

MDOT Use Only

Checked _____

Loaded _____

Keyed _____

02 -



SM No. CNH0003012021

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

02

Overlay approximately 1.4 miles on US 90 from the Biloxi Bay Bridge to Vermont Avenue, known as Federal Aid Project No. NH-0003-01(202) / 108234301 in Jackson County.

Project Completion: Flexible

(STATE DELEGATED)

NOTICE

**BIDDERS MUST COMPLETE AN ONLINE REQUEST
FOR PERMISSION TO BID THIS PROJECT.**

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

SECTION 900
OF THE CURRENT
2017 STANDARD SPECIFICATIONS
FOR ROAD AND BRIDGE CONSTRUCTION
JACKSON, MISSISSIPPI

**MISSISSIPPI DEPARTMENT OF TRANSPORTATION
TABLE OF CONTENTS**

PROJECT: NH-0003-01(202)/108234301 - Jackson

Section 901 - Advertisement

Section 904 - Notice to Bidders

#1	Governing Specification
#2	Status of ROW, w/ Attachments
#3	Final Cleanup
#13	Safety Edge
#113	Tack Coat
#296	Reduced Speed Limit Signs
#445	Mississippi Agent or Qualified Nonresident Agent
#516	Errata and Modifications to the 2017 Standard Specifications
#977	DUNS Requirement For Federal Funded Projects
#1225	Early Notice to Proceed
#1226	Material Storage Under Bridges
#1241	Fuel and Material Adjustments
#2206	MASH Compliant Devices
#2273	Mississippi Special Fuel Tax Law
#2611	Disadvantaged Business Enterprise In Federal-Aid Highway Construction, w/ Supplement
#2782	DBE Pre-Bid Meeting
#2954	Reflective Sheeting for Signs
#3117	Standard Drawings
#3279	Contract Time
#3280	Specialty Items
#3281	Scope of Work
#3282	Cooperation Between Contractors
906	Required Federal Contract Provisions -- FHWA 1273, w/Supplements

Section 907 - Special Provisions

907-102-2	Bidding Requirements and Conditions
907-108-4	Subletting of Contract
907-109-3	Measurement and Payment
907-603-2	Cured-In-Place Pipe
907-603-3	Video Pipe Inspection
907-618-4	Additional Signing Requirements, w/Supplement
907-624-1	Inverted Profile Thermoplastic Traffic Stripe
907-632-1	Traffic Signal Cabinet Assemblies
907-634-3	Traffic Signal and ITS Equipment Poles
907-636-2	Electrical Cable
907-643-1	Video Vehicle Detection
907-687-3	Traffic Recorder Classification System
907-701-2	Hydraulic Cement
907-702-4	Bituminous Materials
907-703-1	Gradation

PROJECT: NH-0003-01(202)/108234301 - Jackson

907-705-1	Stone Riprap
907-707-2	Joint Material
907-711-2	Plain Steel Wire
907-720-2	Acceptance Procedure for Glass Beads
907-721-2	Materials for Signs
907-722-1	Materials for Traffic Signal Installation

Section 905 - Proposal, Proposal Bid Items, Combination Bid Proposal
Certification of Performance - Prior Federal-Aid Contracts
Certification Regarding Non-Collusion, Debarment and Suspension
SAM.GOV Registration and DUNS Number
Section 902 - Contract Form
Section 903 - Contract Bond Forms
Form -- OCR-485

Progress Schedule

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

04/29/2021 02:33 PM

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 901 - ADVERTISEMENT

Electronic bids will be received by the Mississippi Transportation Commission at 10:00 o'clock A.M., Tuesday, May 25, 2021, from the Bid Express Service and shortly thereafter publicly read on the Sixth Floor For:

Overlay approximately 1.4 miles on US 90 from the Biloxi Bay Bridge to Vermont Avenue, known as Federal Aid Project No. NH-0003-01(202) / 108234301 in Jackson 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 87-581, 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.

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

Contractors may request permission to bid online at <http://shopmdot.ms.gov> at no cost. Upon approval, Contractors shall be eligible to submit a bid using Bid Express at <http://bidx.com>. Specimen proposals may be viewed and downloaded online at no cost at <http://mdot.ms.gov> or purchased online at <http://shopmdot.ms.gov> at a cost of Ten Dollars (\$10.00) per proposal plus a small convenience fee. Cash or checks will not be accepted as payment.

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

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

JEFFREY C. ALTMAN
ACTING EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1

CODE: (IS)

DATE: 03/01/2017

SUBJECT: Governing Specifications

The current (2017) 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 within this proposal. Copies of the specification book may be purchased from the MDOT Construction Division, or online at shopmdot/default.aspx?StoreIndex=1.

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 2004 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 2017 Edition of the Standard Specifications.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2

CODE: (IS)

DATE: 03/01/2017

SUBJECT: Status of Right-of-Way

Although it is desirable to have acquired all rights-of-way and completed all railroad agreements, 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, relocations, railroad agreements and utilities adjustments which have not been completed.

The status of right-of-way acquisition, utility adjustments, encroachments, potentially contaminated sites, railroad facilities, improvements, and asbestos contamination 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

NH-0003-01(202)

108234/301000

Jackson County

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
NH-0003-01(202)
108234-301000
Jackson County
March 15, 2021

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.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
Inter-Departmental Memorandum

TO: Vicky Shows
Right of Way Division

DATE: March 12, 2021

FROM: Cape Jones
District Maintenance Engineer

SUBJECT OR PROJECT NO: NH-0003-01(202)
108234/301000

INFORMATION COPY TO:
File
Trudi Loflin (84-01)

COUNTY: Jackson

District Status Report

1. **STATUS OF RIGHT OF WAY:** All work to be done within existing ROW.
2. **RIGHT OF WAY CLEARANCE:** There are no encroachments.
3. **STATUS OF AFFECTED RAILROAD OPERATING FACILITIES:** None Affected.
4. **STATUS OF REQUIRED UTILITY RELOCATIONS:** No utility conflicts.
5. **STATUS OF CONSTRUCTION AGREEMENT:** None required.

STATUS OF POTENTIALLY CONTAMINATED SITES

NH-0003-01(202)

108234-301000

Jackson County

March 15, 2021

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.

Improvements to be included in Notice to Bidders to be removed by the Construction Contractor
FMS Construction Project No: 108234-301000
External ROW No: NH-0003-01(202)

Parcel No:
Station No:
Property Owner:
Description/Pictures:

NA

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3

CODE: (SP)

DATE: 01/17/2017

SUBJECT: Final Clean-Up

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

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

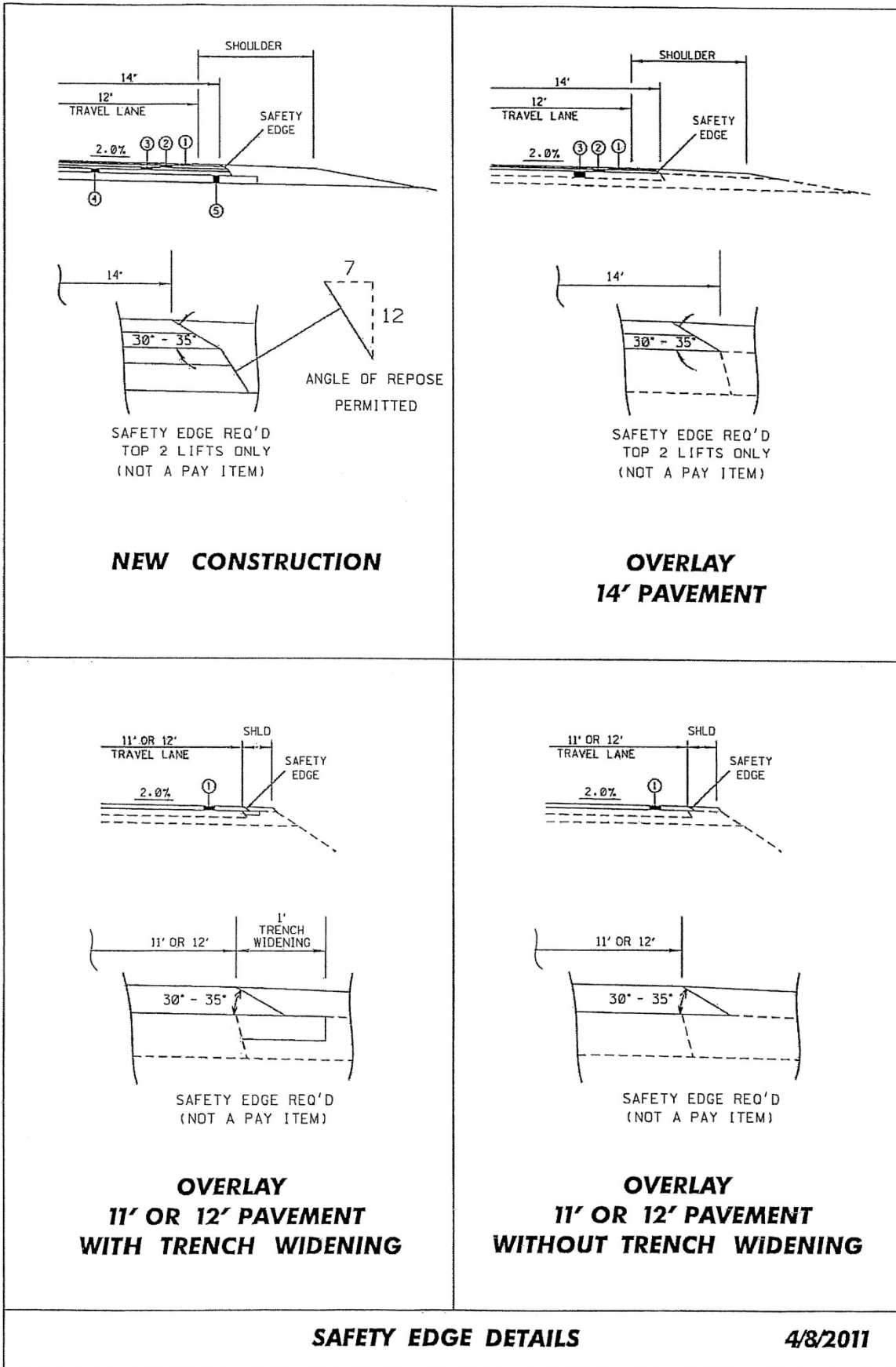
SECTION 904 - NOTICE TO BIDDERS NO. 13

CODE: (IS)

DATE: 03/01/2017

SUBJECT: Safety Edge

Bidders are hereby advised that the Shoulder Wedge (Safety Edge) specified in Section 401, Asphalt Pavements, shall only apply to the top two (2) lifts of asphalt. Open Graded Friction Courses (OGFC) are not to be considered a lift as it pertains to safety edge. Attached is a drawing showing the safety edge. Note that the shoulder dimensions in the bottom two drawings will be less than three feet (3').



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 113

CODE: (SP)

DATE: 04/18/2017

SUBJECT: Tack Coat

Bidders are advised that in addition to the products listed on the Department's APL as referenced in Subsection 401.03.1.2 on page 256, the Contractor may use one of the following as a tack coat.

- CSS-1
- CSS-1h
- SS-1
- SS-1h

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 296

CODE: (SP)

DATE: 07/25/2017

SUBJECT: Reduced Speed Limit Signs

Bidders are advised that when the plans or contract documents require the speed limit on a project to be reduced, the Contractor shall begin work within 48 hours of installing the reduced speed limit signs. Should the Contractor not start work or have no plans to start work within 48 hours of installing the signs, the reduced speed limit signs shall be covered and existing speed limit signs uncovered.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 445

CODE: (SP)

DATE: 10/10/2017

SUBJECT: Mississippi Agent or Qualified Nonresident Agent

Bidders are hereby advised of the requirements of Subsections 102.08, 103.05.2, and 107.14.2.1 of the *2017 Standard Specifications for Road and Bridge Construction* as it refers to bonding agents. Proposal guaranties, bonds, and liability insurance policies must be signed by a **Mississippi Agent or Qualified Nonresident Agent.**

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 516

CODE: (IS)

DATE: 11/28/2017

SUBJECT: Errata and Modifications to the 2017 Standard Specifications

<u>Page</u>	<u>Subsection</u>	<u>Change</u>
16	102.06	In the seventh full paragraph, change “Engineer” to “Director.”
33	105.05.1	In the sixth sentence, change “Contract Administration Engineer” to “Contract Administration Director.”
34	105.05.2.1	In subparagraph 2, change “SWPPP, ECP” to “SWPPP and the ECP”
35	105.05.2.2	In subparagraphs 2, add “ and” to the end of the sentence. In subparagraph 3, remove “, and” and add “.”.
90	109.04.2	In the last paragraph of subparagraph (a), place a period “.” at the end of the sentence.
93	109.04.2	In the last paragraph of subparagraph (g), place a period “.” at the end of the sentence. Also, in the first paragraph of subparagraph (h), place a period “.” at the end of the sentence.
97	109.07	Under ADJUSTMENT CODE, subparagraph (A1), change “HMA mixture” to “Asphalt mixtures.”
98	109.11	In the third sentence, change “Engineer” to “Director.”
219	308.04	In the last sentence of the last paragraph, change “Contractor’s decision” to “Engineer’s decision.”
300	405.02.5.9	In the first sentence of the second paragraph, change “Hot Mix Asphalt” to “Asphalt Mixtures.”
502	630.01.1	In the first paragraph, change “AASHTO” to “AASHTO’s LRFD”.
636	646.05	Change “each” to “per each” for the pay item units of payment.
640	656.02.6.2	In item 7), change “down stream” to “downstream”.
688	630.03.2	Change the subsection number from “630.03.2” to “680.03.2.”

725 702.08.3 In the second sentence of the first paragraph, change “hot-mix” to “asphalt.”

954 804.02.13.1.6 In the definition for “M” in the % Reduction formulas, change “paragraph 7.3” to “paragraph 5.3.”

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 977

CODE: (IS)

DATE: 07/25/2018

SUBJECT: DUNS Requirement for Federal Funded Projects

Bidders are advised that the Prime Contractor must maintain a current registration in the System for Award Management (<http://www.sam.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 System for Award Management.

Bidders are also advised that prior to the award of this contract, they MUST be registered, active, and have no active exclusions in the System for Award Management.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1225

CODE: (SP)

DATE: 11/13/2018

SUBJECT: Early Notice to Proceed

Bidders are advised that if an early notice to proceed is allowed by the Department and the Contractor experiences problems or delays between the early notice to proceed date and the original notice to proceed date, this shall not be justification for any monetary compensation or an extension of contract time.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1226

CODE: (IS)

DATE: 11/16/2018

SUBJECT: Material Storage Under Bridges

Bidders are advised that Subsection 106.08 of the Standard Specifications allows the Contractor to store materials and equipment on portions of the right-of-way. However, the Contractor will not be allowed to store or stockpile materials under bridges without written permission from the Project Engineer. The Contractor shall submit a detailed request of all proposed materials to be stored under bridges to the Engineer a minimum of 14 calendar days prior to anticipated storage. This detail shall include, but not limited to, bridge location, material type, material quantity, and duration of storage. The Project Engineer and any other needed Division will review this information and determine whether to grant approval. The Contractor shall not store any material under any bridge without written approval from the Project Engineer.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 1241

CODE: (IS)

DATE: 11/27/2018

SUBJECT: Fuel and Material Adjustments

Bidder's attention is brought to the last paragraph of Subsection 109.07 of the Standard Specifications which states that no fuel or material adjustment will be made after the completion of contract time. Any fuels consumed or materials incorporated into the work during the monthly estimate period falling wholly after the expiration of contract time will not be subject a fuel or material adjustment.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2206

CODE: (IS)

DATE: 01/14/2020

SUBJECT: MASH Compliant Devices

Bidders are hereby advised that compliance associated with the requirements of meeting either the National Cooperative Highway Research Program (NCHRP) Report 350 or the Manual for Assessing Safety Hardware (MASH) for installations of certain traffic control devices and permanent safety hardware devices (guardrails, guardrail terminals, permanent portable barriers, cast-in-place barriers, all other permanent longitudinal barriers, crash cushions, cable barriers, cable barrier terminals, bridge rails, bridge rail transitions, all other terminals, sign supports, and all other breakaway hardware) as listed throughout the Standard Specifications and/or the Standard Drawings, or both, is now replaced with the requirements of meeting the 2016 version of MASH after December 31, 2019. This change applies to new permanent installations and to full replacements of existing installations.

At the preconstruction conference or prior to starting any work on the project, the Contractor shall submit a letter stating that the traffic control devices and permanent safety hardware devices as outlined within the paragraph above that are to be used on the project are certified to meet MASH 2016.

When a MASH 2016-compliant device does not exist for the new permanent installations and/or full replacement installations of permanent safety hardware devices, as listed above, a MASH 2009-compliant or a NCHRP 350-compliant device may be proposed by the Contractor for the project. A written request for such instances must be submitted by the Contractor either at the preconstruction conference or prior to starting any work on the project. The Contractor shall submit the following items to the Project Engineer: (1) a detailed list of the proposed devices and locations thereof; and (2) certification letters indicating that the proposed devices are compliant with either MASH 2009 or NCHRP 350.

When a MASH 2016-compliant device does not exist for the temporary work zone traffic control devices (Category 1, Category 2, and Category 3 devices), a MASH 2009-compliant or a NCHRP 350-compliant device may be proposed by the Contractor for the project. Temporary work zone traffic control devices (Category 1, Category 2, and Category 3 devices) that are MASH 2009-compliant or NCHRP 350-compliant that have been in use prior to December 31, 2019, and that have a remaining service life may be proposed for use throughout their normal service life on the project by the Contractor. For either of these scenarios for temporary work zone traffic control devices, a written request must be submitted by the Contractor either at the preconstruction conference or prior to starting any work on the project. The Contractor shall submit the following items to the Project Engineer: (1) a detailed list of the proposed devices and locations thereof; and (2) certification letters indicating that the proposed devices are compliant with either MASH 2009 or NCHRP 350.

Work will only be allowed to proceed after the Department has granted written concurrence(s) with the proposed request(s) as listed above.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2273

CODE: (SP)

DATE: 02/12/2020

SUBJECT: Mississippi Special Fuel Tax Law

Bidder's attention is brought to the second paragraph of Subsection 107.02 of the Standard Specifications which states that all Contractors and Subcontractors must comply with all requirements contained in the Mississippi Special Fuel Tax Law, Section 27-55-501, *et seq.* Attached are two Fact Sheets provided by the Mississippi Department of Revenue (MDOR) with additional information.

Gasoline and Dyed Diesel Used for Non-Highway Purposes

Mississippi provides a reduced rate for gasoline and dyed diesel used for non-highway purposes. The reduced rates are 6.44 cents per gallon and 5.75 cents per gallon of gasoline or dyed diesel. These fuels are generally taxed at 18 cents per gallon if for on road use.

Gasoline Used for Non-Highway Purposes

You may be entitled to a refund of 11.56 cents per gallon (making this an equivalent to a tax rate of 6.44 cents per gallon) if you desire to purchase gasoline to be used off road. The gasoline must be used for agricultural, maritime, industrial, manufacturing, domestic or non-highway purposes only.

Examples of non-highway include gasoline used in boats, golf carts, machinery used for manufacturing or farm equipment used exclusively in plowing, planting or harvesting farm products.

Refund Gasoline User

The refund is based on the amount of gallons used. Before a refund is issued, you are required to...

1. Obtain a refund gasoline user's permit and a certificate for refund booklet from the Department of Revenue;
2. Have a storage tank marked "REFUND GASOLINE"; and,
3. Purchase the gasoline from someone who holds a refund gasoline dealer's permit.

No refund will be allowed for gasoline used in motor vehicles owned or operated by a government entity or used in Mississippi government contracts.

Refund Gasoline Dealer

You must obtain a refund gasoline dealer's permit from the Department of Revenue before selling refund gasoline. At no time should the gasoline be delivered to a tank that is not properly marked. The gasoline must be dyed a distinctive mahogany color at the time of delivery.

The Department of Revenue may waive the dye requirement if the dye may cause damage to the equipment. The refund gasoline user is required to obtain the waiver from the Department of Revenue.

Dyed Diesel Used for Non-Highway Purposes

Unlike gasoline, you are not required to apply for a refund if you desire to purchase dyed diesel to be used off road. Mississippi provides a reduced rate of 5.75 cents per gallon on dyed diesel used off road. Diesel used on road is subjected to 18 cents per gallon. Dyed diesel used in motor vehicles owned or operated by a government entity or used in Mississippi government contracts will be subjected to 18 cents per gallon.

Dyed Diesel Used on the Highway

Any person who purchases, receives, acquires or uses dyed diesel for highway use will be liable to pay 18 cents per gallon and subject to a penalty in the amount of \$1000.

Identifying Dyed Diesel

Storage facilities for dyed diesel must be plainly marked "NONHIGHWAY DIESEL FUEL" or "NONHIGHWAY KEROSENE". Retailers are also required to mark all pumps or dispensing equipment.



Special Fuel Used on Government Contracts

State and Local Government Contracts

Special fuel purchased, acquired or used in performing contracts with the State of Mississippi, counties, municipalities or any political subdivision is taxed at a rate of 18 cents per gallon. Special fuel includes but is not limited to the following:

- Dyed diesel fuel;
- Kerosene;
- Undyed diesel fuel; and,
- Fuel oil.

State and local government contracts include construction, reconstruction and maintenance or repairs of projects such as roads, bridges, water systems, sewer systems, buildings, drainage canals and recreational facilities. The Department of Revenue may require contractors to remit the excise tax directly to the state in lieu of paying the tax to a distributor.

Special Fuel Direct Pay Permit

Contractors that remit the excise tax to the state will be issued a Special Fuel Direct Pay Permit. This permit relieves the distributor from collecting the tax and requires the contractor to file a monthly special fuel return. The distributor should include the contractor’s permit number on all invoices that are related to tax-free sales.

The contractor is required to furnish a surety or cash bond guaranteeing the payment of the excise tax prior to receiving the Special Fuel Direct Pay Permit. The Department of Revenue may accept a contractors tax bond if the bond covers the excise tax levied on special fuel.

Special Fuel Distributors

If the contractor does not have a Special Fuel Direct Pay Permit, distributors are required to collect the 18 cents excise tax and remit the tax to the Department of Revenue. The additional 12.25 cents levied on special fuel (excluding undyed diesel) should be reported on schedules 5F and 5G of the special fuel return.

Environmental Protection Fee

Special fuel distributors are required to collect the environmental protection fee even if the contractor has a Special Fuel Direct Pay Permit. The fee is levied at 4/10^{ths} of a cent per gallon. The fee is suspended or reinstated when the trust fund has exceeded or fallen below the obligatory balance.

Penalties

Any person who knowingly and willfully purchases untaxed fuel for use in equipment utilized on a road or highway construction site in this state is guilty of a misdemeanor and, upon conviction, shall be fined not less than \$1,000 or more than \$100,000, or imprisoned in the county jail for not more than one year, or both.



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO NOTICE TO BIDDERS NO. 2611

DATE: **05/02/2020**

The goal is percent for the Disadvantaged Business Enterprise. All Bidders are 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:

https://mdot.ms.gov/portal/current_letting

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2611

CODE: (IS)

DATE: 05/21/2020

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 "Title 49, Code of Federal Regulations, [Part 26](#)." 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, or national origin.

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, sub-recipient or Subcontractor shall not discriminate on the basis of race, color, sex, or national origin 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 49 CFR 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, sex, or national origin. 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 has 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.

If the percentage of the contract that is proposed for DBEs is 1% or greater, the Contractor shall agree to meet or exceed the contract goal on the last bid sheet of the proposal.

All Bidders shall submit to the Office of Civil Rights Form OCR-481, signed by the Prime Contractor and the DBE Subcontractors, no later than the 3rd business day after opening of the bids.

Form OCR-481 is available on the MDOT website at www.mdot.ms.gov under the Civil Rights tab, or by calling 601-359-7466.

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 to be completed by the DBE subcontractor 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, to MDOT Contract Administration Division prior to bid opening, 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 to MDOT Contract Administration Division prior to bid opening, shall be just cause for rejection of the proposal. Award may then be made to the next lowest responsive bidder or the project may be re-advertised.

GOOD FAITH EFFORTS

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.
- (11) 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.

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 "Moving Ahead for Progress in the 21st Century Act (MAP-21)" and applicable requirements of "Title 49, Code of Federal Regulations, Part 26" 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.mdot.ms.gov. The list is in the top left corner of the current Letting Calendar under Contracts & Letting. 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 good faith efforts outlined previously in this document still apply. 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.

PRE-BID MEETING

A pre-bid meeting will be held in the [Commission Room on the 1st Floor](#) of the [MDOT Administration Building](#) in Jackson, 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. The participation of a DBE Firm cannot be counted towards the Prime Contractor's DBE goal until the amount being counted towards the goal has been paid to the DBE.

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) **All Bidders** must submit to the Office of Civil Rights for approval, Form OCR-481 (DBE Commitment) no later than the 3rd business day after opening of the bids 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 include OCR-485 information with their bid proposal listing all firms that submitted quotes for material supplies or items to be subcontracted. OCR-485 information must be **signed and** included with the bid proposal. If the OCR-485 information is not included as part of bid proposal, your bid will be deemed irregular.

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

If the contract goal established by MDOT in this proposal is 1% or greater, it 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, before the final estimate is paid and the project is closed out, the Prime 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 all Contractors / Suppliers over the life of the contract. 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-03-05-02-483. 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 Prime Contractor will submit to the Project Engineer OCR-484 that 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 the form to the monthly estimate before forwarding to the Contract Administration Division for further processing. Failure of the Contractor to submit the OCR-484 will result in the estimate not being processed and paid.
- (5) OCR-485: ALL BIDDERS must submit signed form with bid proposal of all firms that submitted quotes for material supplies or items to be subcontracted. If the OCR-485 information is not included as part of bid proposal, the bid will be deemed irregular.
- (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. The low Bidder should return this form to MDOT with the OCR-481 form, or can also be returned with the Permission to Subcontract Forms (CAD-720, CAD-725 and CAD-521).

DBE Forms, can be obtained from the Office of Civil Rights Division, MDOT Administration Building, 401 North West Street, Jackson, MS, or at www.mdot.ms.gov under the Civil Rights tab.

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 or recover an amount equal to the unmet portion of the DBE goal which may include additional monetary penalties as outlined below based on the number of offenses and the severity of the violation as determined by MDOT.

1 st Offense	10% of unmet portion of goal	or	\$5,000 lump sum payment	or	Both
2 nd Offense	20% of unmet portion of goal	or	\$10,000 lump sum payment	or	Both
3 rd Offense	40% of unmet portion of goal	or	\$20,000 lump sum payment	or	\$20,000 lump sum payment and debarment

(4) Debar the Contractor involved from bidding on MDOT federally funded projects for a period of up to 12 months after notification by certified email.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2782

CODE: (SP)

DATE: 8/13/2020

SUBJECT: DBE Pre-Bid Meeting

Due to the COVID-19 pandemic and the Department not allowing visitors in the Administration Building at this time, the DBE Pre-Bid Meeting referenced on Page 5 of Notice to Bidders No. 2611 will be held by **video conference only**. The meeting will be held at 2:00 P.M. on the day preceding the date of the bid opening using Zoom video conferencing software. Anyone interested in participating can download Zoom and connect to the meeting at the below link.

<https://zoom.us/j/5548736403?pwd=SDh5S2hQSE5pNG5FOEkzR3NsUnBYQT09>

Password (if prompted): 272147

For those unable to participate via Zoom, the below teleconference number may be used instead.

1-888-227-7517

Conference Code: 404496

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2954

CODE: (SP)

DATE: 12/01/2020

SUBJECT: Reflective Sheeting for Signs

Bidders are hereby advised that the retroreflective sign sheeting used for signs on this project shall be as listed below and shall meet the requirements of Subsection 721.06.

Temporary Construction Signs

Temporary traffic control (orange) sign sheeting shall be a minimum Type IX Fluorescent Orange sheeting as shown in Special Provision 907-721.

Permanent Signs

Permanent signs, except signs on traffic signal poles/mast arms, shall be as follows:

- Brown background sheeting on guide signs shall be a minimum Type VIII sheeting,
- Green and blue background sheeting on guide signs shall be a minimum Type IX sheeting, and
- All white, yellow, red, fluorescent yellow, and fluorescent yellow/green sheeting shall be Type XI sheeting.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 – NOTICE TO BIDDERS NO. 3117

CODE: (SP)

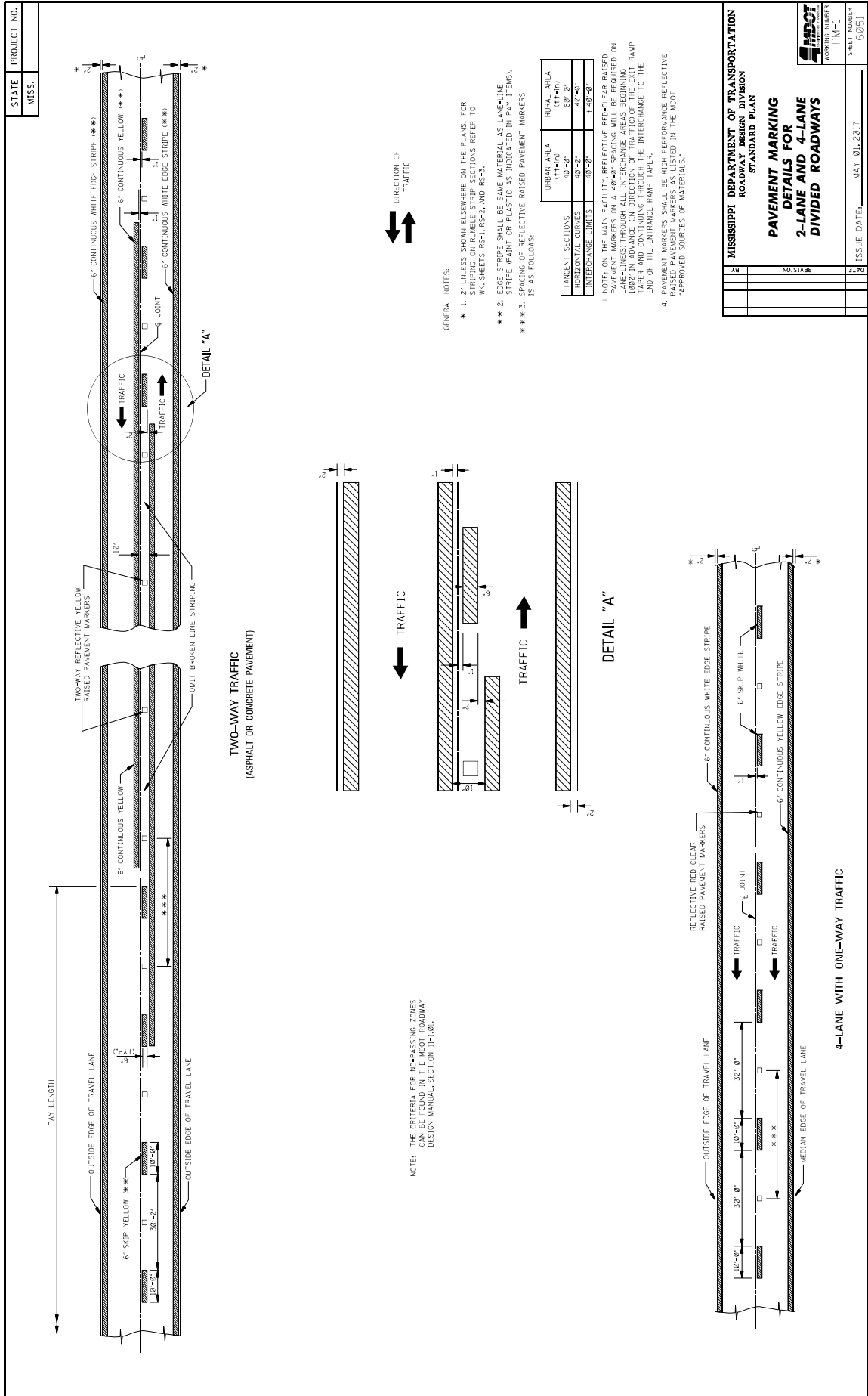
DATE: 02/23/2021

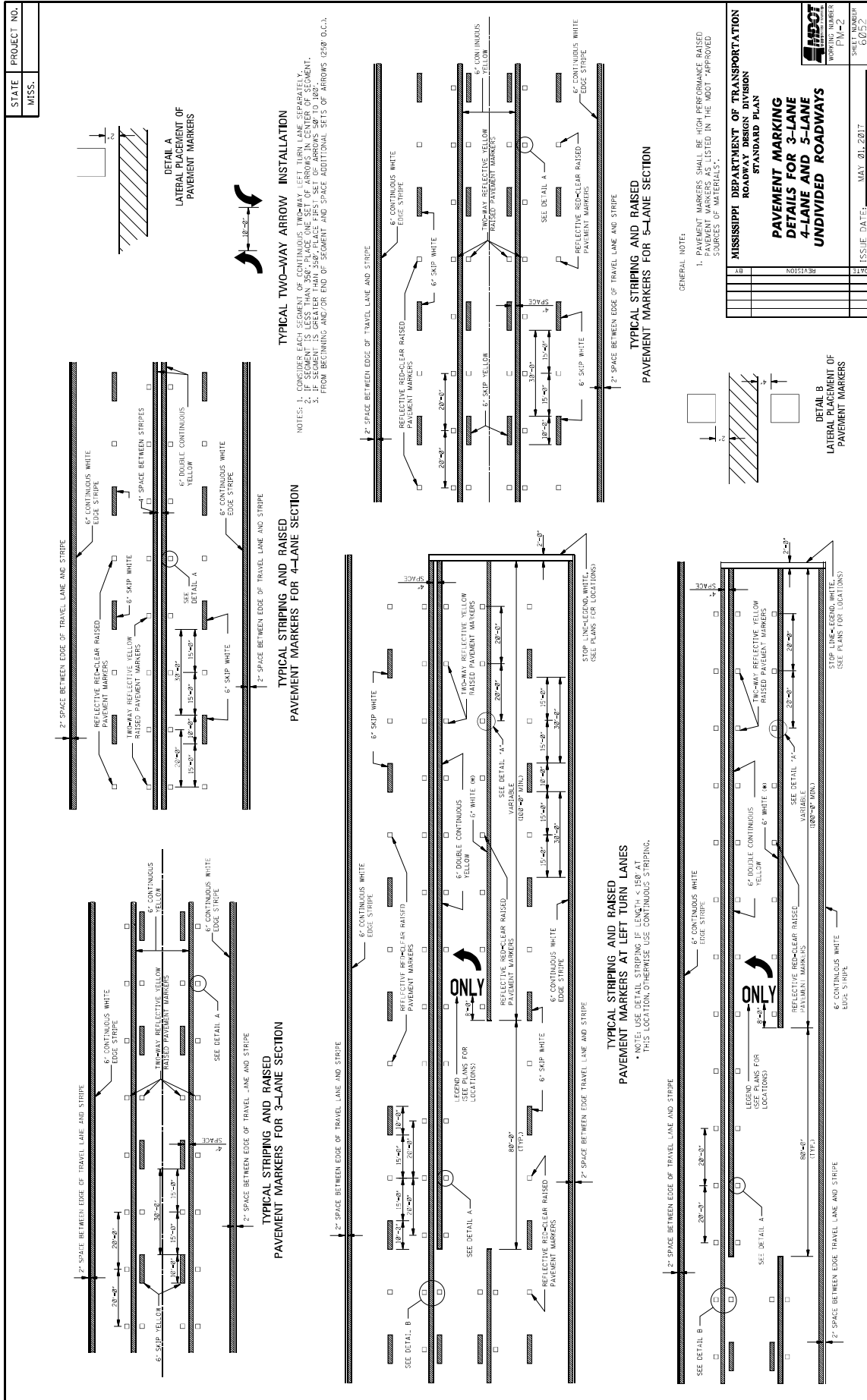
SUBJECT: Standard Drawings

Standard Drawings attached hereto shall govern appropriate items of required work.

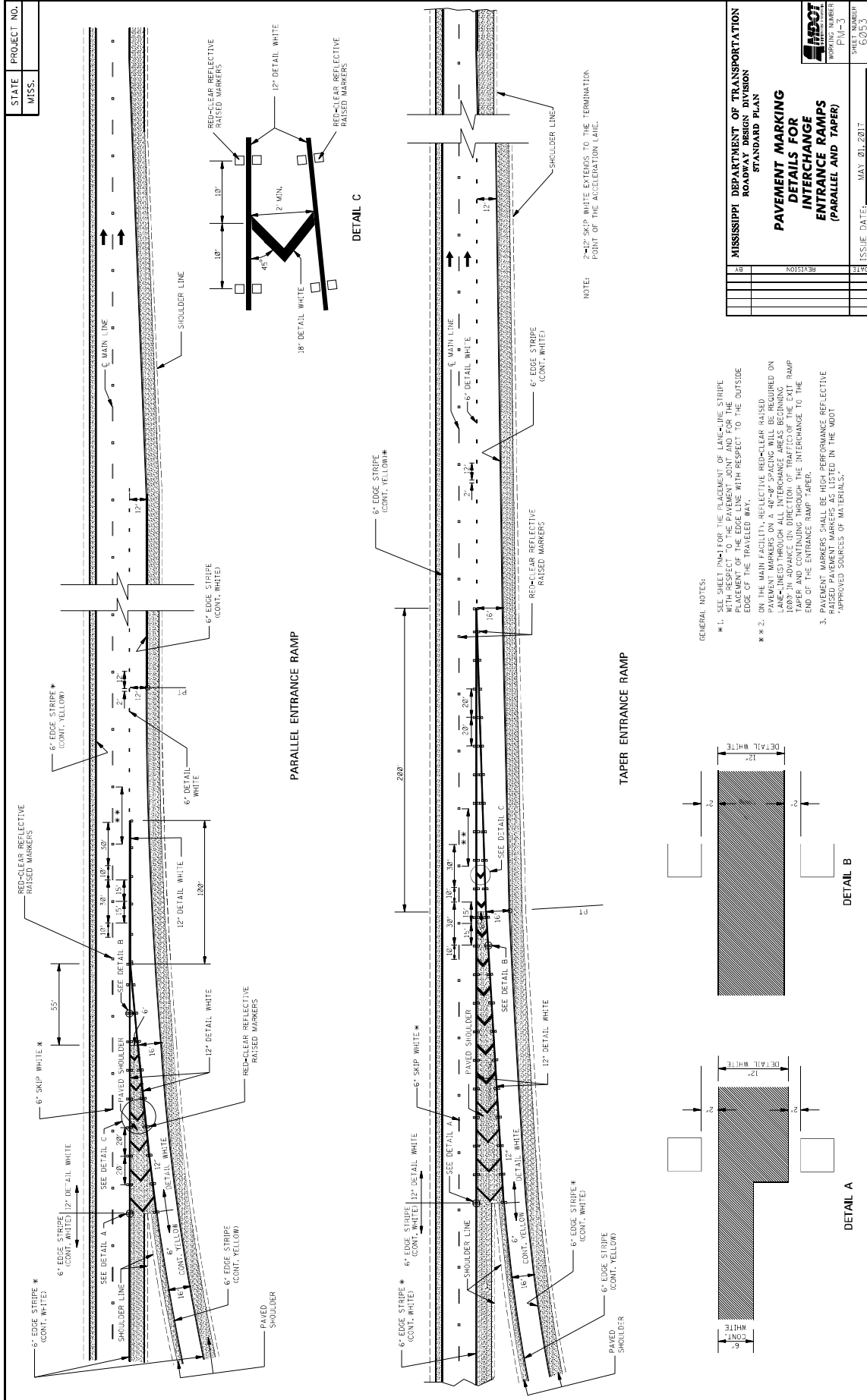
Larger copies of Standard Drawings may be purchased from:

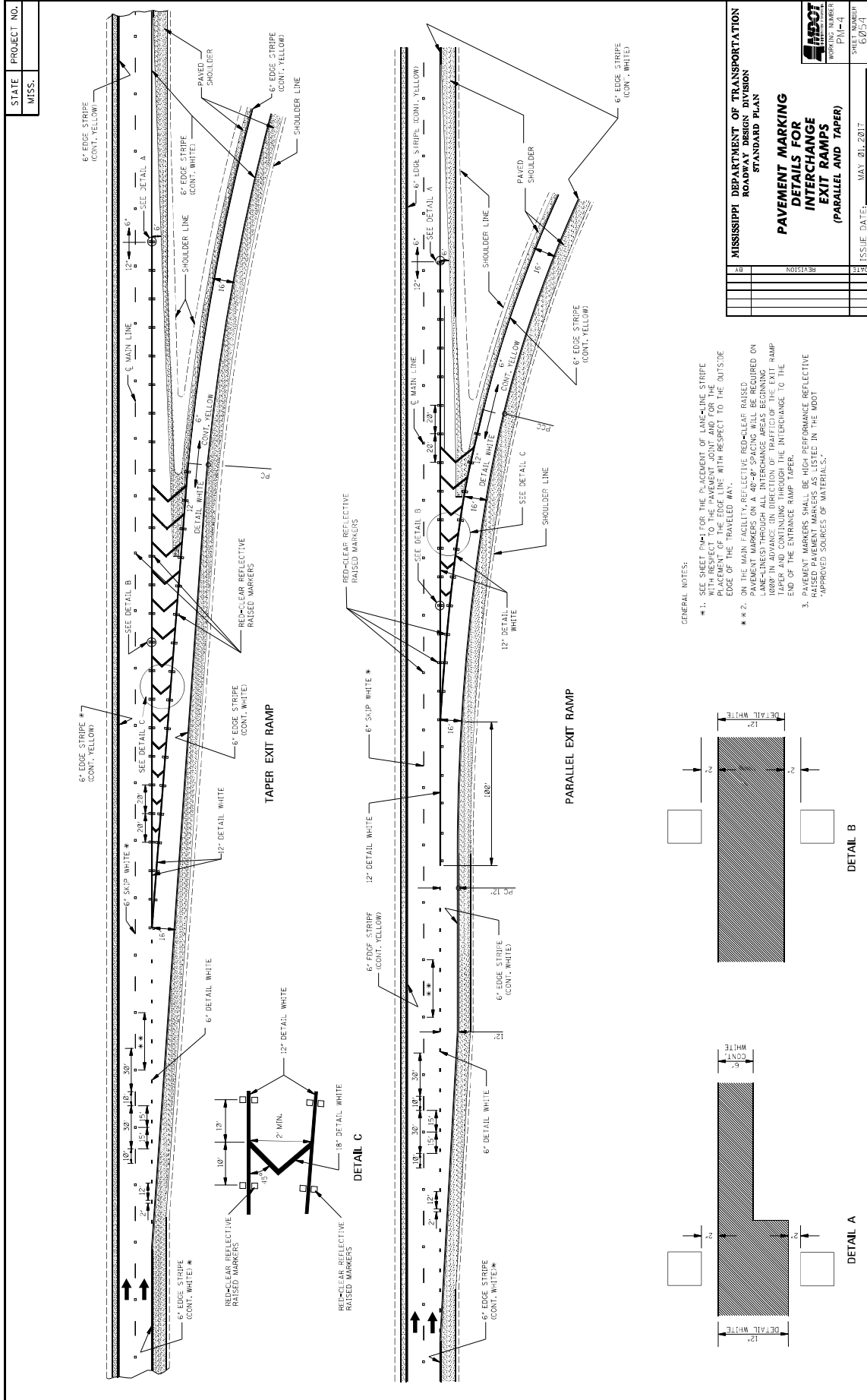
MDOT Plans Print Shop
MDOT Shop Complex, Building C, Room 114
2567 North West Street
P.O. Box 1850
Jackson, MS 39215-1850
Telephone: (601) 359-7460
or FAX: (601) 359-7461
or e-mail: plans@mdot.state.ms.us





MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
ROADWAY DESIGN DIVISION	
STANDARD PLAN	
PAVEMENT MARKING	
DETAILS FOR 3-LANE	
4-LANE AND 3-LANE	
UNDIVIDED ROADWAYS	
SHEET NUMBER P-2	SHEET TOTAL 60/52
ISSUE DATE: MAY 20, 2017	

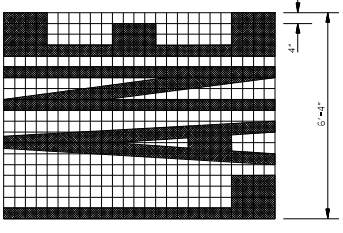




- GENERAL NOTES:
- * 1. SEE SHEET PAV-1 FOR THE PLACEMENT OF LANE-LINE STRIPE WITH RESPECT TO THE PAVEMENT JOINT AND FOR THE PLACE OF THE PAVED SHOULDER WITH RESPECT TO THE OUTSIDE EDGE OF THE PAVED MARKING. RED-CLEAR RAISED PAVEMENT MARKERS ON A 40'-84" SPACING WILL BE REQUIRED ON LANE-LINES THROUGH ALL INTERCHANGE AREAS BEGINNING 1000' IN ADVANCE IN DIRECTION OF TRAFFIC OF THE EXIT RAMP TAPER AND CONTINUING THROUGH THE INTERCHANGE TO THE END OF THE ENTRANCE RAMP TAPER.
 - * 2. RAISED PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE REFLECTIVE 'APPROVED SOURCES OF MATERIALS.'

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
ROADWAY DESIGN DIVISION	
STANDARD PLAN	
PAVEMENT MARKING	
INTERCHANGE	
EXIT RAMP	
(PARALLEL AND TAPER)	
SHEET NUMBER	ISSUE DATE:
PL-4	MAY 20, 2017
WORKING NUMBER	
62/254	

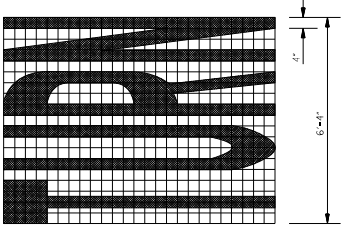
STATE MISS.	PROJECT NO.										
----------------	-------------	--	--	--	--	--	--	--	--	--	--



6'-4"

8'-4"

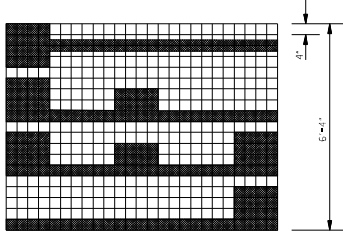
4"



6'-4"

8'-4"

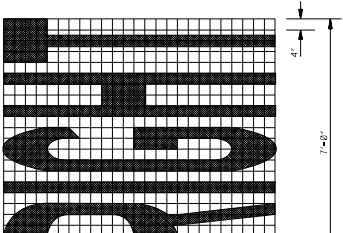
4"



6'-4"

8'-4"

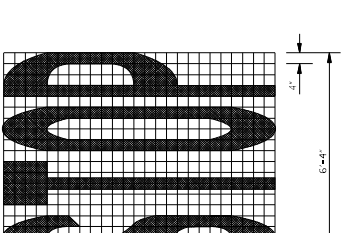
4"



7'-0"

8'-4"

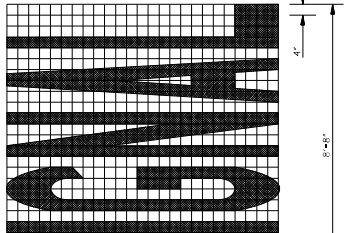
4"



6'-4"

8'-4"

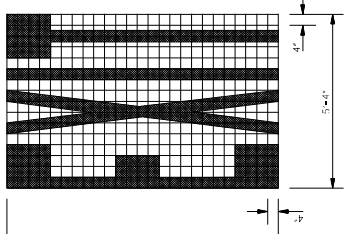
4"



6'-4"

8'-4"

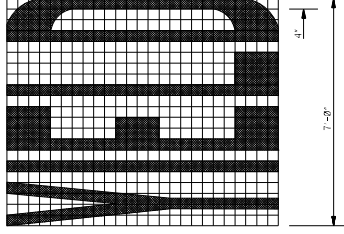
4"



5'-4"

8'-4"

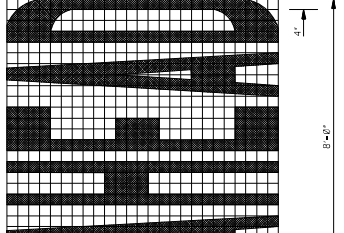
4"



7'-0"

8'-4"

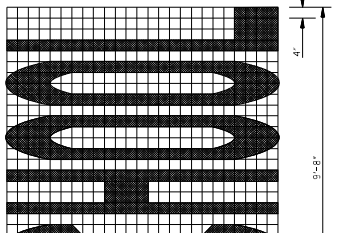
4"



8'-0"

8'-4"

4"



9'-8"

8'-4"

4"

GENERAL NOTES:

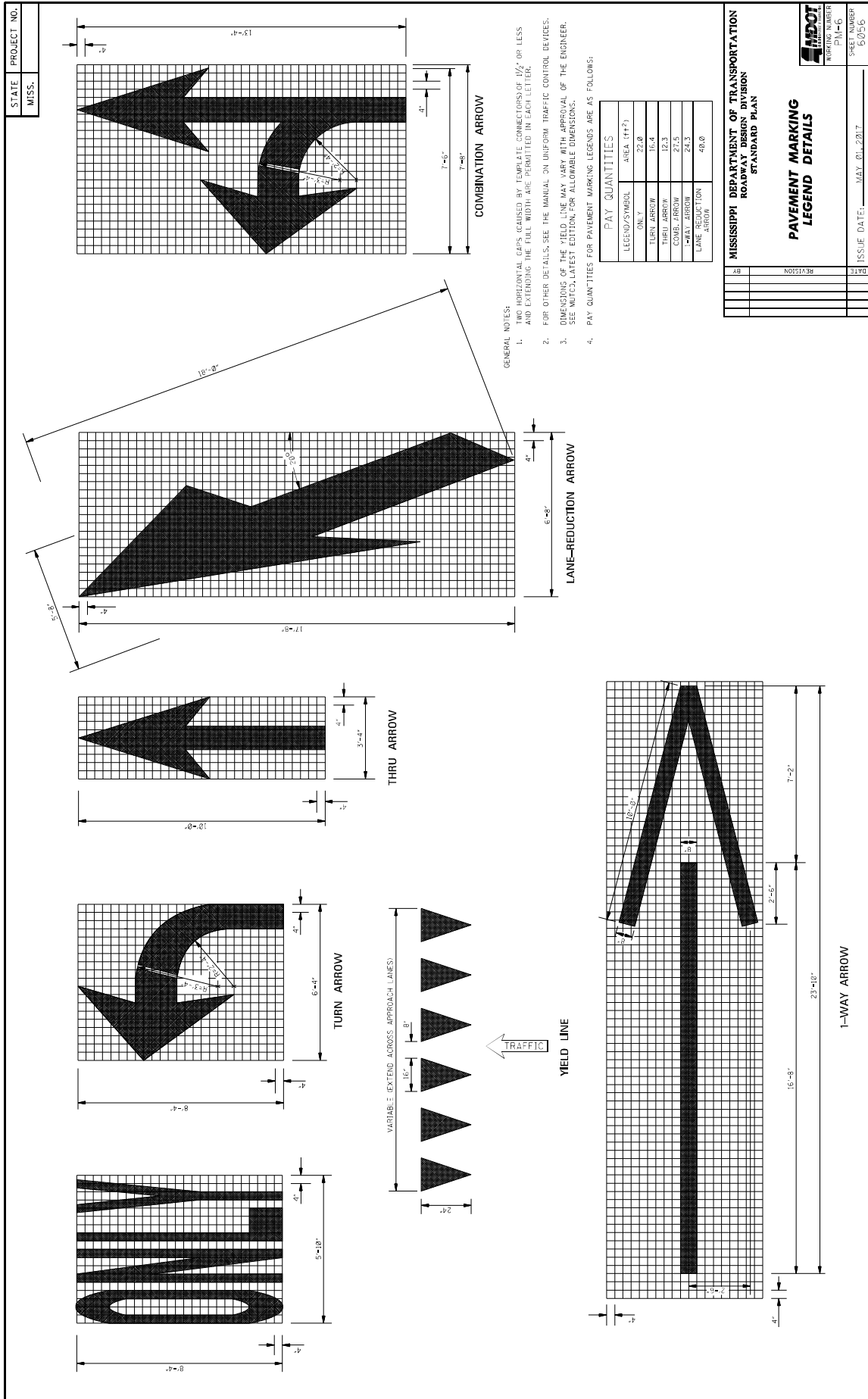
- TWO HORIZONTAL GAPS (CAUSED BY TEMPLATE CONNECTIONS) OF 1/4" SHALL BE MAINTAINED BETWEEN ALL LETTERS OR BETWEEN THE EXTENDING LETTERS OF THE SAME CHARACTER.
- FOR OTHER DETAILS, SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- PAY QUANTITIES FOR PAVEMENT MARKING LEGENDS ARE AS FOLLOWS:

LEGEND	AREA (sq ft)
STOP	246.6
RIGHT	206.6
LEFT	195.5
YIELD	227.2
AHEAD	322.4
YIELD	206.6
EXIT	185.5
SIGNAL	322.4
SCHOOL	352.2

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

**PAVEMENT MARKING
LEGEND DETAILS**

DATE	BY	REVISION									
ISSUE DATE: MAY 01, 2017											
SHEET NUMBER	PROJECT NUMBER										
60535	PM-5										



STATE
MISS.

PROJECT NO.

TYPICAL LOCATION OF STOP LINE WHERE NO ACTIVE WARNING DEVICE IS PRESENT OR PROPOSED.

GENERAL NOTES:

- **1. A PORTION OF THE PAVEMENT MARKING SYMBOL SHOULD BE DIRECTLY OPPOSITE THE ADVANCE WARNING SIGN (R14-1).
- **2. WIDTH OF R X R SYMBOL MAY VARY ACCORDING TO LANE WIDTH. SYMBOL SHOULD EXTEND ACROSS ALL APPROACH LANES AND INDIVIDUAL R X R SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.
- **3. R X R SYMBOL (65.8 - 71.1) TRANSVERSE BANDS AND STOP LINE SHALL BE PAID FOR AS LEGEND WHITE.
- **4. REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR LOCATION OF PROPOSED WARNING DEVICES AT RAILROAD-HIGHWAY GRADE CROSSINGS.

NOTE: DISTANCE 'X' MAY BE OMITTED IF PROTECTIVE PHYSICAL CONDITIONS EXIST AT THE DESIGNATED DISTANCE.

POSTED SPEED (mph)	① DISTANCE 'X' (ft)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475

DETAIL A
STANDARD "R" PAVEMENT MARKING FOR R X R SYMBOL

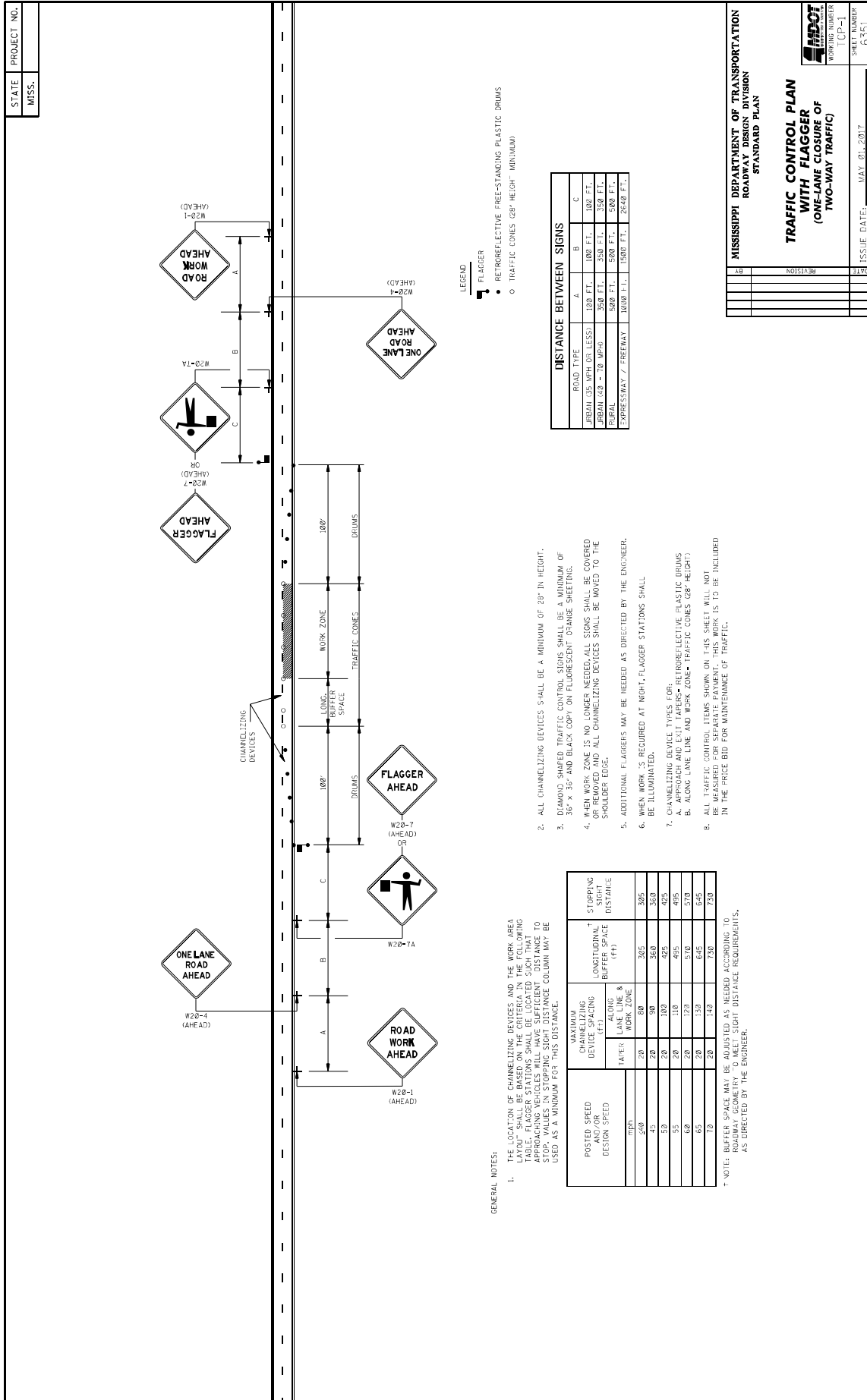
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

TYPICAL PLACEMENT OF WARNING SIGNS AND PAVEMENT MARKINGS AT RAILROAD HIGHWAY GRADE CROSSINGS

SECTION

SHEET NUMBER
60531

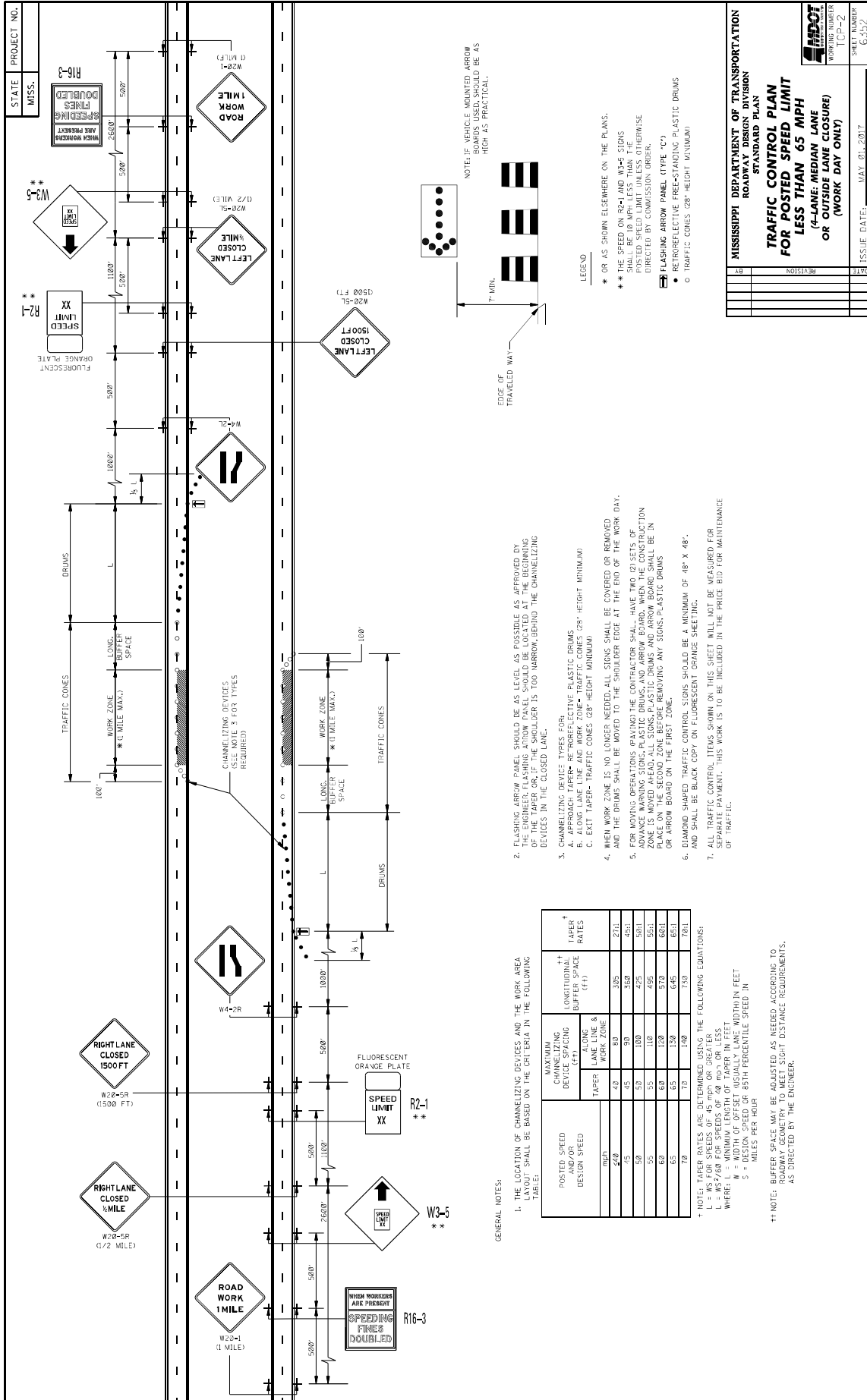
ISSUE DATE: MAY 01, 2017



MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

TRAFFIC CONTROL PLAN
WITH FLAGGER
(ONE-LANE CLOSURE OF
TWO-WAY TRAFFIC)

WORKING NUMBER: [CP-1]
 SHEET NUMBER: 6351
 ISSUE DATE: MAY 01, 2017



STATE PROJECT NO.
MISS.
R16-3

W20-3R (1500 FT)
RIGHT LANE CLOSED 1500 FT

W20-5P (1/2 MILE)
RIGHT LANE CLOSED 1/2 MILE

W20-1 (1 MILE)
ROAD WORK 1 MILE

W20-5L (1/2 MILE)
LEFT LANE CLOSED 1/2 MILE

W20-5L (1500 FT)
LEFT LANE CLOSED 1500 FT

W4-2R

R2-1
SPEED LIMIT XX

W3-5
SPEED LIMIT XX

R16-3
SPEEDING FINES DOUBLED

NOTE: IF VEHICLE MOUNTED ARROW SIGNS SHOULD BE AS HIGH AS PRACTICAL.

7' MIN. EDGE OF TRAVELED WAY

LEGEND
 * OR AS SHOWN ELSEWHERE ON THE PLANS.
 ** THE SPEED ON R2-1 AND W3-5 SIGNS SHALL BE 10 MPH LESS THAN THE POSTED SPEED LIMIT UNLESS OTHERWISE DIRECTED BY COMMISSION ORDER.
 [Symbol] FLASHING ARROW PANEL (TYPE 'C')
 [Symbol] RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS
 [Symbol] TRAFFIC CONES (28" HEIGHT MINIMUM)

2. FLASHING ARROW PANEL SHOULD BE AS LEVEL AS POSSIBLE AS APPROVED BY THE ENGINEER. THE PANEL SHOULD BE LOCATED AT THE END OF THE WORK AREA OF THE TAPER OR, IF THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.
 3. CHANNELIZING DEVICES: TAPER, FOR:
 A. APPROACH TAPER- RETROREFLECTIVE PLASTIC DRUMS
 B. ALONG LANE LINE AND WORK ZONE- TRAFFIC CONES (28" HEIGHT MINIMUM)
 C. EXIT TAPER- TRAFFIC CONES (28" HEIGHT MINIMUM)
 4. WHEN WORK ZONE IS NO LONGER NEEDED, ALL SIGNS SHALL BE COVERED OR REMOVED.
 5. FOR MOVING OPERATIONS (PAVING) THE CONTRACTOR SHALL HAVE TWO (2) SETS OF ADVANCE WARNING SIGNS- PLASTIC DRUMS AND ARROW BOARD. WHEN THE CONSTRUCTION ZONE IS MOVED AHEAD, ALL SIGNS- PLASTIC DRUMS AND ARROW BOARD SHALL BE IN PLACE ON THE SECOND ZONE BEFORE REMOVING ANY SIGNS- PLASTIC DRUMS OR ARROW BOARD ON THE FIRST ZONE.
 6. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHOULD BE A MINIMUM OF 48" X 48" AND SHALL BE BLACK COPY ON FLUORESCENT ORANGE SHEETING.
 7. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

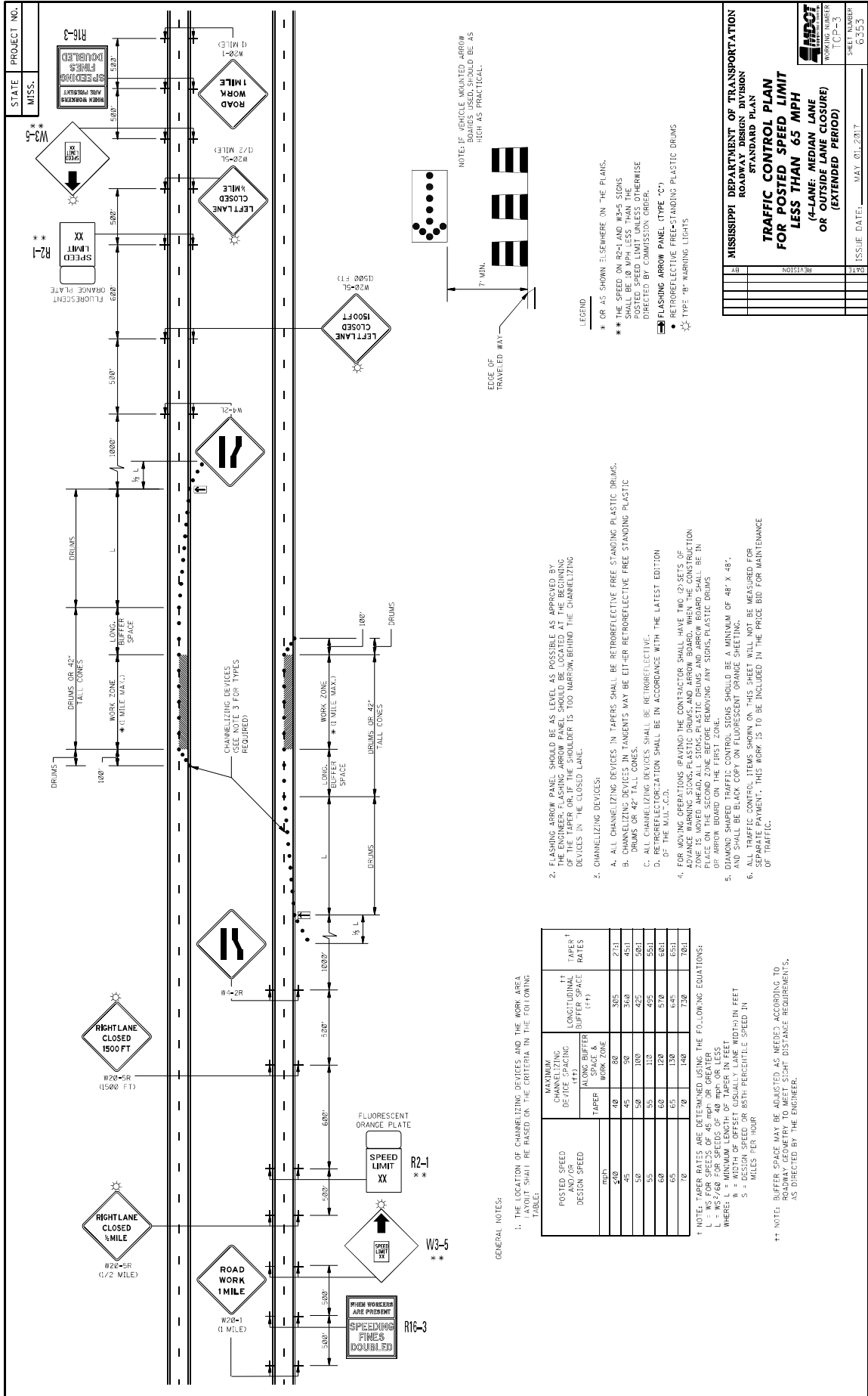
GENERAL NOTES:
 1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LAYOUT SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:

POSTED SPEED AND/OR DESIGN SPEED (MPH)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)		LONGITUDINAL BUFFER SPACE (FT)	TAPER RATES
	LANE LINE & WORK ZONE	WORK ZONE		
24	42	80	305	27:1
30	45	90	350	45:1
35	50	100	425	50:1
40	55	110	495	55:1
45	60	120	570	60:1
50	65	130	645	65:1
55	70	140	730	70:1

† NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 L = MS FOR SPEEDS OF 45 MPH OR GREATER
 L = MS FOR SPEEDS OF 30 MPH OR GREATER
 WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
 M = WIDTH OF OFFSET (USUALLY LANE WIDTH) IN FEET
 S = DESIGN SPEED OR 85TH PERCENTILE SPEED IN MILES PER HOUR
 †† NOTE: BUFFER SPACE MAY BE ADJUSTED AS NEEDED ACCORDING TO ROADWAY GEOMETRY TO MEET SIGHT DISTANCE REQUIREMENTS, AS DIRECTED BY THE ENGINEER.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
 ROADWAY DESIGN DIVISION
 STANDARD PLAN
**TRAFFIC CONTROL PLAN
 FOR POSTED SPEED LIMIT
 LESS THAN 65 MPH
 (4-LANE, MEDIAN LANE
 OR OUTSIDE LANE CLOSURE)
 OR (WORK DAY ONLY)**

ISSUE DATE: MAY 01, 2017
 SHEET NUMBER: 1CP-2
 WORKING NUMBER: G252



STATE PROJECT NO. MISS.

WORKERS ARE PRESENT
SPEEDING FINES DOUBLED
R16-3

W3-5

W20-1R (1500 FT)
RIGHT LANE CLOSED 1500 FT

W20-5R (1/2 MILE)
RIGHT LANE CLOSED 1/2 MILE

W20-1 (1 MILE)
ROAD WORK 1 MILE

W20-5L (1/2 MILE)
LEFT LANE CLOSED 1/2 MILE

W20-5L (1500 FT)
LEFT LANE CLOSED 1500 FT

W4-2R

W4-2L

EDGE OF TRAVELED WAY

7' MIN.

NOTE: IF VEHICLE MOUNTED ARROW BOARDS USED, SHOULD BE AS HIGH AS PRACTICAL.

LEGEND

- * OR AS SHOWN ELSEWHERE ON THE PLANS.
- ** THE SPEED ON R2-1 AND R2-5 SIGNS SHOULD BE 10 MPH LESS THAN THE POSTED SPEED LIMIT UNLESS OTHERWISE DIRECTED BY COMMISSION ORDER.
- ◆ FLASHING ARROW PANEL (TYPE 'C')
- RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS
- TYPE 'B' WARNING LIGHTS

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
**TRAFFIC CONTROL PLAN
FOR POSTED SPEED LIMIT
LESS THAN 65 MPH
(4-LANE, MEDIAN LANE
OR OUTSIDE LANE CLOSURE
(EXTENDED PERIOD))**

WORKING NUMBER
TOP-3

SHEET NUMBER
6253

ISSUE DATE:
MAY 01, 2017

- FLASHING ARROW PANEL SHOULD BE AS LEVEL AS POSSIBLE AS APPROVED BY THE ENGINEER. FLASHING ARROW PANEL SHOULD BE LOCATED AT THE BEGINNING OF THE WORK ZONE. THERE SHOULD BE 100' CLEARANCE BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.
- CHANNELIZING DEVICES:
 - ALL CHANNELIZING DEVICES IN TAPERS SHALL BE RETROREFLECTIVE FREE STANDING PLASTIC DRUMS.
 - ALL CHANNELIZING DEVICES IN TAPERS MAY BE EITHER RETROREFLECTIVE FREE STANDING PLASTIC DRUMS OR 42" TALL CONES.
 - ALL CHANNELIZING DEVICES SHALL BE RETROREFLECTIVE.
 - RETROREFLECTORIZATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE M.I.T.C.C.
- FOR MOVING TRAFFIC, CHANNELIZING DEVICES SHALL HAVE TWO (2) FEET OF PLACEMENT STONES PLASTIC DRUMS AND ARROW BOARD. WHEN THE CONSTRUCTION ZONE IS MOVED AHEAD, ALL SIGNS, PLASTIC DRUMS AND ARROW BOARD SHALL BE IN PLACE ON THE SECOND ZONE BEFORE REMOVING ANY SIGNS, PLASTIC DRUMS OR ARROW BOARD ON THE FIRST ZONE.
- ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LAYOUT SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:

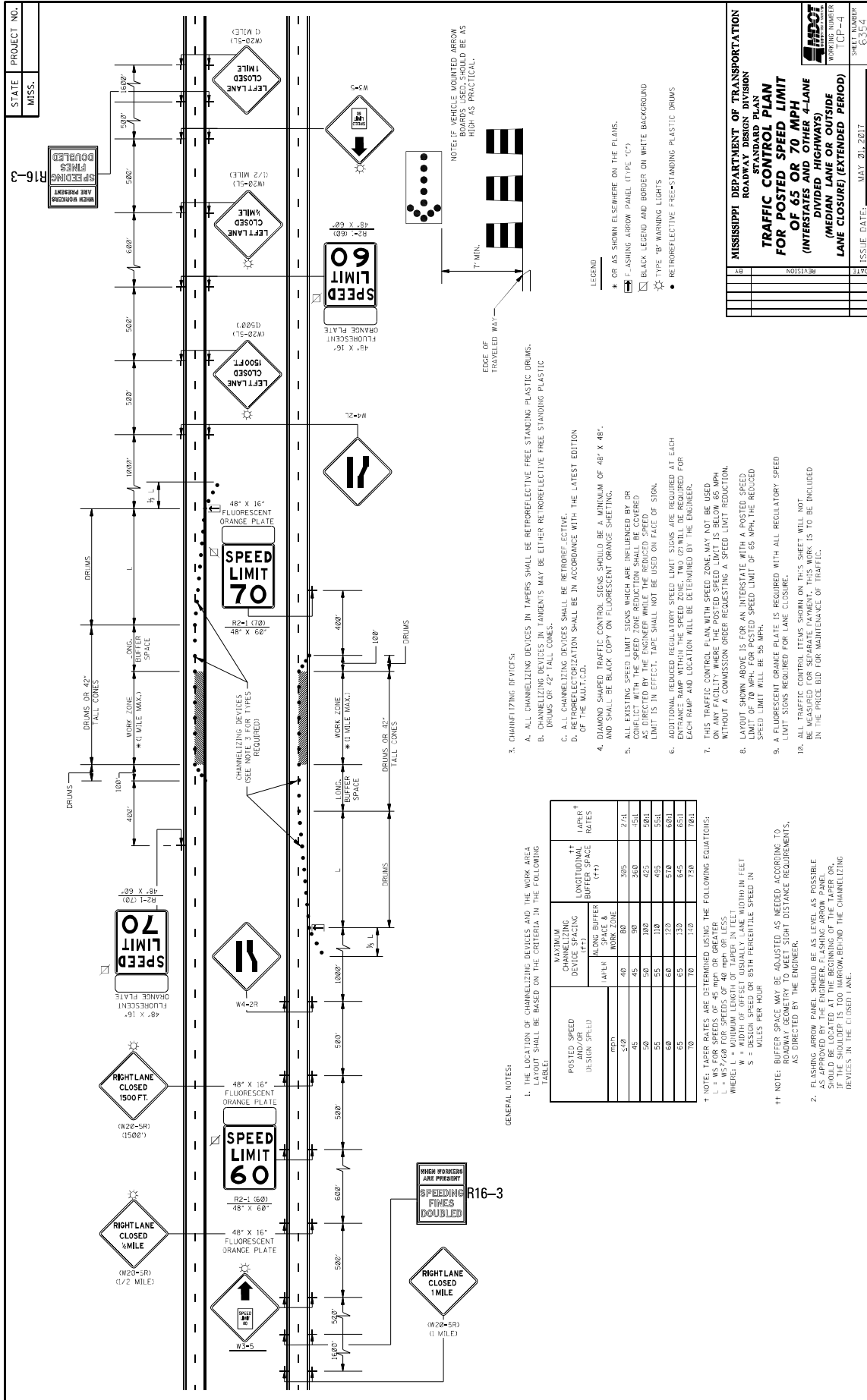
POSTED SPEED DESIGN SPEED	MAXIMUM CHANNELIZING DEVICE SPACING (FT)		LONGITUDINAL BUFFER SPACE (FT)	TAPER RATES
	ALONG BUFFER	WORK ZONE		
10	48	80	305	2:1
20	48	80	360	4:1
30	50	100	425	5:1
40	55	110	495	5:1
50	60	120	570	6:1
60	65	130	645	6:1
70	70	140	720	7:1

† NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 L = AS FOR SPEEDS OF 45 MPH OR GREATER
 L = MS/60 FOR SPEEDS OF 40 MPH OR LESS
 WHERE: L = LENGTH OF TAPER IN FEET
 M = WIDTH OF OFFSET (USUALLY LANE WIDTH) IN FEET
 S = DESIGN SPEED OR 85TH PERCENTILE SPEED IN MILES PER HOUR

GENERAL NOTES:

1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LAYOUT SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:

†† NOTE: BUFFER SPACE MAY BE ADJUSTED AS NECESSARY ACCORDING TO ROADWAY GEOMETRY TO MEET SIGHT DISTANCE REQUIREMENTS, AS DIRECTED BY THE ENGINEER.



STATE PROJECT NO.
MISS. R16-3

WHEN WORKERS ARE PRESENT
SPEEDING FINES DOUBLED

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
**TRAFFIC CONTROL PLAN
FOR POSTED SPEED LIMIT
OF 65 OR 70 MPH
(INTERSTATES AND OTHER 4-LANE
DIVIDED HIGHWAYS)
(MEDIUM LANE OR OUTSIDE
LANE CLOSED (EXTENDED PERIOD))**
ISSUE DATE: MAY 20, 2012

- LEGEND
- * OR AS SHOWN ELSEWHERE ON THE PLANS.
 - FLASHING ARROW PANEL (TYPE "C")
 - BLACK LEGGED AND BORDER ON WHITE BACKGROUND
 - TYPE "B" MARKING LIGHTS
 - RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS
- NOTE: IF VEHICLE MOUNTED ARROW SHOULD BE AS HIGH AS PRACTICAL.

GENERAL NOTES:

- THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LENGTH SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:

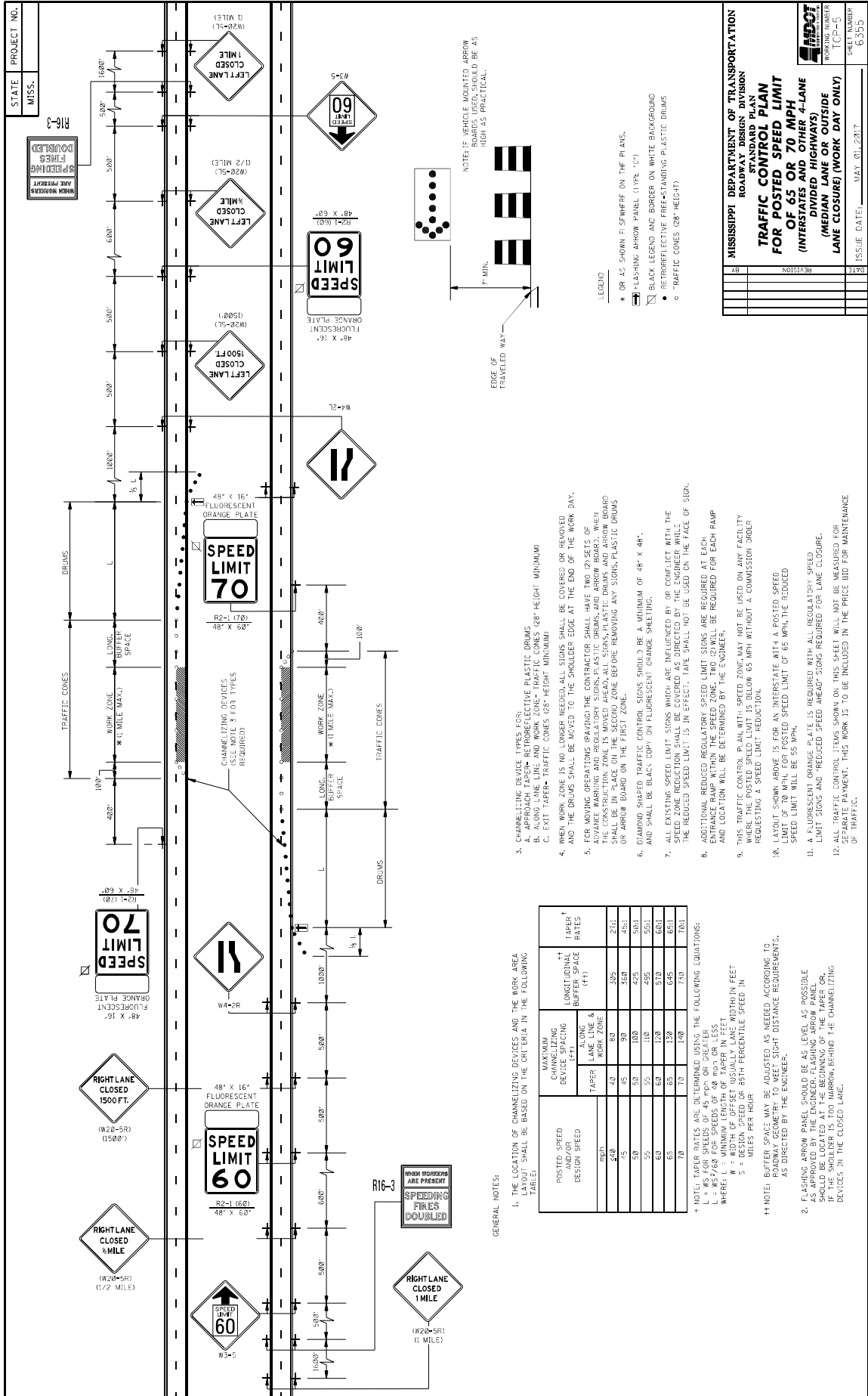
POSTED SPEED AND/OR DESIGN SPEED (MPH)	MAXIMUM CHANNELIZING DEVICE SPACING (FEET)		LONGITUDINAL BUFFER SPACE (FT)	TAPER RATES
	ALONG BUFFER SPACE & WORK ZONE	ALONG BUFFER SPACE		
50	40	80	300	2:1
45	40	80	200	2:1
40	40	80	150	2:1
35	40	80	100	2:1
30	40	80	75	2:1
25	40	80	50	2:1
20	40	80	25	2:1

NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 T = WS²/60 FOR SPEEDS OF 45 MPH OR GREATER
 L = WS²/60 FOR SPEEDS OF 40 MPH OR LESS
 WHERE: L = MINIMUM BUFFER SPACE (FEET)
 S = DESIGN SPEED OR 85TH PERCENTILE SPEED IN MILES PER HOUR

NOTE: BUFFER SPACE MAY BE ADJUSTED AS NEEDED ACCORDING TO ROADWAY GEOMETRY TO MEET SIGHT DISTANCE REQUIREMENTS, AS DIRECTED BY THE ENGINEER.

- FLASHING ARROW PANEL SHOULD BE AS LEVEL AS POSSIBLE AS APPROVED BY THE ENGINEER. FLASHING ARROW PANEL SHOULD BE LOCATED AT THE BEGINNING OF THE TAPER OR AT THE END OF THE TAPER, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.

- CHANNELIZING DEVICES IN TAPERS SHALL BE RETROREFLECTIVE FREE STANDING PLASTIC DRUMS.
- CHANNELIZING DEVICES IN TANGENTS MAY BE EITHER RETROREFLECTIVE FREE STANDING PLASTIC DRUMS OR 42" TALL CONES.
- ALL CHANNELIZING DEVICES SHALL BE RETROREFLECTIVE.
- RETROREFLECTIVIZATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD-6A.
- DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHOULD BE A MINIMUM OF 48" X 48" AND SHALL BE BLACK COPY ON FLUORESCENT ORANGE SHEETING.
- ALL EXISTING SPEED LIMIT SIGNS WHICH ARE INFLUENCED BY OR CONFLICT WITH THE SPEED ZONE REDUCTION SHALL BE COVERED. THE EXISTING SPEED LIMIT IS IN EFFECT. TAPE SHALL NOT BE USED ON FACE OF SIGN.
- ADDITIONAL REQUIRED REGULATORY SPEED LIMIT SIGNS ARE REQUIRED AT EACH ENTRANCE RAMP AND LOCALITY WILL BE DETERMINED BY THE ENGINEER.
- THIS TRAFFIC CONTROL PLAN WITH SPEED ZONE MAY NOT BE USED ON ANY FACILITY WHERE THE POSTED SPEED LIMIT IS BELOW 65 MPH WITHOUT A COMMISSION ORDER REQUESTING A SPEED LIMIT REDUCTION.
- LAYOUT SHOWN ABOVE IS FOR AN INTERSTATE WITH A POSTED SPEED LIMIT OF 70 MPH FOR PASTED SPEED LIMIT OF 65 MPH. THE REDUCED SPEED LIMIT WILL BE 55 MPH.
- A FLUORESCENT ORANGE PLATE IS REQUIRED WITH ALL REGULATORY SPEED LIMIT SIGNS REQUIRED FOR LANE CLOSURE.
- ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.



GENERAL NOTES:

1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LAYOUT SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:

POSTED SPEED AND/OR DESIGN SPEED (MPH)	MAXIMUM CHANNELIZING DEVICE SPACING (FT.)		LONGITUDINAL BUFFER SPACE (FT.)	TAPER RATES
	LANE LINE & WORK ZONE	WORK ZONE		
40	42	80	305	2:1H
45	50	100	350	4:5:1
50	50	100	425	50:1
55	55	110	495	95:1
60	60	120	570	60:1
65	65	130	645	65:1
70	70	140	730	70:1

† NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:

L = WS FOR SPEEDS OF 45 MPH OR GREATER
L = WS FOR SPEEDS OF 30 MPH OR GREATER
WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
S = DESIGN SPEED OR 85TH PERCENTILE SPEED IN MILES PER HOUR

†† NOTE: BUFFER SPACE MAY BE ADJUSTED AS NEEDED ACCORDING TO LOCALITY AND RIGHT-OF-WAY DISTANCE REQUIREMENTS, AS DIRECTED BY THE ENGINEER.

2. FLASHING ARROW PANEL SHOULD BE AS LEVEL AS POSSIBLE AND LOCATED AT THE BEGINNING OF THE TAPER OR IF THE SHOULDER IS TOO NARROW BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.

- 3. CHANNELIZING DEVICES:
 - A. APPROACH TAPER- RETROREFLECTIVE PLASTIC DRUMS
 - B. ALONG LANE LINE AND WORK ZONE- TRAFFIC CONES (28" HEIGHT MINIMUM)
 - C. EXIT TAPER- TRAFFIC CONES (28" HEIGHT MINIMUM)
- 4. WHEN WORK ZONE IS NO LONGER NEEDED- ALL SIGNS SHALL BE COVERED OR REVOLVED AND THE DRUMS SHALL BE MOVED TO THE SHOULDER EDGE AT THE END OF THE WORK DAY.
- 5. FOR MOVING OPERATIONS (PAVING) THE CONTRACTOR SHALL HAVE TWO (2) SETS OF ADVANCE WARNING AND REGULATORY SIGNS, PLASTIC DRUMS, AND ARROW BOARD. THESE SHALL BE IN PLACE ON THE SECOND ZONE BEFORE REMOVING ANY SIGNS, PLASTIC DRUMS OR ARROW BOARD ON THE FIRST ZONE.
- 6. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHOULD BE A MINIMUM OF 48" X 48".
- 7. ALL EXISTING SPEED LIMIT SIGNS WHICH ARE INDICATED BY THE CRG LEFT WITH THE SPEED ZONE REDUCTION SHALL BE COVERED AS DIRECTED BY THE ENGINEER WHILE THE REDUCED SPEED LIMIT IS IN EFFECT. TAPE SHALL NOT BE USED ON THE FACE OF SIGN.
- 8. ADDITIONAL REVOLVED REGULATORY SPEED LIMIT SIGNS ARE REQUIRED AT EACH ENTRANCE RAMP WITHIN THE SPEED ZONE. TWO (2) WILL BE REQUIRED FOR EACH RAMP AND LOCATION WILL BE DETERMINED BY THE ENGINEER.
- 9. THIS TRAFFIC CONTROL PLAN WITH SPEED ZONE MAY NOT BE USED ON ANY FACILITY REQUESTING A SPEED LIMIT REDUCTION.
- 10. LAYOUT SHOWN ABOVE IS FOR AN INTERSTATE WITH A POSTED SPEED LIMIT OF 70 MPH. FOR POSTED SPEED LIMIT OF 65 MPH, THE REDUCED SPEED LIMIT WILL BE 55 MPH.
- 11. A FLUORESCENT ORANGE PLATE IS REQUIRED WITH ALL REGULATORY SPEED LIMIT SIGNS AND "REDUCED SPEED AHEAD" SIGNS REQUIRED FOR LANE CLOSURE.
- 12. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

STATE MISS.	PROJECT NO.		
----------------	-------------	--	--

WING BARRICADES

- WING BARRICADES ARE TYPE II BARRICADES ERECTED ON THE SHOULDER OF A ROADWAY OR RESTRICTED ROADWAY. WING BARRICADES MAY BE USED AS A MOUNTING FOR THE ADVANCE WARNING SIGNS OR FLASHERS.
- WING BARRICADES SHOULD BE USED:
 - IN ADVANCE OF A CONSTRUCTION PROJECT EVEN WHEN NO PART OF THE ROADWAY IS ACTUALLY CLOSED.
 - IN ADVANCE OF ALL BRIDGE OR CULVERT WIDENING OPERATIONS.

PLASTIC DRUM STRIPING DETAIL

- PLASTIC DRUMS SHALL BE ON END AND USED AS AN EXPEDIENT METHOD FOR TRAFFIC CHANNELIZATION. THE COLOR AND MARKING OF DRUMS SHALL BE CONSISTENT WITH MARKING STANDARDS. THE PREFERRED COLOR OF DRUMS WITH MARKING STRIPES SHALL BE RETROREFLECTIVE. HORIZONTAL, CIRCUMFERENTIAL STRIPES 12 ORANGE & 2 WHITE/6" WIDE.
- DRUMS SHOULD NEVER BE PLACED IN THE ROADWAY WITHOUT WARNING SIGNS.
- WHERE PRACTICAL PLASTIC DRUMS SHOULD BE PLACED NO CLOSER THAN 3'-0" FROM THE EDGE OF TRAVELED LANE.

BARRICADE CHARACTERISTICS

	I	II	III
WIDTH OF RAIL **	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.
LENGTH OF RAIL **	24" MIN.	24" MIN.	48" MIN.
WIDTH OF STRIPE *	6"	6"	6"
HEIGHT	36" MIN.	36" MIN.	60" MIN.
NUMBER OF RETROREFLECTORIZED RAIL FACES	2 (ONE EACH DIRECTION)	4 (TWO EACH DIRECTION)	3 IF FACING TRAFFIC IN ONE DIRECTION AND 4 IF FACING TRAFFIC IN TWO DIRECTIONS

BARRICADE CLOSING A ROAD

STANDARD BARRICADES

- THE MARKING FOR BARRICADE RAILS SHALL BE ORANGE AND WHITE (SLOPING DOWNWARD AT AN ANGLE OF 45° IN THE DIRECTION OF TRAFFIC IS TO PASS).
- RAIL STRIPE SHALL BE 6 INCHES EXCEPT THAT 4-INCH WIDE STRIPES MAY BE USED IF RAIL LENGTHS ARE LESS THAN 36 INCHES.
- DO NOT PLACE SANDBAGS OR OTHER DEVICES TO PROVIDE MASS ON THE BOTTOM RAIL THAT WILL BLOCK VIEW OR RAIL FACE.
- FOR ADDITIONAL INFORMATION OR DETAILS, SEE MUTCD, LATEST EDITION.
- BARRICADES ARE CLASSIFIED BY FHWA AS CATEGORY II. MOST ZONE DEVICES WHICH REQUIRE SUCCESSFULLY CRASH TESTED. A LIST OF CRASHWORTHY BARRICADES AND OTHER CATEGORY II DEVICES CAN BE FOUND ON FHWA'S WEBSITE: http://safety.fhwa.dot.gov/roadway_dept/pafety_guidance/road_hardware/cat2.cfm

TYPE 3 OBJECT MARKER (OM-3R)

- TYPE 3 OBJECT MARKERS SHALL BE USED AT ALL EXPOSED BRIDGE ABUTMENTS AND AT OTHER LOCATIONS AS DETERMINED NECESSARY BY THE ENGINEER.
- OM-3R IS SHOWN. THE OM-3L IS SIMILAR EXCEPT THE STRIPES SLOPE DOWNWARD FROM THE UPPER LEFT SIDE TO THE LOWER RIGHT SIDE AND SHALL BE PLACED ON THE LEFT SIDE OF THE OBJECT.
- THE INSIDE EDGE OF THE MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION.

CHEVRON SIGN DETAIL

- A CHEVRON SIGN CONSISTS OF A BLACK CHEVRON TYPE MARKING ON AN ORANGE BACKGROUND AND SHALL POINT IN THE DIRECTION OF TRAFFIC FLOW.
- THE CHEVRON SIGN SHALL BE MOUNTED ON CRASHWORTHY SUPPORT.
- CHEVRON SIGNS MAY BE USED TO SUPPLEMENT OTHER STANDARD DEVICES WHERE ONE OR MORE LANES ARE CLOSED FOR CONSTRUCTION OR MAINTENANCE. THEY SHOULD BE PLACED APPROXIMATELY 2'-0" BEHIND THE LANE TRANSITION STRIPE.

WING BARRICADES

- WING BARRICADES ARE TYPE II BARRICADES ERECTED ON THE SHOULDER OF A ROADWAY OR RESTRICTED ROADWAY. WING BARRICADES MAY BE USED AS A MOUNTING FOR THE ADVANCE WARNING SIGNS OR FLASHERS.
- WING BARRICADES SHOULD BE USED:
 - IN ADVANCE OF A CONSTRUCTION PROJECT EVEN WHEN NO PART OF THE ROADWAY IS ACTUALLY CLOSED.
 - IN ADVANCE OF ALL BRIDGE OR CULVERT WIDENING OPERATIONS.

PLASTIC DRUM STRIPING DETAIL

- PLASTIC DRUMS SHALL BE ON END AND USED AS AN EXPEDIENT METHOD FOR TRAFFIC CHANNELIZATION. THE COLOR AND MARKING OF DRUMS SHALL BE CONSISTENT WITH MARKING STANDARDS. THE PREFERRED COLOR OF DRUMS WITH MARKING STRIPES SHALL BE RETROREFLECTIVE. HORIZONTAL, CIRCUMFERENTIAL STRIPES 12 ORANGE & 2 WHITE/6" WIDE.
- DRUMS SHOULD NEVER BE PLACED IN THE ROADWAY WITHOUT WARNING SIGNS.
- WHERE PRACTICAL PLASTIC DRUMS SHOULD BE PLACED NO CLOSER THAN 3'-0" FROM THE EDGE OF TRAVELED LANE.

BARRICADE CHARACTERISTICS

	I	II	III
WIDTH OF RAIL **	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.
LENGTH OF RAIL **	24" MIN.	24" MIN.	48" MIN.
WIDTH OF STRIPE *	6"	6"	6"
HEIGHT	36" MIN.	36" MIN.	60" MIN.
NUMBER OF RETROREFLECTORIZED RAIL FACES	2 (ONE EACH DIRECTION)	4 (TWO EACH DIRECTION)	3 IF FACING TRAFFIC IN ONE DIRECTION AND 4 IF FACING TRAFFIC IN TWO DIRECTIONS

BARRICADE CLOSING A ROAD

STANDARD BARRICADES

- THE MARKING FOR BARRICADE RAILS SHALL BE ORANGE AND WHITE (SLOPING DOWNWARD AT AN ANGLE OF 45° IN THE DIRECTION OF TRAFFIC IS TO PASS).
- RAIL STRIPE SHALL BE 6 INCHES EXCEPT THAT 4-INCH WIDE STRIPES MAY BE USED IF RAIL LENGTHS ARE LESS THAN 36 INCHES.
- DO NOT PLACE SANDBAGS OR OTHER DEVICES TO PROVIDE MASS ON THE BOTTOM RAIL THAT WILL BLOCK VIEW OR RAIL FACE.
- FOR ADDITIONAL INFORMATION OR DETAILS, SEE MUTCD, LATEST EDITION.
- BARRICADES ARE CLASSIFIED BY FHWA AS CATEGORY II. MOST ZONE DEVICES WHICH REQUIRE SUCCESSFULLY CRASH TESTED. A LIST OF CRASHWORTHY BARRICADES AND OTHER CATEGORY II DEVICES CAN BE FOUND ON FHWA'S WEBSITE: http://safety.fhwa.dot.gov/roadway_dept/pafety_guidance/road_hardware/cat2.cfm

TYPE 3 OBJECT MARKER (OM-3R)

- TYPE 3 OBJECT MARKERS SHALL BE USED AT ALL EXPOSED BRIDGE ABUTMENTS AND AT OTHER LOCATIONS AS DETERMINED NECESSARY BY THE ENGINEER.
- OM-3R IS SHOWN. THE OM-3L IS SIMILAR EXCEPT THE STRIPES SLOPE DOWNWARD FROM THE UPPER LEFT SIDE TO THE LOWER RIGHT SIDE AND SHALL BE PLACED ON THE LEFT SIDE OF THE OBJECT.
- THE INSIDE EDGE OF THE MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION.

CHEVRON SIGN DETAIL

- A CHEVRON SIGN CONSISTS OF A BLACK CHEVRON TYPE MARKING ON AN ORANGE BACKGROUND AND SHALL POINT IN THE DIRECTION OF TRAFFIC FLOW.
- THE CHEVRON SIGN SHALL BE MOUNTED ON CRASHWORTHY SUPPORT.
- CHEVRON SIGNS MAY BE USED TO SUPPLEMENT OTHER STANDARD DEVICES WHERE ONE OR MORE LANES ARE CLOSED FOR CONSTRUCTION OR MAINTENANCE. THEY SHOULD BE PLACED APPROXIMATELY 2'-0" BEHIND THE LANE TRANSITION STRIPE.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
ROADWAY DESIGN DIVISION	
STANDARD PLAN	
HIGHWAY SIGN AND BARRICADE DETAILS FOR CONSTRUCTION PROJECTS	
WORKING NUMBER ICP-5	SHEET NUMBER 03500
ISSUE DATE: MAY 2017	

STATE MISS.	PROJECT NO.	
----------------	-------------	--

MOBILE OPERATIONS ON MULTILANE ROAD

MOBILE OPERATIONS ON MULTILANE ROAD

MOBILE OPERATIONS ON TWO-LANE ROAD

MOBILE OPERATIONS ON TWO-LANE ROAD

NOTES FOR MULTILANE LANE OPERATION:

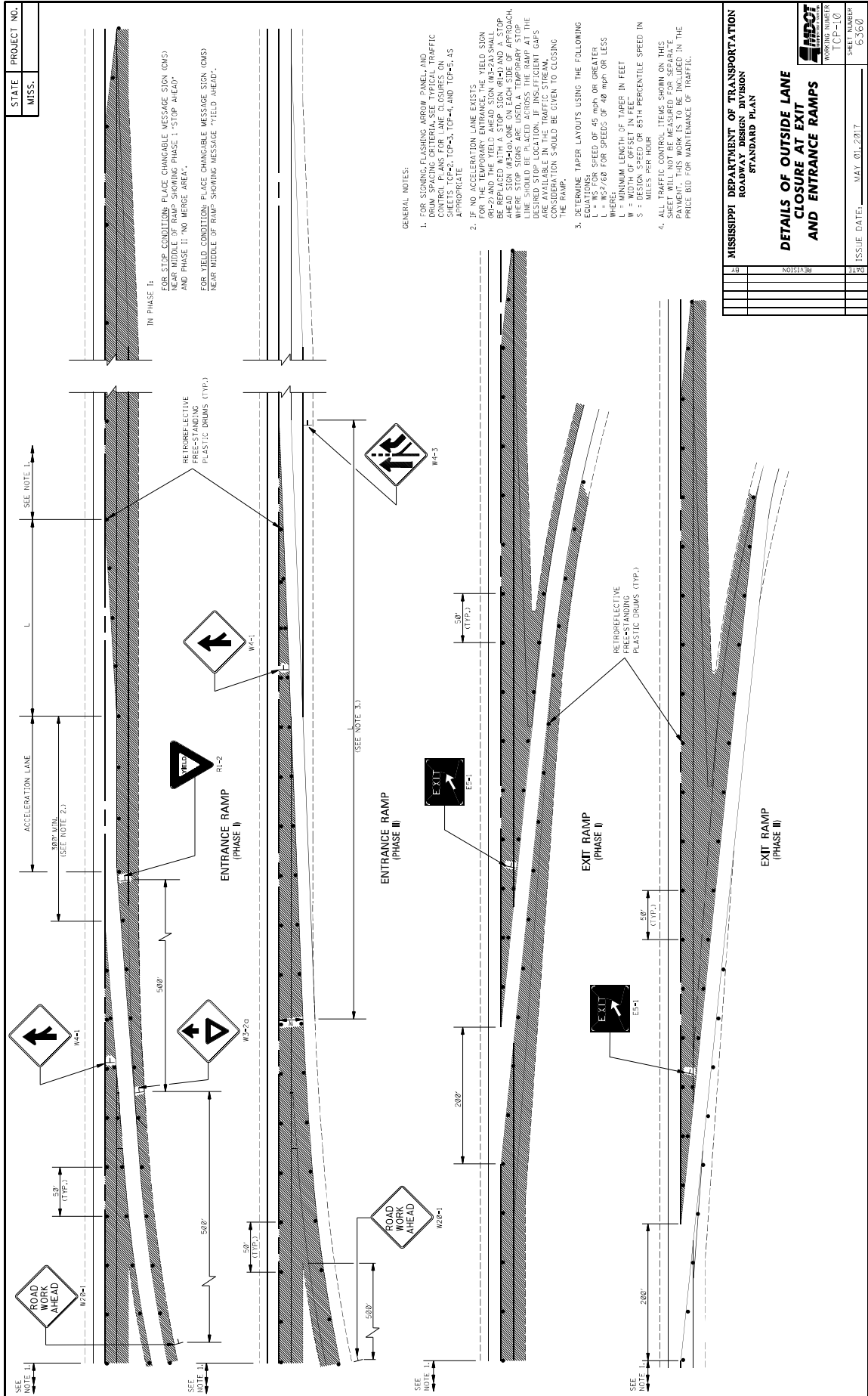
- VEHICLES USED FOR THESE OPERATIONS SHOULD BE MADE HIGHLY VISIBLE WITH APPROPRIATE EQUIPMENT, SUCH AS FLASHING LIGHTS, ROTATING BEACONS, FLAS, SIGNS, OR ARROW PANELS.
- SHADOW VEHICLE 2 SHOULD BE EQUIPPED WITH AN ARROW PANEL AND TRUCK MOUNTED ATTENUATOR (TMA), AN APPROPRIATE LANE CLOSURE SIGN SHOULD BE PLACED BEHIND SHADOW VEHICLE 2 SO AS NOT TO OBSCURE THE ARROW PANEL.
- SHADOW VEHICLE 1 SHOULD BE EQUIPPED WITH AN ARROW PANEL AND TRUCK MOUNTED ATTENUATOR (TMA).
- SHADOW VEHICLE 2 SHOULD TRAVEL AT A VARYING DISTANCE FROM THE WORK OPERATION SO AS TO PROVIDE ADEQUATE SIGHT DISTANCE FOR TRAFFIC APPROACHING FROM THE REAR.
- WHEN ADEQUATE SHOULDER WIDTH IS NOT AVAILABLE, SHADOW VEHICLE 2 SHOULD BE ELIMINATED.
- ON HIGH-SPEED ROADWAYS, A THIRD SHADOW VEHICLE SHOULD BE USED (i.e., VEHICLE 3 ON THE SHOULDER OF PRACTICALLY, VEHICLE 2 IN THE CLOSED LANE, AND VEHICLE 1 IN THE CLOSED LANE).
- ARROW PANELS SHALL BE AS A MINIMUM, TYPE B, 60" X 30", IN ACCORDANCE WITH THE CRITERIA PRESENTED IN THE MUTCD.
- WORK SHOULD NORMALLY BE DONE DURING OFF-PEAK HOURS.
- VEHICLE-MOUNTED SIGNS SHOULD BE MOUNTED WITH THE BOTTOM OF THE SIGN LOCATED AT A MINIMUM HEIGHT OF 48" ABOVE THE PAVEMENT AND SHALL NOT BE OBTURED BY EQUIPMENT OR STRUCTURES. SIGN LEGENDS SHALL BE COVERED OR TURNED FROM VIEW WHEN WORK IS NOT IN PROGRESS.
- ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

NOTES FOR TWO-LANE OPERATION:

- WHERE PRACTICAL AND WHEN NEEDED, THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS. IF THIS CAN NOT BE DONE FREQUENTLY AS AN ALTERNATIVE, A "DO NOT PASS" SIGN MAY BE PLACED ON THE REAR OF THE VEHICLE BLOCKING THE LANE.
- THE DISTANCE BETWEEN THE WORK AND SHADOW VEHICLES MAY VARY ACCORDING TO TERRAIN, PAINT DRYING TIME, AND OTHER FACTORS. SHADOW VEHICLES ARE USED TO WARN TRAFFIC OF THE OPERATION AHEAD. WHENEVER ADEQUATE SHOULD MAINTAIN THE MINIMUM DISTANCE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. THE SHADOW VEHICLE SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.
- ADDITIONAL SHADOW VEHICLES TO WARN AND REDUCE THE SPEED OF ONCOMING OR OPPOSING TRAFFIC MAY BE USED. POLICE PATROL CARS MAY BE USED FOR THIS PURPOSE.
- A TRUCK-MOUNTED ATTENUATOR (TMA) SHOULD BE USED ON THE SHADOW VEHICLE AND MAY BE USED ON THE WORK VEHICLE.
- THE WORK VEHICLE SHALL BE EQUIPPED WITH BEACONS AND THE SHADOW VEHICLE SHALL BE EQUIPPED WITH BEACONS AND LIGHTS. THE SHADOW VEHICLE LIGHTS MOUNTED ON THE REAR, ADJACENT TO THE SIGN, SHADOW AND WORK VEHICLES SHALL DISPLAY FLASHING OR ROTATING BEACONS BOTH FORWARD AND TO THE REAR.
- VEHICLE-MOUNTED SIGNS SHOULD BE MOUNTED WITH THE BOTTOM OF THE SIGN LOCATED AT A MINIMUM HEIGHT OF 48" ABOVE THE PAVEMENT AND SHALL NOT BE OBTURED BY EQUIPMENT OR STRUCTURES. SIGN LEGENDS SHALL BE COVERED OR TURNED FROM VIEW WHEN WORK IS NOT IN PROGRESS.
- ARROW BOARD TO BE USED IN CAUTION MODE.
- ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

REVISION	DATE	
1	MAY 01, 2017	

MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN	
TRAFFIC CONTROL PLAN MOBILE OPERATIONS MULTILANE ROADS TWO-LANE ROADS	
	SHEET NUMBER TDP-9 6333



STATE PROJECT NO.
MISS.

FOR STOP CONDITIONS: PLACE CHANGABLE MESSAGE SIGN (CMS) NEAR MIDDLE OF RAMP SHOWING PHASE I "STOP AHEAD" AND PHASE II "NO MERGE AREA".
FOR YIELD CONDITIONS: PLACE CHANGABLE MESSAGE SIGN (CMS) NEAR MIDDLE OF RAMP SHOWING MESSAGE "YIELD AHEAD".

- GENERAL NOTES:
- FOR SIGNING FLASHING ARROW PANEL AND DRUM SPACING CRITERIA, SEE TYPICAL TRAFFIC CONTROL PLANS FOR LANE CLOSURES ON RAMP ENTRIES. SEE TYPICAL TRAFFIC CONTROL PLANS FOR LANE CLOSURES ON RAMP ENTRIES. SEE TYPICAL TRAFFIC CONTROL PLANS FOR LANE CLOSURES ON RAMP ENTRIES. SEE TYPICAL TRAFFIC CONTROL PLANS FOR LANE CLOSURES ON RAMP ENTRIES.
 - IF NO ACCELERATION LANE EXISTS FOR THE TEMPORARY LANE CLOSURE, THE YIELD SIGN (W4-2) AND THE YIELD AHEAD SIGN (W4-2A) SHALL BE REPLACED WITH A STOP SIGN (W4-1) AND A STOP AHEAD SIGN (W4-1A). STOP SIGNS AND STOP AHEAD SIGNS SHOULD BE PLACED ACROSS THE RAMP AT THE DESIRED STOP LOCATION. INSUFFICIENT GAPS FOR STOPPING SHOULD BE AVOIDED. CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP.
 - DETERMINE TAPER LAYOUTS USING THE FOLLOWING EQUATIONS: SPEEDS OF 45 mph OR GREATER
L = W²/60 FOR SPEEDS OF 40 mph OR LESS
WHERE:
L = MINIMUM LENGTH OF TAPER IN FEET
W = DESIGN SPEED OF 85th PERCENTILE SPEED IN MILES PER HOUR
4. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. ITEMS SHOWN ON THIS SHEET WILL BE PAID FOR IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

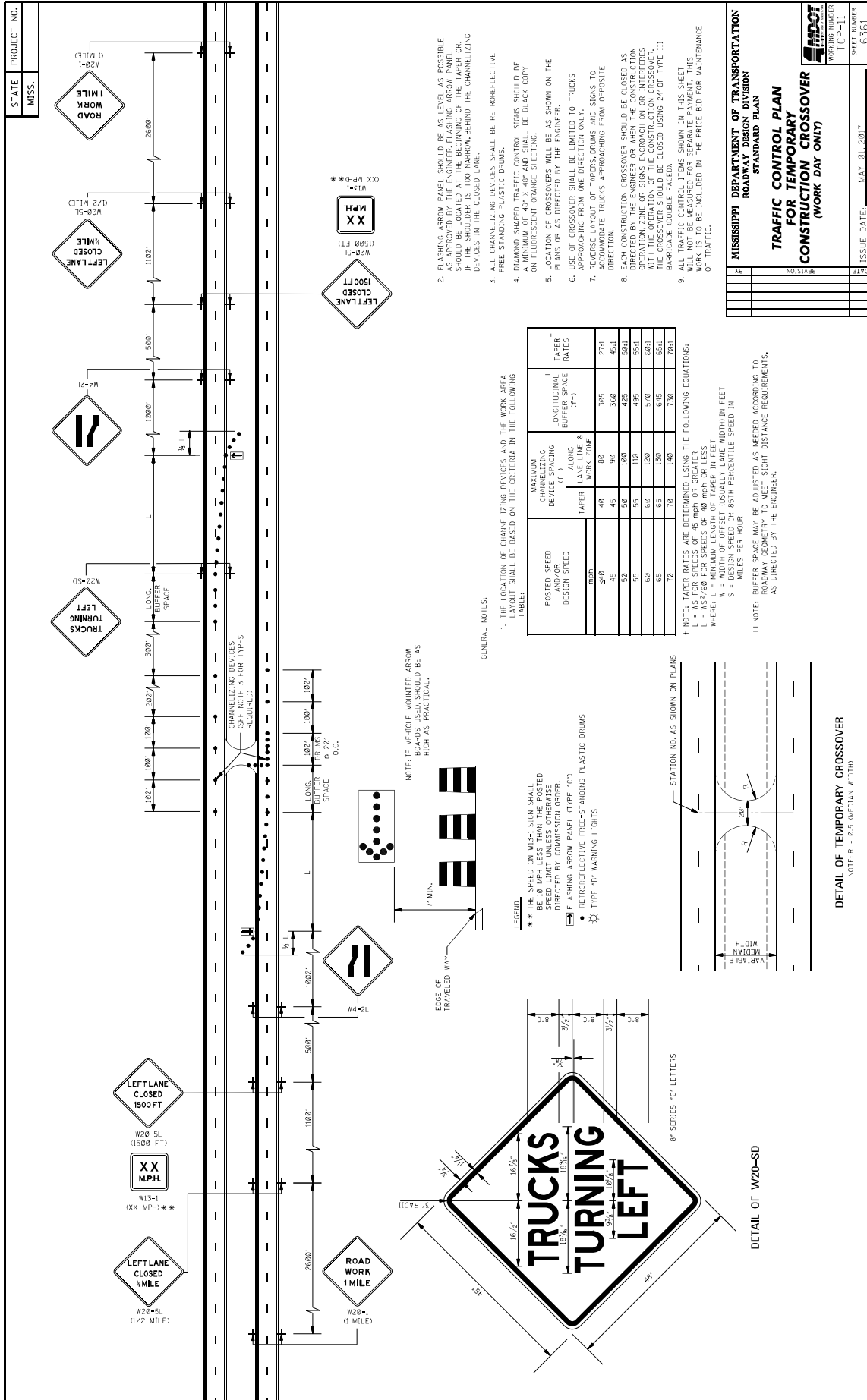
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

DETAILS OF OUTSIDE LANE CLOSURE AT EXIT AND ENTRANCE RAMP

WORKING NUMBER: TCP-110
SHEET NUMBER: 6360

ISSUE DATE: MAY 01, 2017

DATE	REVISION



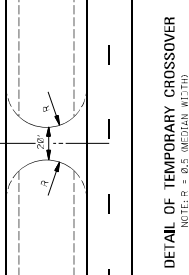
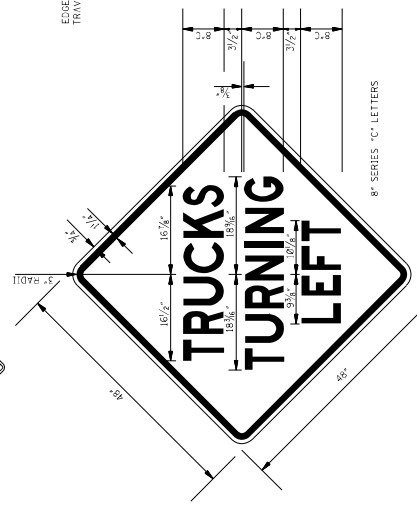
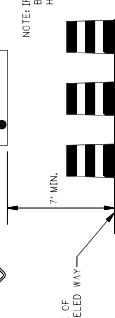
1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA TAPER SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:
2. FLASHING ARROW PANELS SHOULD BE AS LEVEL AS POSSIBLE AS APPROVED BY THE ENGINEER. FLASHING ARROW PANELS SHOULD BE LOCATED AT THE BEGINNING OF THE TAPER OR, IF THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.
3. ALL CHANNELIZING DEVICES SHALL BE RETROREFLECTIVE FREE STANDING PLASTIC DRUMS.
4. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHOULD BE BLACK COPY ON FLUORESCENT ORANGE SUCTING.
5. LOCATION OF CROSSOVERS WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. USE OF CROSSOVERS SHALL BE LIMITED TO TRUCKS APPROACHING FROM ONE DIRECTION ONLY.
7. REVERSE LAYOUT OF TAPERS, DRUMS AND SIGNS TO ACCOMMODATE TRUCKS APPROACHING FROM OPPOSITE DIRECTION.
8. EACH CONSTRUCTION CROSSOVER SHOULD BE CLOSED AS EARLY AS POSSIBLE AND KEPT CLOSED UNTIL THE OPERATION ZONE OF SIGNS ENOUGH ON OR INTERFERES WITH THE OPERATION OF THE CONSTRUCTION CROSSOVER. THE CROSSOVER SHOULD BE CLOSED USING 24" OF TYPE III RETROREFLECTIVE PLASTIC DRUMS.
9. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

GENERAL NOTES:

1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA TAPER SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:
2. FLASHING ARROW PANELS SHOULD BE AS LEVEL AS POSSIBLE AS APPROVED BY THE ENGINEER. FLASHING ARROW PANELS SHOULD BE LOCATED AT THE BEGINNING OF THE TAPER OR, IF THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.
3. ALL CHANNELIZING DEVICES SHALL BE RETROREFLECTIVE FREE STANDING PLASTIC DRUMS.
4. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHOULD BE BLACK COPY ON FLUORESCENT ORANGE SUCTING.
5. LOCATION OF CROSSOVERS WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. USE OF CROSSOVERS SHALL BE LIMITED TO TRUCKS APPROACHING FROM ONE DIRECTION ONLY.
7. REVERSE LAYOUT OF TAPERS, DRUMS AND SIGNS TO ACCOMMODATE TRUCKS APPROACHING FROM OPPOSITE DIRECTION.
8. EACH CONSTRUCTION CROSSOVER SHOULD BE CLOSED AS EARLY AS POSSIBLE AND KEPT CLOSED UNTIL THE OPERATION ZONE OF SIGNS ENOUGH ON OR INTERFERES WITH THE OPERATION OF THE CONSTRUCTION CROSSOVER. THE CROSSOVER SHOULD BE CLOSED USING 24" OF TYPE III RETROREFLECTIVE PLASTIC DRUMS.
9. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 L = MINIMUM LENGTH OF TAPER IN FEET
 W = WIDTH OF OFFSET USUALLY LANE WIDTH IN FEET
 S = 85TH PERCENTILE SPEED IN MILES PER HOUR

NOTE: BUFFER SPACE MAY BE ADJUSTED AS NEEDED ACCORDING TO ROADWAY GEOMETRY TO MEET SIGHT DISTANCE REQUIREMENTS, AS DIRECTED BY THE ENGINEER.

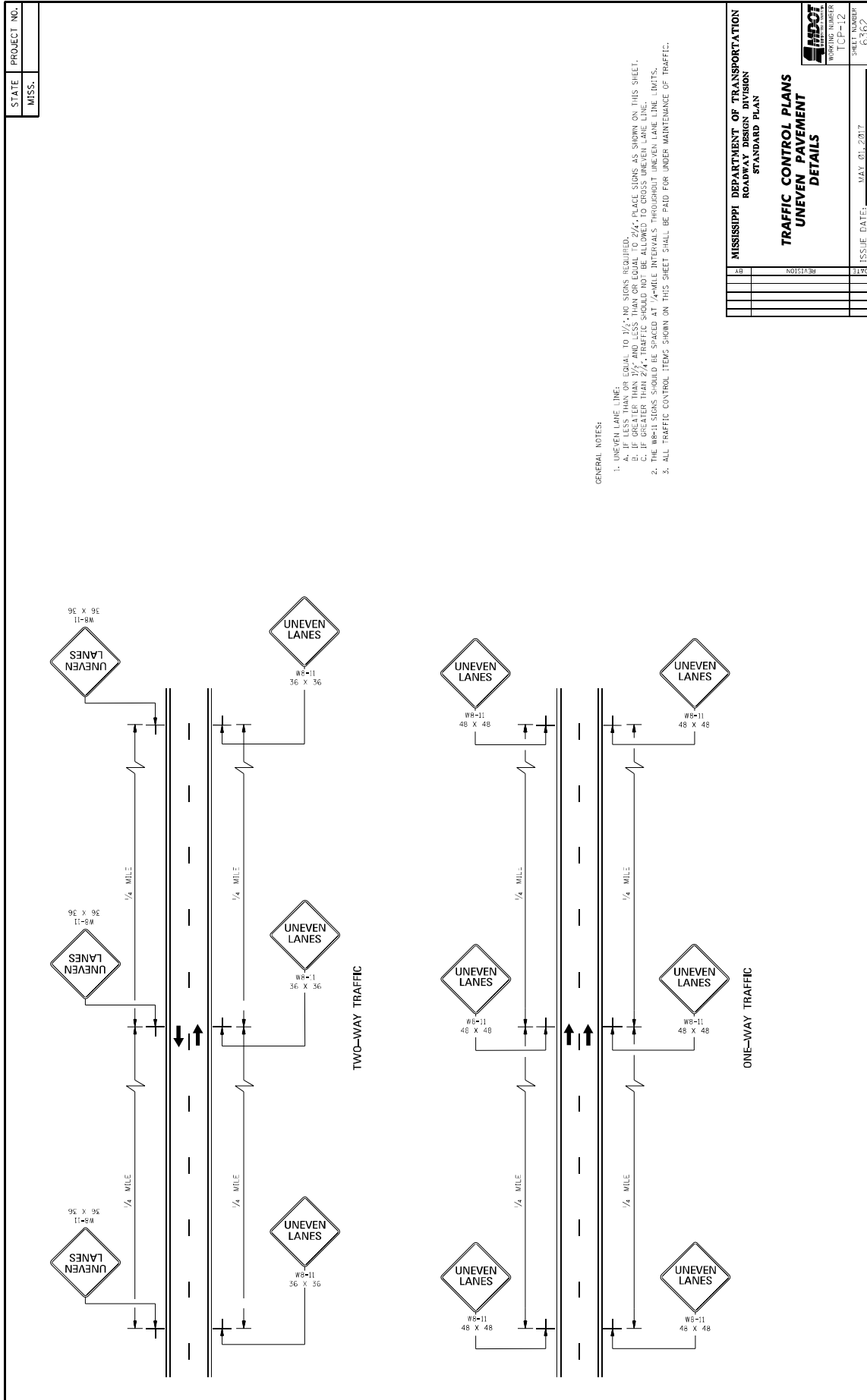


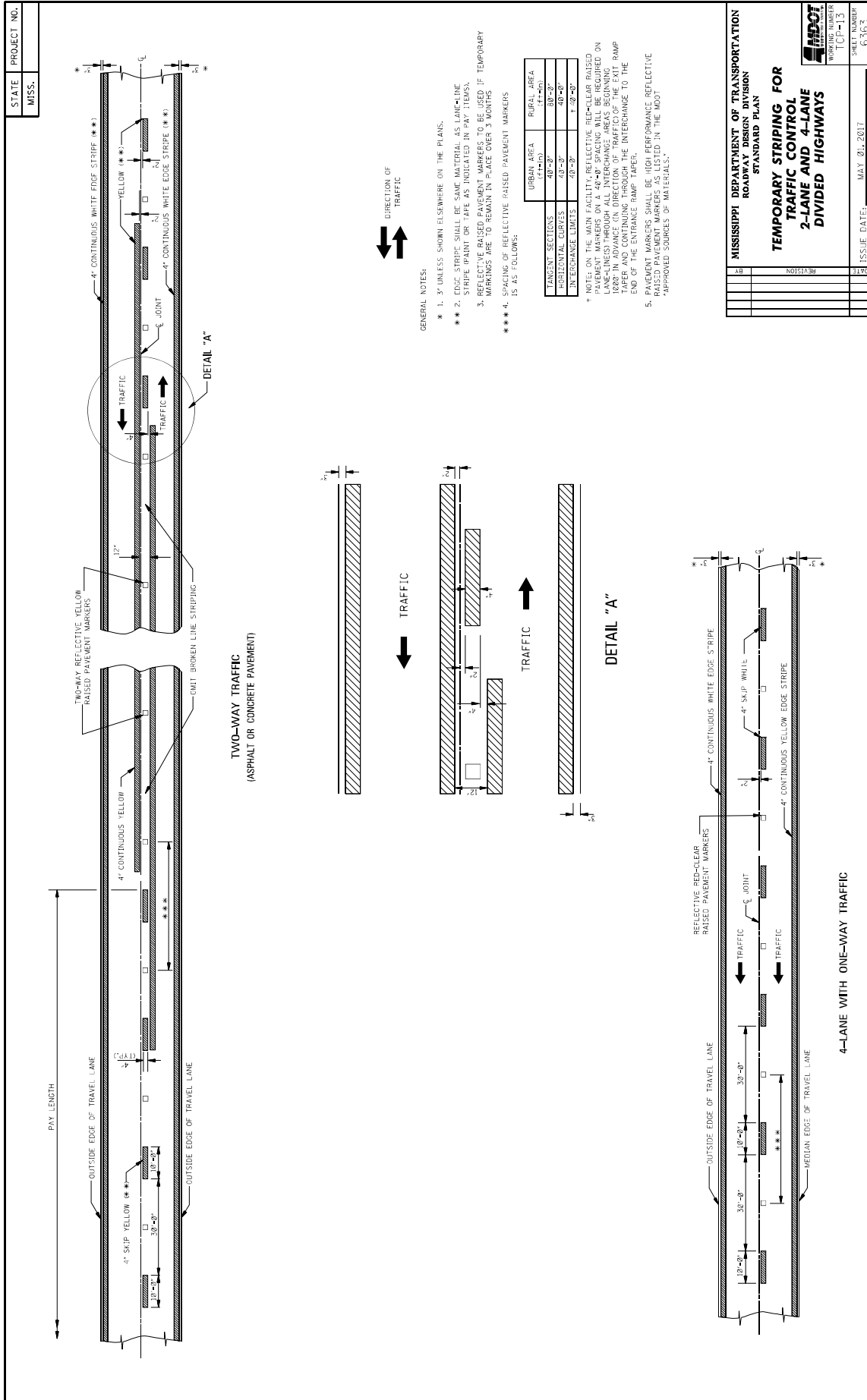
STATE PROJECT NO. MISS.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
 ROADWAY DESIGN DIVISION
 STANDARD PLAN
**TRAFFIC CONTROL PLAN
 FOR TEMPORARY
 CONSTRUCTION CROSSOVER
 (WORK DAY ONLY)**

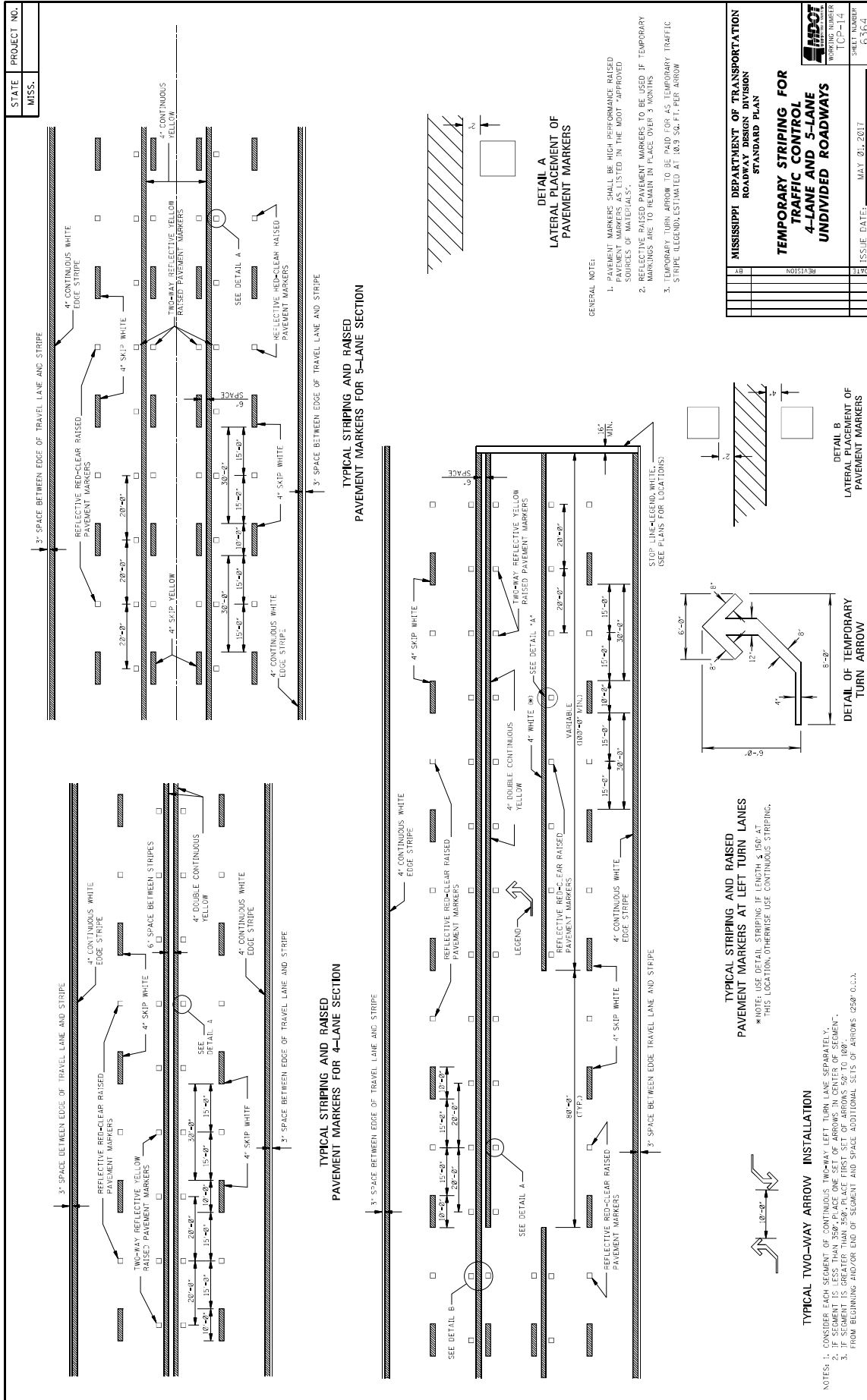
WORKING NUMBER: TCR-11
 SHEET NUMBER: 6361

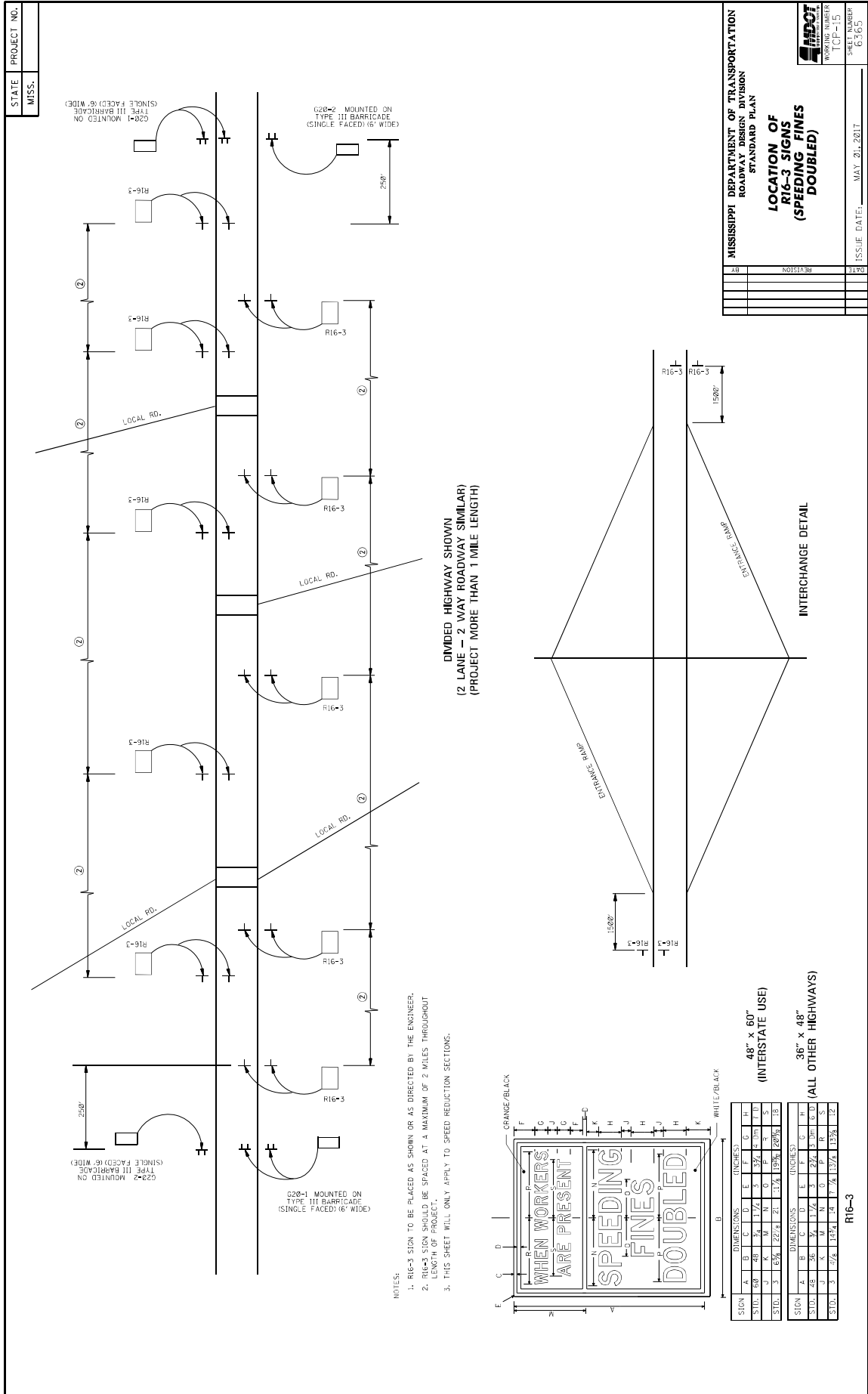
ISSUE DATE: MAY 01, 2017

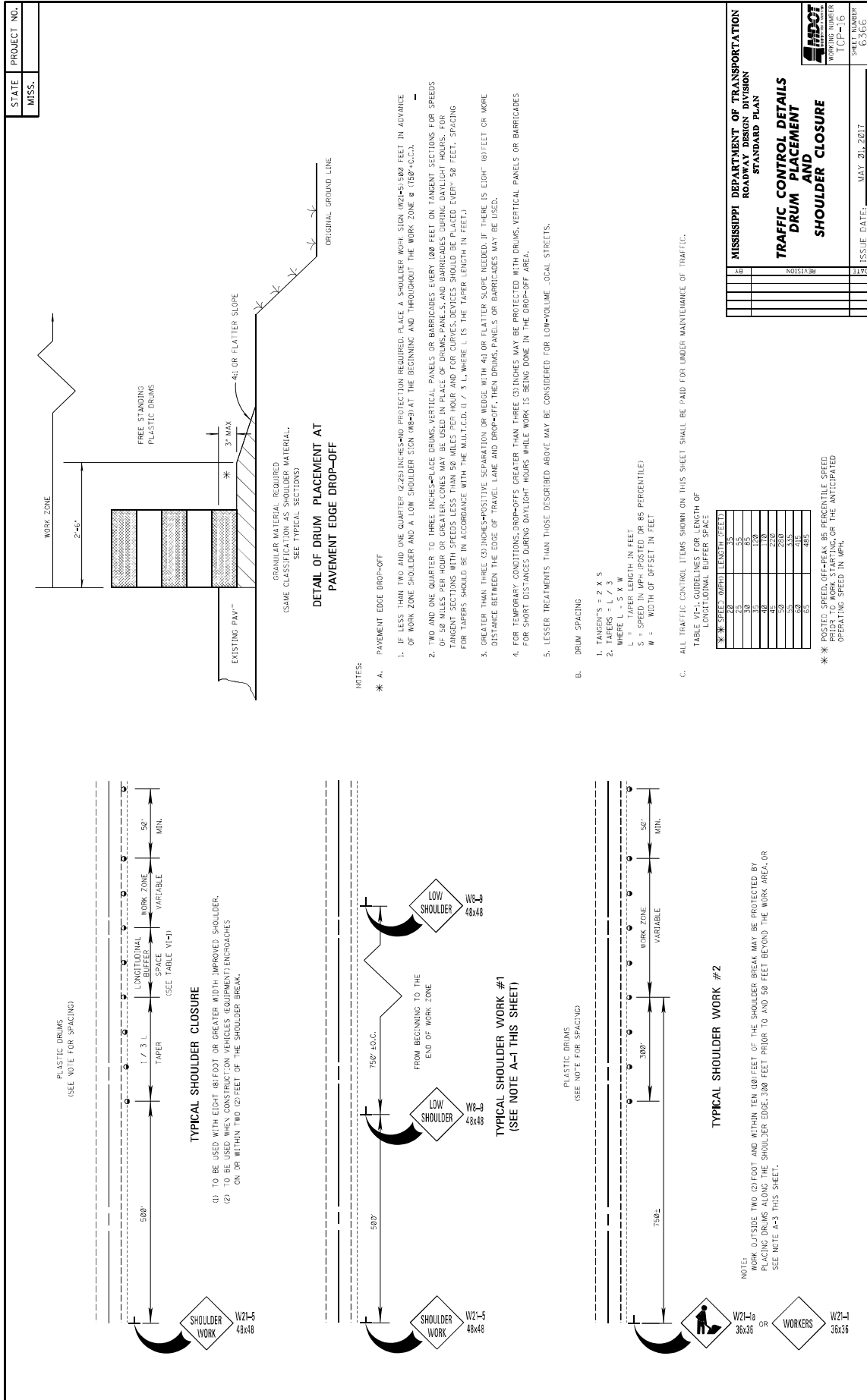




MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
ROADWAY DESIGN DIVISION	
STANDARD PLAN	
TEMPORARY STRIPING FOR	
2-LANE AND 4-LANE	
DIVIDED HIGHWAYS	
	WORKING NUMBER TCP-13
ISSUE DATE:	MAY 01, 2017
SHEET NUMBER	6363

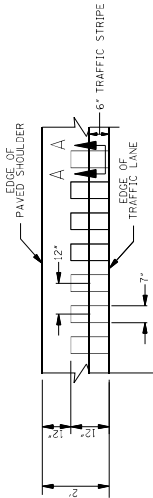




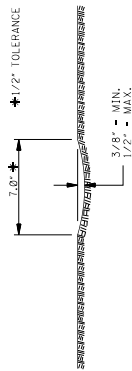


GENERAL NOTES

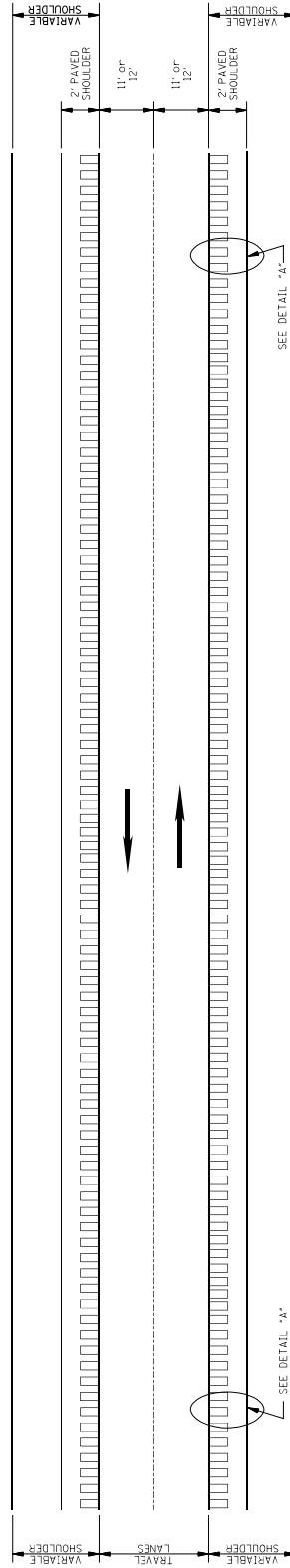
1. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED TO ALL PAVED SHOULDERS OF ALL PAVED SHOULDERS ON THIS PROJECT.
2. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED TO ALL EXISTING AND NEW ROADS, INCLUDING INTERSECTIONS, NORMAL SHOULDER WIDTH AS DIRECTED BY THE ENGINEER.
3. COST TO BE PAID FOR USING APPROPRIATE PAY ITEMS.
4. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED TO:
 - A. MAINLINE
 - B. INTERSECTING ROADWAY IF OVERLAP OR RECONSTRUCTED BEYOND NORMAL MAINLINE R.O.W.
 - C. ANY ROADWAY WITH EXISTING RUMBLE STRIPES PRIOR TO CONSTRUCTION.
5. DO NOT USE WHERE TRAVEL LANE IS LESS THAN 11' WIDE.



SECTION "A-A"



SECTION "A-A"



PLAN

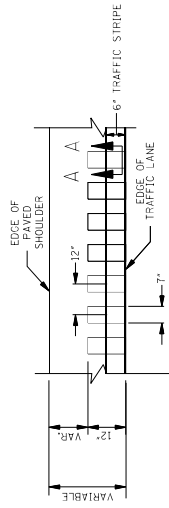
NOT TO SCALE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
ROADWAY DESIGN DIVISION	
STANDARD PLAN	
DATE	ISSUE DATE: AUGUST 01, 2017
BY	
DESIGNED STRIPE LOCATION	
REVISION	
FIG. NUMBER	RS-1
PROJECT NUMBER	6064

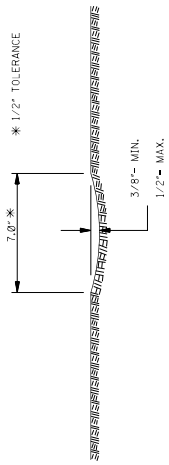
**RUMBLE STRIPES
2-LANE HIGHWAYS
(ASPHALT LANES,
2-FT ASPHALT SHOULDERS)**

GENERAL NOTES

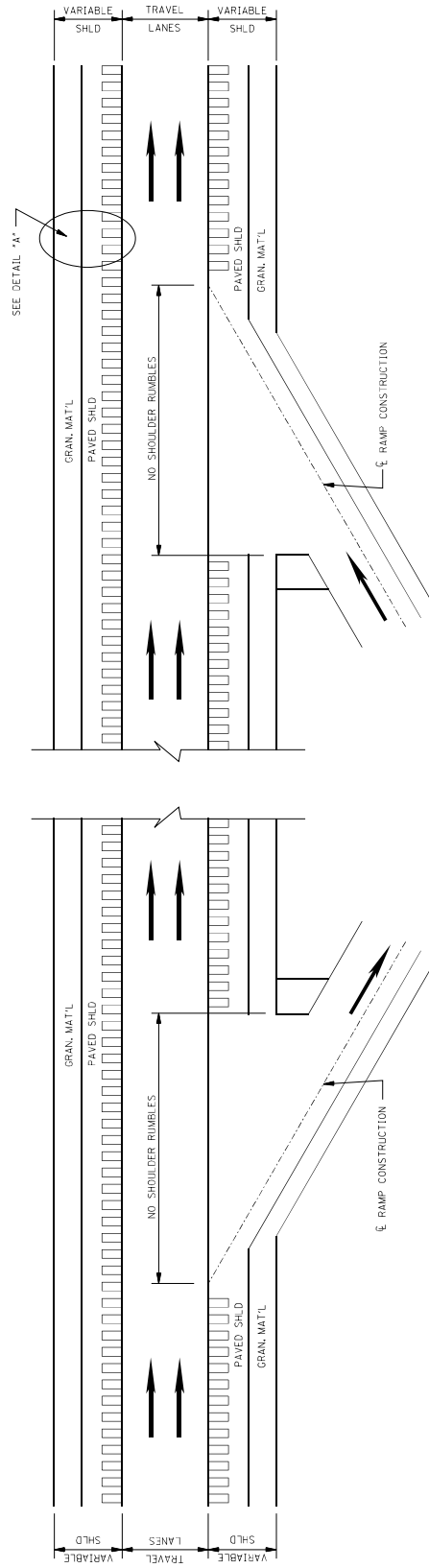
1. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED TO ALL PAVED SHOULDERS AND ALL PAVED SHOULDERS ON THIS PROJECT.
2. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED TO ALL PAVED SHOULDERS ON ROADWAYS WITH OTHER INTERSECTIONS IN NORMAL SHOULDER WIDTH AS DIRECTED BY THE ENGINEER.
3. COST TO BE PAID FOR USING APPROPRIATE PAY ITEMS.
4. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED TO:
 - A. MAINLINE
 - B. INTERSECTING ROADWAY IF OVERLAP OR RECONSTRUCTED BEYOND NORMAL MAINLINE R.O.W.
 - C. ANY ROADWAY WITH EXISTING RUMBLE STRIPES PRIOR TO CONSTRUCTION.



DETAIL "A"



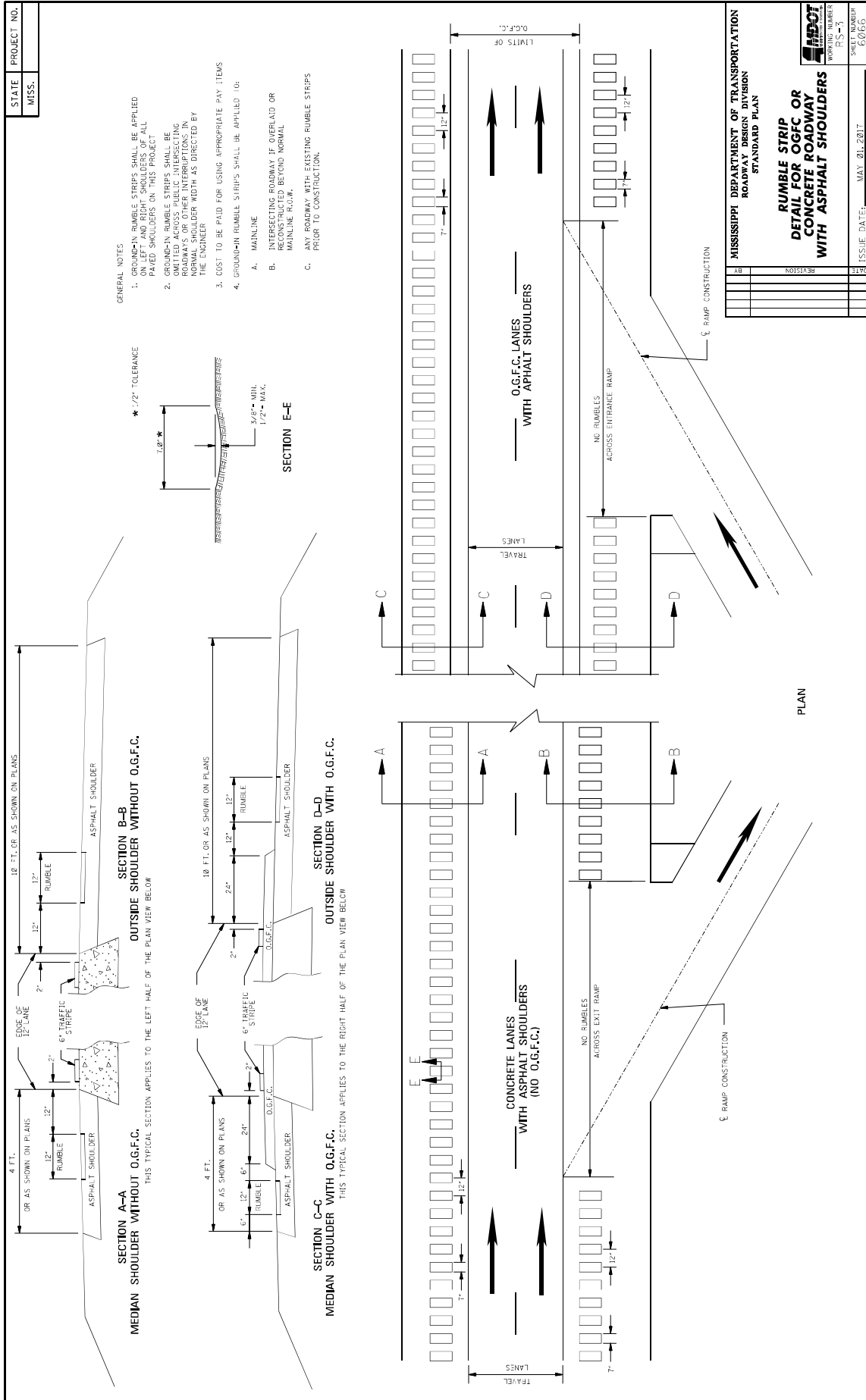
SECTION "A-A"



PLAN
NOT TO SCALE

DETAILS OF
RUMBLE STRIPES

DATE	REVISION	BY
	508	



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3279

CODE: (SP)

DATE: 4/9/2021

SUBJECT: Contract Time

PROJECT: NH-0003-01(202) / 108234301 – Jackson County

The completion of work to be performed by the Contractor for this project will not be a specified date but shall be when all allowable working days are assessed, or any extension thereto as provided in Subsection 108.06. It is anticipated that the Notice of Award will be issued no later than **June 8, 2021**.

The Contractor shall request a Notice to Proceed/Beginning of Contract Time date between the dates **July 8, 2021 and September 9, 2021**.

Should the Contractor request a Notice to Proceed earlier than **July 8, 2021** and it is agreeable with the Department for an early Notice to Proceed, the requested date will become the new Notice to Proceed and Beginning of Contract Time date.

Should the Contractor not request a Notice to Proceed by **September 9, 2021**, the date for the Notice to Proceed and Beginning of Contract Time will be **September 9, 2021**.

All requests for an early Notice to Proceed shall be sent to the Project Engineer who will forward it to the Contract Administration Division.

30 Working Days have been allowed for the completion of work on this project.

The progress schedule for this project shows the Notice to Proceed and Beginning of Contract Time starting at the latest possible date. If the Contractor requests a Notice to Proceed earlier than this date, the Contractor shall submit a revised progress schedule showing the work beginning at the new Notice to Proceed and Beginning of Contract Time date.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3280

DATE: April 9, 2021

SUBJECT: Specialty Items

PROJECT: NH-0003-01(202)/108234301 - JACKSON

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: PAVEMENT STRIPING AND MARKING

Line No	Pay Item	Description
0150	626-A001	6" Thermoplastic Double Drop Traffic Stripe, Skip White
0160	626-B002	6" Thermoplastic Double Drop Traffic Stripe, Continuous White
0170	626-E001	6" Thermoplastic Double Drop Traffic Stripe, Continuous Yellow
0180	626-G002	Thermoplastic Detail Stripe, White
0190	626-G003	Thermoplastic Detail Stripe, Yellow
0200	626-H004	Thermoplastic Legend, White
0210	626-H005	Thermoplastic Legend, White
0220	627-K001	Red-Clear Reflective High Performance Raised Markers
0230	627-L001	Two-Way Yellow Reflective High Performance Raised Markers
0390	628-G001	6" High Performance Cold Plastic Traffic Stripe, Skip White
0400	628-H001	6" High Performance Cold Plastic Traffic Stripe, Continuous White
0410	628-J001	6" High Performance Cold Plastic Traffic Stripe, Continuous Yellow
0420	907-624-A002	6" Inverted Profile Thermoplastic Traffic Stripe, Skip White
0430	907-624-B002	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous White
0440	907-624-D002	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous Yellow

CATEGORY: TRAFFIC CONTROL - PERMANENT

Line No	Pay Item	Description
0260	907-632-B007	Remove and Replace Existing Traffic Signal Cabinet Assembly, Type III Cabinet, Type 1 Controller
0270	907-632-J001	Power Service Pedestal
0280	907-634-B001	Traffic Signal Equipment Pole Shaft Extension, 10'
0290	907-634-G001	Traffic Signal Equipment Pole Mast Arm Extension
0300	907-636-B003	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 10, 2 Conductor
0310	907-643-A004	Video Vehicle Detection Sensor, Type 1A
0320	907-643-B001	Video Vehicle Detection Cable
0330	907-643-E001	Multi-Sensor Vehicle Detection Sensor
0340	907-643-F001	Multi-Sensor Vehicle Detection Cable

CATEGORY: TRAFFIC CONTROL - TEMPORARY

Line No	Pay Item	Description
0090	619-A1001	Temporary Traffic Stripe, Continuous White
0100	619-A2001	Temporary Traffic Stripe, Continuous Yellow

CATEGORY: TRAFFIC CONTROL - TEMPORARY

Line No	Pay Item	Description
0110	619-A3001	Temporary Traffic Stripe, Skip White
0120	619-A5001	Temporary Traffic Stripe, Detail
0130	619-A6001	Temporary Traffic Stripe, Legend
0140	619-A6002	Temporary Traffic Stripe, Legend

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3281

CODE: (SP)

DATE: 03/24/2021

SUBJECT: Scope of Work

PROJECT: NH-0003-01(202) / 108234301 -- Jackson County

The contract documents do not include an official set of construction plans but may, by reference, include some Standard Drawings when so specified in a Notice to Bidders entitled, "Standard Drawings".

Work on this project shall consist of milling, paving, and upgrading approximately 2 miles of US Highway 90 between Biloxi Bay Bridge and Vermont Avenue as followings.

GENERAL CONDITIONS

- (A) All work requiring a lane closure within the limits of Biloxi/Ocean Springs Bridge and Vermont Avenue shall be restricted to Sunday through Thursday between the hours of 7:00 PM to 5:00 AM. Changes or variances from these restrictions shall be submitted to the Project Engineer for review and written approval. A lane rental fee of \$1,500.00 per full or partial 5 minutes shall be assessed for 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 closure, including drums or cones, shall be in the roadway prior to or after the above-mentioned times. Work requiring a shoulder or lane closure shall begin within one (1) hour of the completion of the closure setup. Lane closures will be allowed only at times when work requiring a lane closure is underway. Failure to begin working within this 1-hour period will result in the Contractor being assessed a lane rental fee of \$1,500.00 for each full or partial 5-minute period until work has begun.
- (B) Prior to the overlay, centerline alignment shall be determined by the Contractor by measuring the existing roadway at 500-foot intervals in tangent sections and 100-foot intervals in horizontal curves.
- (C) A uniform cross slope of $\pm 2\%$ in tangent sections and correction/maintenance of super elevation in the curves is required. Super-elevation rates shall be in accordance with Standard Drawing SE-2A.
- (D) Temporary stripe along the mainline, as well as temporary detail stop bars of all intersecting local roads shall be placed on the asphalt surface upon the completion of each lift of mainline operations. Temporary and permanent striping shall be placed where existing stripes are located, and shall conform to finished stripe specifications for alignment, neatness, reflectivity, and straightness. All permanent pavement markings on asphalt are to be hot thermoplastic. Edge lines will be placed so as to maintain the original lane width.

- (E) It will be the responsibility of the Contractor to protect existing structures such as pipes, inlets, bridges, aprons, etc. from damage which might occur during construction. The Contractor shall replace or repair, as directed by the Project Engineer, any structures damaged by the Contractor during the life of the contract. No payment will be made for the replacement or repair of damaged items.
- (F) The Contractor shall erect and maintain construction signing, and provide all signs and traffic handling devices in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
- (G) Incidental work such as removing vegetation, shaping and compaction of shoulder, removing excess asphalt material, project clean-up, and other incidental work necessary to complete the project will not be measured for separate payment, but will be included in other bid items.
- (H) If pavement section marking tape is encountered on this project, it shall be located prior to overlaying and placed back in same location after paving operations have ceased. The section marking shall be 8 inch high performance cold plastic detail stripe and shall be four feet (4') in length. The marking shall be centered across the centerline stripe. The cost of this item shall be absorbed in other bid items.
- (I) All castings, gratings, and utility appurtenances shall be raised to match the new elevation of the asphalt pavement. Costs of this work shall be included in other items bid.

**CONSTRUCTION OF APPROXIMATELY 1.4 MILES OF US HIGHWAY 90
FROM BILOXI BAY BRIDGE TO VERMONT AVENUE**

Drainage Items

- 1. The pipe under US 90 just east of Lovers Lane and along US 90 on the south side just east of Lovers Lane shall be video inspected.
- 2. A 36" Cured-In-Place Pipe shall be constructed under US 90 just east of Lovers Lane.

Pavement Items

- 1. Prior to the overlay, the Contractor shall fine mill the roadway including all crossovers, side roads, and shoulders to a depth of 1½". Traffic shall only be allowed to travel on the mainline fine milled surface for up to five (5) days before it is overlaid. (Mainline – approximately 65,797 SY, Crossovers and Side Roads – approximately 23,966 SY).
- 2. US 90 Mainline and SR 609 shall be overlaid with 1½" of 9.5-mm, HT, asphalt. (approximately 5,944 tons)
- 3. Crossovers, turn lanes, side roads, and shoulders shall be overlaid with 1½" of 9.5-mm, MT, asphalt. (approximately 2,530 tons)
- 4. Tie ends on the service roads shall be fine milled.
- 5. Service roads shall be overlaid with 1½" of 9.5-mm, MT, asphalt. (approximately 1,478 tons)
- 6. If water stands on the pavement when project is complete, the Contractor shall correct the situation to the satisfaction of the Engineer at no additional cost to the State.
- 7. Shoulders shall be raised with crushed stone/concrete to match new asphalt pavement edge.

Pavement Marking Items

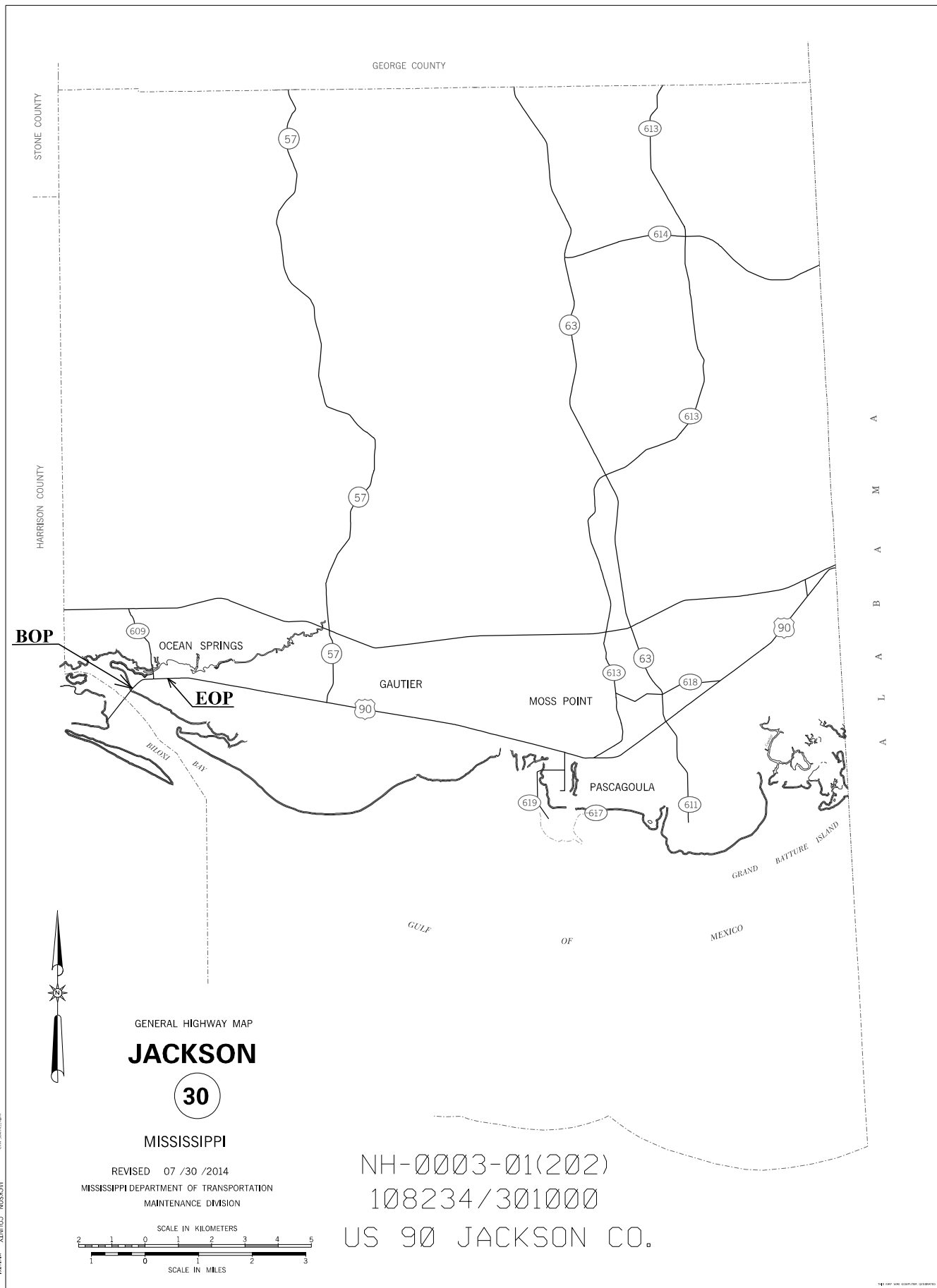
1. Temporary stripe shall be placed after each day's operation.
2. Existing striping along bridges shall be removed and replaced with either Inverted Profile or Cold Plastic striping.
3. Regardless of the spacing shown on sheet PM-1, raised pavement markers shall be placed on 40-foot intervals in both tangents and curves in both urban and rural areas. Only flexible adhesive meeting the requirements of Subsection 720.03.7.7 shall be used for placement of raised pavement markers.

Traffic Recorder Classification System Item

1. A Traffic recorder classification permanent system shall be installed at the east end of the Biloxi-Ocean Springs Bay Bridge in accordance with Special Provision 907-687.
2. Existing equipment shall be salvaged to MDOT. Contractor shall deliver salvaged equipment to MDOT Electrical Shop at 16499 Highway 49, Saucier, MS.

Traffic Signal Items

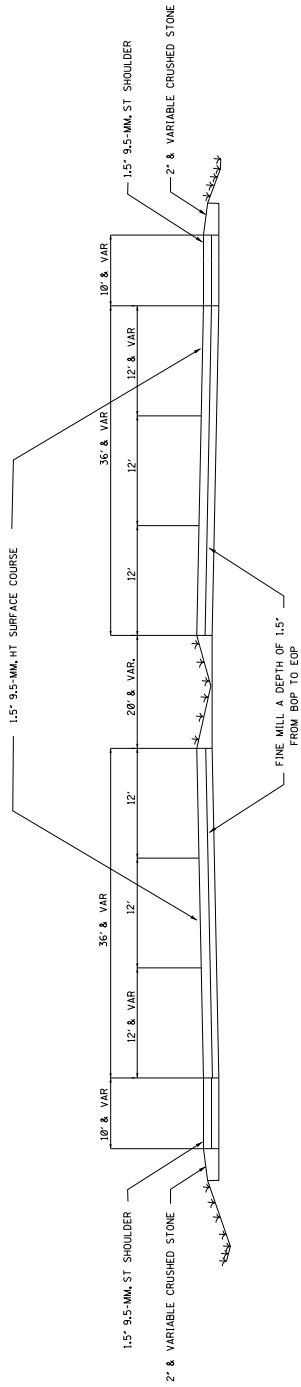
1. The Contractor shall remove and replace existing traffic signal cabinet assembly (Type III cabinet, Type 1 controller) at the location indicated. Contractor to verify foundation size and bolt spacing dimensions of existing cabinets to ensure new cabinets can be installed on existing foundations. Installation shall be in accordance with Special Provision 907-632.
2. Electric cable, underground in conduit (IMSA 20-1, AWG 10, 2-Conductor) shall be used as luminaire cable. The Contractor shall run luminaire cable from power service pedestal to the top of each signal pole. The Contractor shall leave 30 feet of slack in each luminaire cable run for future use. Slack shall be kept in the pull box closest to the signal pole. The end of each luminaire cable run shall be capped off with a weatherproof splice enclosure. All work shall be performed in accordance with Section 636 of the Standard Specifications and Special Provision 907-636.
3. Electric cable, underground in conduit (IMSA 20-1, AWG 14, 8-Conductor) shall be used as signal cable. All work shall be performed in accordance with Section 636 of the Standard Specifications and Special Provision 907-636.
4. Existing power service shall be transferred to new power service pedestal.
5. The Contractor shall notify MDOT prior to removal of existing traffic signal cabinets. MDOT will remove existing communications equipment prior to removal of existing traffic signal cabinets.
6. The Contractor shall notify MDOT upon completion of new traffic signal cabinet installations. MDOT will reinstall communications equipment upon completion of new traffic signal cabinet installations.
7. The controller timing will be provided by MDOT.
8. Existing equipment shall be salvaged to MDOT. The Contractor shall deliver salvaged equipment to MDOT Electrical Shop at 16499 Hwy 49 Saucier, MS 39574.



NH-0003-01(202) / 108234-301000

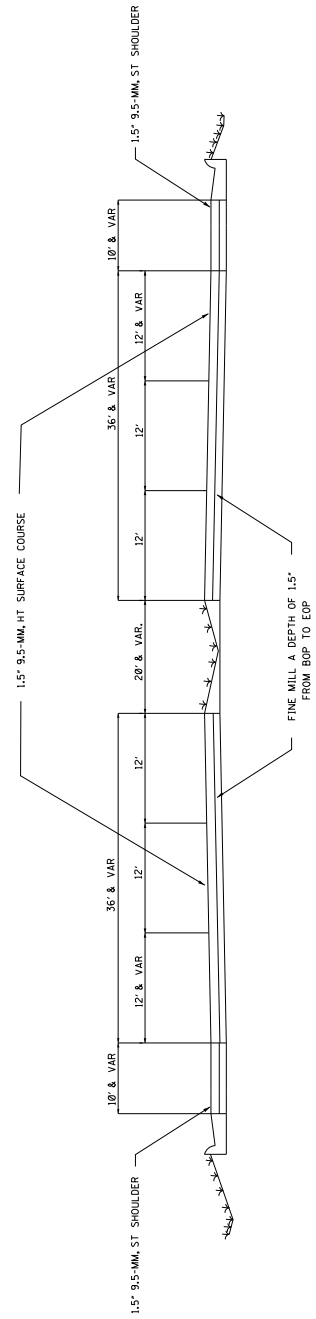
JACKSON COUNTY

US HIGHWAY 90 FROM BILOXI BAY BRIDGE TO VERMONT AVE.



US HIGHWAY 90

TYPICAL SECTION AT AREAS WITH CURB & GUTTER



US HIGHWAY 90

TYPICAL SECTION AT CURB & GUTTER AREAS

Notice to Bidders No. 3281 - Cont'd

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

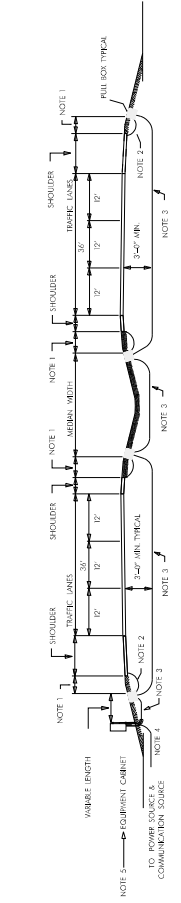
TRAFFIC RECORDER CLASSIFICATION PERMANENT SYSTEM!

6 LANE DIVIDED ROADWAY LAYOUT PLAN

NO. DRAWING NUMBER

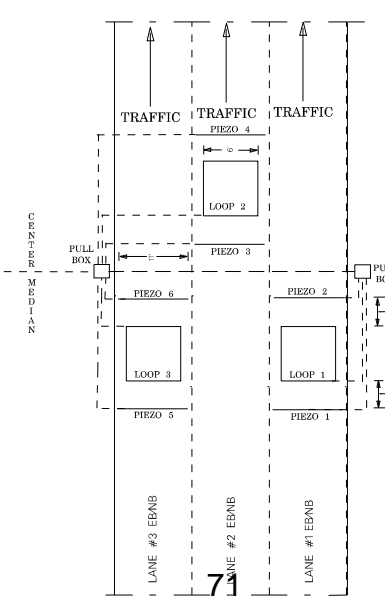
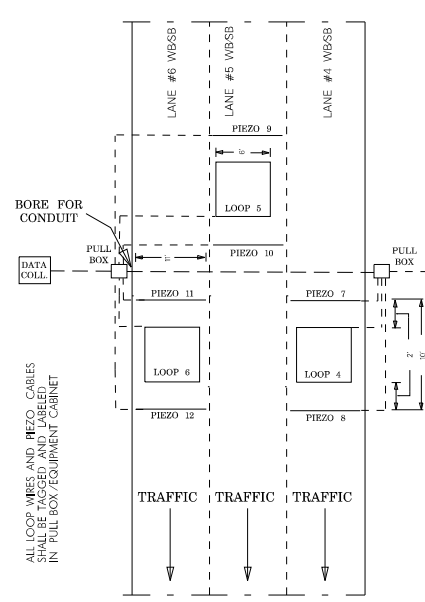
SHEET NUMBER

FILENAME: dgd DATE: PREPARED BY:

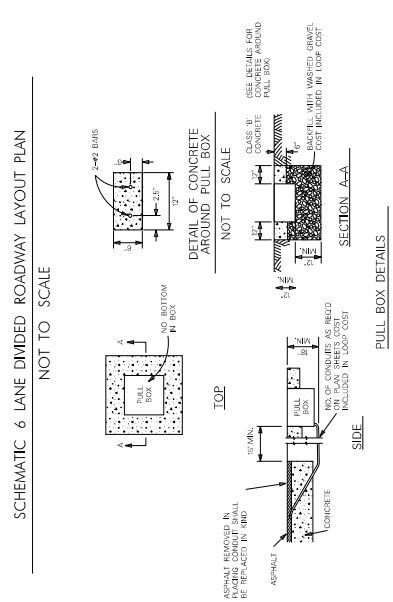


TYPICAL SECTION FOR CONDUIT PLACEMENT

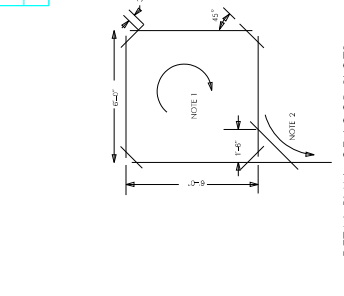
- NOT TO SCALE
1. LOCATE PULL BOXES 15'-0" MIN. FROM SHOULDER UNLESS OTHERWISE NOTED BY PROJECT ENGINEER. EQUIPMENT CABINET LOCATION MUST BE APPROVED BY PROJECT ENGINEER.
 2. 3/4" DIA. SCH. 40 PVC CONDUIT FOR EACH LOOP OR SENSOR TO PULL BOX.
 3. 2" DIA. SCH. 80 PVC CONDUIT BURIED AT 3'0" AT THE SHOULDER.
 4. BURIED CABLE TO POWER SOURCE AND COMMUNICATION SOURCE.
 5. LOCATION OF EQUIPMENT CABINET AND LANE WIDTH WILL VARY DEPENDING ON SITE.
 6. ALL SENSOR WIRE AND LOOP WIRE MUST BE PLACED IN CONDUIT FROM PAVEMENT TO EQUIPMENT CABINET. CONDUITS RUN WITH OUT ANY SPACING FROM THE SENSOR TO THE EQUIPMENT CABINET.



SCHEMATIC 6 LANE DIVIDED ROADWAY LAYOUT PLAN

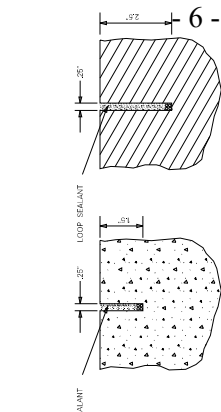


- NOT TO SCALE
1. BACKFILL WITH CONCRETE AS APPROVED BY PROJECT ENGINEER.



DETAIL PLAN OF LOOP SLOTS

- NOT TO SCALE
1. INSTALL WIRE TURNS THE SAME (CLOCKWISE) DIRECTION.
 2. LOOP LEAD WIRE EXIT FROM LAST TURN.
 3. ALL LOOPS TO INCLUDE 4 TURNS OF #18 AWG WIRE.
 4. DIMENSIONAL TOLERANCE FOR LOOP LENGTH, SPACING AND DETECTOR LOCATION: 1/2".



DETAIL OF CABLE SLOT

- NOT TO SCALE
- CONCRETE
- ASPHALT

SPECIFICATIONS

- ALL WORK SHALL CONFORM TO S.P. 907-887-A.
- INSTALLATION NOTES
1. EXACT LOCATION TO BE VERIFIED IN FIELD BY STATE PLANNING ENGINEER.
 2. SATISFACTORY OPERATION OF ALL COMPONENTS SHALL BE VERIFIED BY STATE PLANNING ENGINEER.

TRAFFIC RECORDER CLASSIFICATION PERMANENT SYSTEM!

6 LANE DIVIDED ROADWAY LAYOUT PLAN

NO. DRAWING NUMBER

SHEET NUMBER

FILENAME: dgd DATE: PREPARED BY:

TRAFFIC SIGNAL GENERAL NOTES

1. POLES, SIGNAL HEADS, EQUIPMENT BOXES, PULLBOXES AND CONDUIT LOCATIONS MAY BE VARIED SLIGHTLY TO FIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER. HOWEVER, SIGNAL HEAD OR POLE LOCATIONS SHALL BE WITHIN REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND HIGHWAY DESIGN AND OPERATIONAL PRACTICES RELATED TO HIGHWAY SAFETY.
2. THE CONTRACTOR SHALL PROVIDE MAST ARM POLE DESIGN CERTIFICATION AND CALCULATIONS AS OUTLINED IN SECTION 722.02 OF STANDARD SPECIFICATIONS. DESIGN STANDARD FOR MAST ARMS POLES SHALL BE 2013 ASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS; USE FATIGUE CATEGORY II, USE 50 YEAR DESIGN SERVICE LIFE AND DO NOT CONSIDER GALLOPING OR TRUCK-INDUCED GUSTS, WIND AND ICE LOADS VARIABLE BASED UPON MAPS IN THE 2013 ASHTO SPECIFICATION. USE UPSWEPT MAST ARMS UNLESS OTHERWISE NOTED ON PLANS. SEE TSD 3.
3. DETERMINATION OF REQUIRED SIZES, LENGTHS AND GAUGES OF TYPE I - XI STEEL POLES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IN ACCORDANCE WITH THE PLANS AND SECTION 722.02 OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE SPECIFIED IN PLANS OR SPECIFICATIONS.
4. TRAFFIC SIGNAL MAST ARM POLES SHALL BE HOT DIPPED GALVANIZED WITH FINISH APPROVED BY THE ENGINEER.
5. TRAFFIC SIGNAL MAST ARM POLES REQUIRING LUMINAIRES ARE DESIGNATED BY (L). ALL LUMINAIRES SHALL BE LED UNLESS OTHERWISE NOTED ON PLANS.
6. STAINLESS STEEL TAG ATTACHED TO THE POLE SHAFT USING 3/16 INCH STAINLESS STEEL POP RIVETS WITH PROPERTIES AND INFORMATION AS FOLLOWS:
 - MINIMUM 1/16 INCH THICKNESS
 - MINIMUM 1/4 INCH STAMPED LEGEND WITH FOLLOWING INFORMATION:
 - MANUFACTURER NAME
 - MONTH/YEAR OF MANUFACTURE
 - UNIQUE IDENTIFYING NUMBER FOR FUTURE MANUFACTURER REFERENCE
 - EXTERNAL PROJECT NUMBER FROM THE PLANS COVER SHEET (EXAMPLE: STP-XXXX-XX...)
7. THE TOP OF THE STRAIN POLE FOUNDATION SHALL BE 6" ABOVE THE GROUND. THE CONTRACTOR SHALL PROVIDE POLES OF SUFFICIENT LENGTH PLUS 2 FEET TO PROVIDE REQUIRED VERTICAL CLEARANCE OF THE TRAFFIC SIGNAL HEADS WITHOUT EXTENDING THE FOUNDATION ABOVE THE GROUND LINE OF THE POINT WHERE THE POLE IS LOCATED, EVEN THOUGH THIS MAY BE BELOW THE FINISHED GRADE OF THE ROADWAY.
8. ALL STRAIN POLES AT AN INTERSECTION SHALL BE THE SAME DIAMETER AND UTILIZE THE SAME BOLT CIRCLE SPACING.
9. POLE FOUNDATIONS AND BASE MOUNTED CABINET FOUNDATIONS, GRADE SHALL BE ESTABLISHED TO 3" OF EDGE OF PAVEMENT ELEVATION UNLESS APPROVED BY SIGNAL PROJECT ENGINEER.
10. TRAFFIC SIGNAL HEADS SHALL BE BLACK IN COLOR UNLESS OTHERWISE NOTED ON PLANS WITH BLACK BACK PLATES
11. PEDESTRIAN HEADS SHALL BE BLACK IN COLOR UNLESS OTHERWISE NOTED ON PLANS.
12. PEDESTRIAN PUSHBUTTONS SHALL BE EITHER STANDARD PUSHBUTTONS OR APS (ACCESSIBLE PEDESTRIAN SYSTEM STYLE AS NOTED ON PLANS. SIGNS TO BE INCLUDED IN PAY ITEM FOR PEDESTRIAN PUSHBUTTONS AT NO ADDITIONAL COST. SIDE OF POLE LOCATIONS OF PUSHBUTTONS MAY BE FIELD ADJUSTED. PUSHBUTTON HARDWARE SHALL BE BLACK IN COLOR UNLESS OTHERWISE NOTED ON PLANS.
13. FIELD DRILL AND TAP EXISTING POLES WHERE PEDESTRIAN SIGNALS AND PUSHBUTTONS ARE REQUIRED ON PLANS. (ABSORBED ITEM).
14. TRAFFIC SIGNAL CABINETS AND CONTROLLERS SHALL BE WIRED TO PROVIDE FOR ALL PHASES INCLUDING FUTURE PHASES IN ACCORDANCE WITH THE PHASE SEQUENCE DIAGRAM.
15. ALL TRAFFIC SIGNAL CONTROLLERS SHALL ETHERNET READY, AND COMPATIBLE WITH MIDOT'S EXISTING TRAFFIC SIGNAL MANAGEMENT SOFTWARE. ALL TRAFFIC SIGNAL CONTROLLER FIRMWARE SHALL BE CAPABLE OF DELAYING THE ONSET OF THE FLASHING YELLOW ARROW. ALL MMU'S SHALL BE ETHERNET READY, 16 CHANNEL, AND CAPABLE OF RUNNING 12 DIFFERENT MODES OF FLASHING YELLOW ARROW OPERATION. THE CONTRACTOR SHALL COORDINATE WITH MIDOT FOR IP ADDRESSES ON ALL NETWORKABLE DEVICES. DEVICES INCLUDE BUT NOT LIMITED TO: CONTROLLER, MMU WITH SOLID CABLE (CONFLICT MONITOR), AND DETECTION UNITS. TRAFFIC SIGNAL CONTROLLER CABINET SHALL HAVE A 16 LOAD BAY FACILITY, REAR ACCESS DOOR, LAPTOP TRAY, AND DUAL POSITION INTERNAL LED LIGHTING. ALL TRAFFIC SIGNAL CONTROLLER CABINETS SHALL HAVE A 5 POSITION CARD RACK AND ONE 175 WATT MINIMUM POWER SUPPLY AND 4 AVAILABLE SLOTS UNLESS OTHERWISE NOTED ON PLANS. SEE 907-632.02.6.1.
16. FOR PROTECTED/PERMITTED LEFT TURN PHASING USING TYPE 2, P/A TRAFFIC SIGNAL HEADS, OPERATION SHALL BE AS FOLLOWS: THE PROTECTED PHASE OF THIS OPERATION SHALL DISPLAY A SOLID GREEN ARROW, FOLLOWED BY A SOLID YELLOW ARROW, AND ENDING WITH A SOLID RED ARROW. THE PERMITTED PORTION OF THIS OPERATION SHALL START WITH A FLASHING YELLOW ARROW, FOLLOWED BY A SOLID YELLOW ARROW, AND ENDING WITH A SOLID RED ARROW. THERE SHALL BE A DELAY (AS DIRECTED BY THE ENGINEER) BETWEEN THE END OF THE PROTECTED PORTION OF THIS OPERATION AND THE BEGINNING OF THE PERMITTED PORTION OF THIS OPERATION. DURING THIS DELAY, THE OPPOSING PHASE THRU HEADS ARE CAPABLE OF DISPLAYING A GREEN BALL. SIGNAL CONTROLLER WITH FIRMWARE NECESSARY TO ACCOMPLISH THIS DELAY SHALL BE PROVIDED.
17. POLES AND FOUNDATIONS OF EXISTING SIGNAL INSTALLATION REMOVALS SHALL BE CUT OFF 6" BELOW GROUND, REMOVED, AND AREA RESTORED TO MATCH ADJACENT SURFACE AS DIRECTED BY THE ENGINEER.
18. ALL REMOVED EXISTING TRAFFIC SIGNAL EQUIPMENT SHALL BECOME THE PROPERTY OF THE CONTRACTOR, UNLESS SPECIFIC ITEMS ARE NOTED IN THE PLANS TO BE SALVAGED AS DIRECTED BY THE ENGINEER.
19. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ELECTRICAL SERVICE FROM THE POWER COMPANY SERVICE POINT TO THE POWER SERVICE PEDestal FOR SPAN WIRE INSTALLATION. POWER SHALL RUN FROM THE POWER COMPANY SERVICE POINT AHEAD TO THE SIGNAL POLE NEAREST THE CONTROL. THE SERVICE SHALL THEN RUN TO THE CONTROLLER AS SHOWN ON THE PLANS FOR USE FARM INSTALLATION. POWER SHALL RUN FROM THE POWER COMPANY SERVICE POINT UNDERGROUND DIRECTLY TO THE POWER SERVICE PEDestal, THEN TO THE CONTROLLER CABINET. AS SHOWN ON THE PLANS. A DISCONNECT SHALL BE INSTALLED AT THE POWER COMPANY SERVICE POLE FOR MAST ARM INSTALLATIONS.
20. POWER SERVICE METER SHALL NOT BE MOUNTED ON THE CONTROLLER CABINET OR MAST ARM POLE SHAFTS. A SEPARATE POWER SERVICE PEDestal FOR MOUNTING THESE ITEMS IS REQUIRED. (SEE TSD-6 & TSD-7). BLACK CONDUCTORS SHALL BE USED FOR ALL LINE (HOT) WIRES AND WHITE CONDUCTORS SHALL BE USED FOR ALL NEUTRAL WIRES.
21. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE THE NECESSARY ARRANGEMENTS WITH THE LOCAL POWER COMPANY TO PROVIDE THE POWER SUPPLY ASSEMBLY FOR ANY NEW INSTALLATION. THE CONTRACTOR SHALL PAY FOR, AT NO COST TO THE DEPARTMENT, ALL DEPOSITS, HOOK-UP CHARGES, OR OTHER SERVICE FEES REQUIRED BY THE POWER COMPANY FOR THE ESTABLISHMENT OF NEW SERVICE. THE COST OF ALL SUCH FEES SHALL BE CONSIDERED INCIDENTAL AND ABSORBED WITHIN PAY ITEMS. THE DEPARTMENT OR THE LOCAL AGENCY WILL BE RESPONSIBLE FOR PAYMENT OF THE MONTHLY SERVICE BILL FOR THE NEW POWER SERVICE INSTALLATION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SWAP THE ELECTRICAL SERVICE ACCOUNT OVER TO THE DEPARTMENT OR LOCAL AGENCY. WHEN ELECTRIC POWER SERVICE EXISTS AND IS USED FOR THE OPERATION OF AN EXISTING SYSTEM, THE MONTHLY SERVICE FEES SHALL CONTINUE TO BE PAID BY THE DEPARTMENT OR THE LOCAL AGENCY. IF THE EXISTING POWER SERVICE IS INTENDED FOR USE WITH A NEW SIGNAL SYSTEM, THEN ANY SERVICE CHARGE FEES

SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SIMILARLY, IF AN EXISTING POWER SERVICE IS TO BE DISCONNECTED, ANY SERVICE CHARGE FEES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF ALL SUCH FEES SHALL BE CONSIDERED INCIDENTAL AND ABSORBED WITHIN EXISTING PAY ITEMS.

22. WHEN CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY SIGNALS TO ACCOMMODATE ROADWAY CONSTRUCTION, IT SHALL BE PAID FOR UNDER PAY ITEM 619-H1, TRAFFIC SIGNAL - LUMP SUM, UNLESS OTHERWISE NOTED ON PLANS.

23. VEHICLE LOOP ASSEMBLIES SHALL BE INSTALLED IN THE TOP LAYER OF BINDER OR EXISTING SURFACE BEFORE THE FINAL SURFACE COURSE IS APPLIED (BASED ON 2" FINAL LIFT MAXIMUM).

24. WHEN RADAR, VIDEO, OR MULTI-SENSOR DETECTION IS USED, THE SYSTEM MAY REQUIRE BOTH STOP BAR AND ADVANCE DETECTION. TSI PLANS SHOW A GENERIC LAYOUT FOR DETECTION; DETECTOR MAY BE RELOCATED PER MANUFACTURER'S RECOMMENDATIONS. THERE SHALL BE NO EXTRA PAY FOR MOVING DETECTORS OTHER THAN CABLE LENGTHS. MANUFACTURER TO HAVE FACTORY REP ON SITE DURING INSTALLATIONS UNLESS CERTIFIED BY THE MANUFACTURER. DETECTION CABLE WILL BE MEASURED BY THE LINEAR FOOT, MEASURED HORIZONTALLY ALONG THE CONDUIT, MESSENGER CABLE OR MAST ARM AND VERTICALLY ALONG THE DETECTION CABLE FOR CAMERAS, THE POWER AND VIDEO CABLE MAY BE IN THE SAME JACKET.

25. ALL DETECTION UNITS SHALL BE NETWORKABLE DEVICES AND BE ON THE MIDOT NETWORK IF NOTED ON PLANS.

26. MESSENGER CABLE AND OTHER SUPPORTING DEVICES WHERE REQUIRED SHALL BE ABSORBED IN THE PAY ITEMS FOR SIGNAL CABLE.

27. THE CONTRACTOR SHALL STAKE THE LOCATION OF EACH POLE FOUNDATION AND NOTIFY THE PROJECT ENGINEER FOR CONCURRENCE IN THE LOCATION BEFORE PROCEEDING WITH THE PURCHASE OF THE POLE.

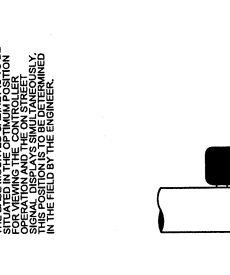
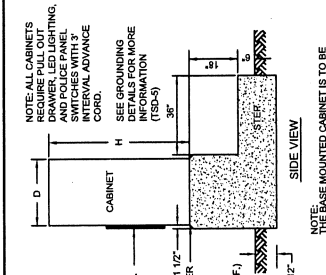
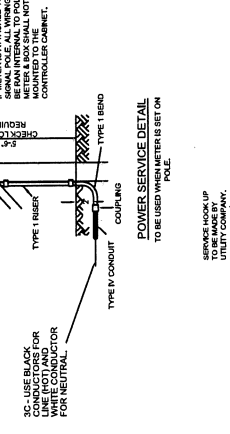
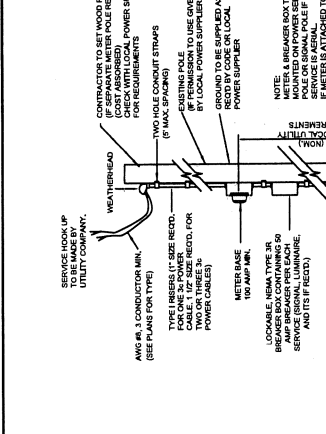
28. THE CONTRACTOR SHALL BE REQUIRED TO ADEQUATELY AND COMPLETELY COVER TRAFFIC SIGNAL HEADS DURING TIMES THAT THEY ARE NOT IN OPERATION WITH A DURABLE, OUTDOOR-HARDENED MATERIAL THAT CONTRASTS WITH THE COLOR OF THE HEAD THAT CLEARLY DESIGNATES THAT THE SIGNAL IS NOT IN "STOP AND GO" MODE. HEAD COVERS ARE TO BE APPROVED BY THE ENGINEER.

29. A NEW TRAFFIC SIGNAL INSTALLATION SHALL BE PUT IN FLASH OPERATION FOR A PERIOD OF THREE (3) TO SEVEN (7) DAYS PRIOR TO THE ACTIVATION OF THE SIGNAL'S "STOP AND GO" OPERATION. ACTIVATION OF NEW TRAFFIC SIGNALS SHALL BE DURING A MID-WEEK WEEKDAY (TUESDAY - THURSDAY) DURING A NON-PEAK TIME AND SHALL BE COORDINATED WITH THE ENGINEER. UPON INITIAL INSPECTION AND ACCEPTANCE TESTING OF THE NEW TRAFFIC SIGNAL INSTALLATION, THE CONTRACTOR SHALL REQUEST THE START OF THE 30 DAY BURN-IN PERIOD TO COMMENCE. AS OUTLINED IN SUBSECTION 631.03.4 OF THIS SPECIFICATION, ANY NOTED DEFICIENCIES FOUND WITHIN THAT 30 DAY PERIOD SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER. THE 30 DAY BURN-IN PERIOD MUST COMMENCE WITHIN THE CONTRACT TIME, AND BEFORE SUBSTANTIAL COMPLETION OF THE PROJECT IS GRANTED.

30. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING FINAL INSPECTION MEETING WITH DISTRICT OFFICE, PROJECT OFFICE AND TRAFFIC ENGINEERING FOR SIGNAL PORTION OF THE PROJECT.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
TRAFFIC SIGNAL GENERAL NOTES	
DATE	WORKING NUMBER
REVISION	SHEET NUMBER
PROJ. NO. :	FILE NAME: E:\proj. TSDs. 3. 6. 2013.dwg
COUNTY :	DATE PLOTTED: 04/01/13 09:25:56

STATE PROJECT NO. MISS. WORKING NUMBER SHEET NUMBER
 MISS. COUNTY: FILENAME: E:Road_ISSDs_3_5_2019.dgn
 DATE: 3/20/2019 8:55:33 AM
 DESIGNED BY: CHECKED BY: DATE: 3/20/2019 8:55:33 AM

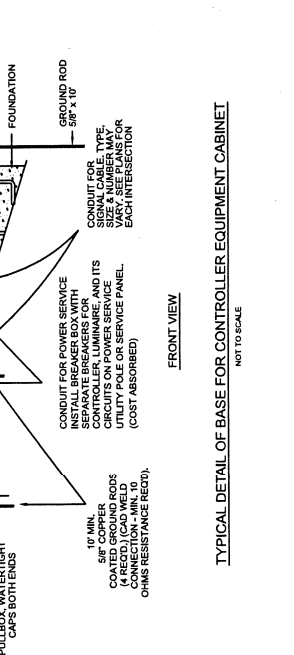
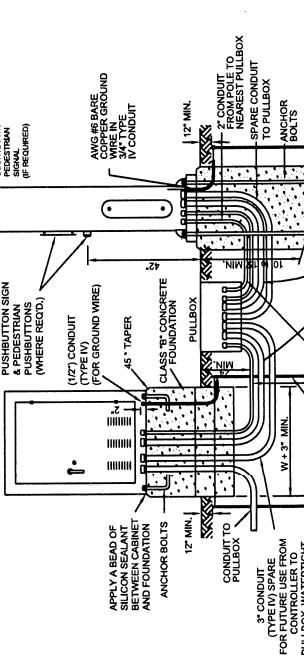


CABINET INFORMATION

TYPE	SIZE (MIN.)	LOAD BAY POSITION
TYPE I CABINET	51H x 30"W x 18"D	8 POSITION
TYPE II CABINET	51H x 36"W x 18"D	12 POSITION
TYPE III CABINET	51H x 44"W x 27"D	16 POSITION
TYPE IV CABINET	57H x 44"W x 29"D	16 POSITION
TYPE V CABINET	77H x 44"W x 27"D	16 POSITION

NOTE: THE BASE MOUNTED CABINETS TO BE FOR VIEWING THE CONTROLLER SIGNAL DISPLAYS SMALL ANGLE VISUALLY. SIGNAL DISPLAYS SMALL ANGLE VISUALLY IN THE FIELD BY THE ENGINEER.

TYPE I AND II MAY BE POLE OR BASE MOUNTED. ALL OTHERS ARE BASE MOUNTED. CONTRACTOR TO VERIFY CABINET SIZE BEFORE POURING FOUNDATION.



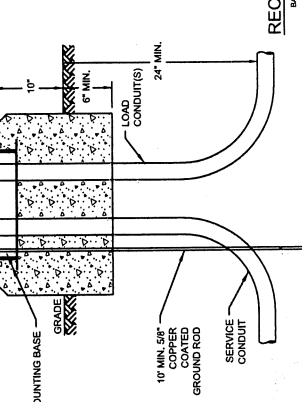
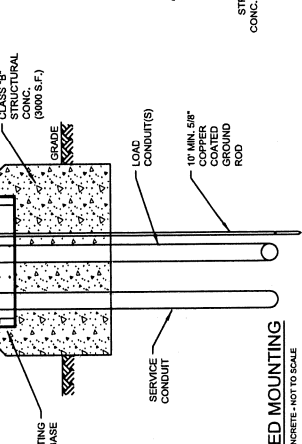
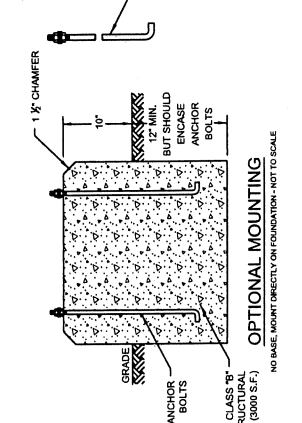
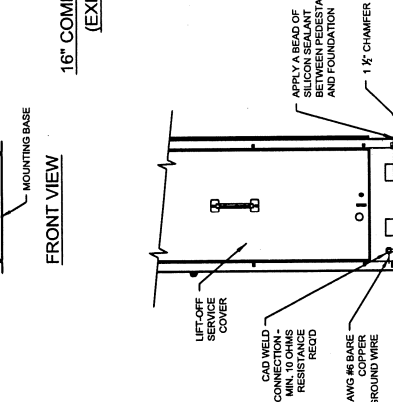
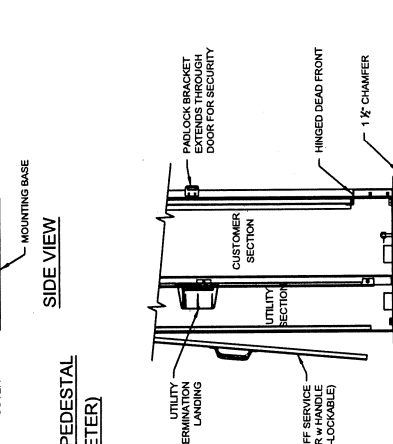
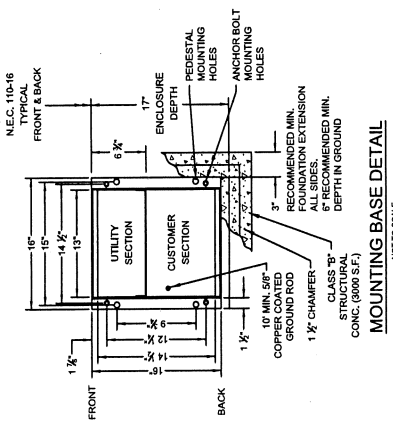
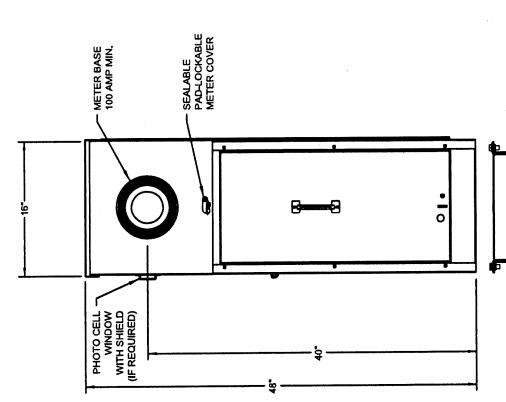
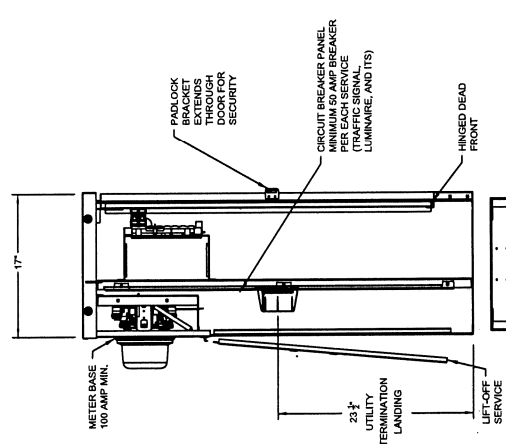
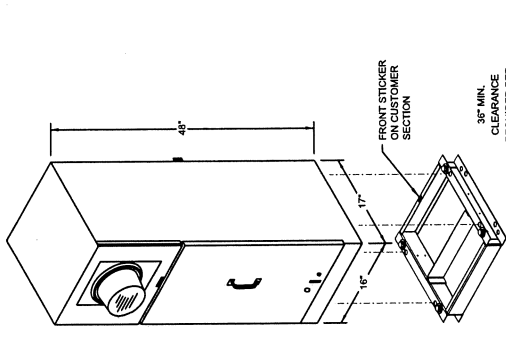
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
 CONTROLLER CABINET AND POWER SERVICE DETAILS
 PROJ. NO.:
 COUNTY:

TYPICAL DETAIL OF BASE FOR CONTROLLER EQUIPMENT CABINET
 NOT TO SCALE

TYPICAL DETAIL FOR POLE MOUNTED CONTROLLER
 NOT TO SCALE

- GENERAL NOTES:
1. THE PEDESTAL SHALL BE OF NEMA TYPE 3R RAINPROOF CONSTRUCTION AND SHALL BE UL LISTED AS ENCLOSED INDUSTRIAL CONTROL EQUIPMENT (UL 508A). EXTERNAL CONSTRUCTION SHALL COMPLY WITH UL50 REQUIREMENTS AND SHALL BE UNPAINTED ALUMINUM.
 2. NOMINAL SIZE OF THE PEDESTAL SHALL BE 48" X 16" X 17". DIMENSION SHOWN ARE TYPICAL. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH MANUFACTURER PRIOR TO INSTALLATION.
 3. PEDESTAL SHALL HAVE A VOLTAGE RATING OF 120V/240V SINGLE PHASE WITH AN AMPERAGE RATING THAT IS ADEQUATE TO RUN ALL TRAFFIC SIGNAL EQUIPMENT AS SPECIFIED IN THE PLANS (MAX 800A).
 4. HINGES SHALL BE STAINLESS STEEL AND OF THE CONTINUOUS PIANO HINGE TYPE.
 5. THE PEDESTAL MOUNTING BOLTS SHALL NOT BE EXTERNALLY ACCESSIBLE. THE PEDESTAL SHALL BE MOUNTED ON CONCRETE OR ANCHOR BOLTS. THE MOUNTING BASE OR ANCHOR BOLT KIT SHALL BE REQUIRED FOR INSTALLATION.
 6. THE SERVICE PEDESTAL SHALL HAVE THREE SEPARATE ISOLATED SECTIONS FOR METERING EQUIPMENT, UTILITY TERMINATION AND CUSTOMER EQUIPMENT.
 7. THE METERING SECTION SHALL BE PAD-LOCKABLE AND SEALABLE AND HAVE A HINGED SWING DOOR FOR ACCESS TO DEMAND METERS, METER SOCKET TYPE SHALL MEET THE REQUIREMENTS OF THE SERVING UTILITY.
 8. THE UTILITY TERMINATION SECTION SHALL BE PAD-LOCKABLE AND SEALABLE AND SHALL HAVE A STAINLESS STEEL HANDLE PROVIDED ON A LIFT-OFF COVER. SUFFICIENT CLEARANCE SHALL BE PROVIDED FOR A 4-INCH DIAMETER CONDUIT FOR UTILITY CABLES ENTRANCE. UTILITY LANDING LUGS SHALL BE UL LISTED AND SHALL ACCOMMODATE #6 350 KCMIL CONDUCTORS.
 9. THE CUSTOMER COMPARTMENT DOOR SHALL BE HINGED ON THE LEFT HAND SIDE. A STAINLESS PAD-LOCKABLE HASP SHALL BE PROVIDED TO SECURE CUSTOMER COMPARTMENT. AN OUTDOOR RATED HEAVY DUTY HINGE SHALL BE PROVIDED TO SECURE CUSTOMER COMPARTMENT. A DOOR KEYS SHALL BE PROVIDED TO KEEP THE DOOR IN AN OPEN POSITION. A PRINT POCKET SHALL BE PROVIDED ON THE INSIDE OF THE DOOR IN A WEATHERPROOF SLEEVE REQUIRED UL LABELING SHALL BE LOCATED ON THE INSIDE OF THE CUSTOMER DOOR. DISTRIBUTION AND CONNECTIONS SHALL BE SECURED WITH A LATCH AND SHALL BE HINGED TO OPEN MORE THAN 90 DEGREES. THE DEAD-FRONT DOOR SHALL BE HINGED ON THE SAME SIDE AS THE CUSTOMER SECTION DOOR.
 10. ALL DISTRIBUTION AND CONTROL EQUIPMENT SHALL BE FACTORY WIRED USING 600 VOLT WIRE SIZED TO NEC AND UL REQUIREMENTS.
 11. THE SERVICE PEDESTAL SHALL BE RATED FOR OPERATION AT 10K MINIMUM (AC) AMPS INTENSIFICATION AND SHALL BE RATED FOR OPERATION AT 10K MINIMUM OPERATION FOR ENGRAVED RATINGS. CIRCUIT BREAKERS SHALL BE PERMANENTLY LABELED WITH ENGRAVED NAME PLATES.
 12. THE PANEL SHALL CONTAIN AS A MINIMUM 1.50 AMP BREAKERS PER EACH SERVICE (TRAFFIC SIGNAL, LUMINAIRE, AND ITS) IF ITS EQUIPMENT IS INSTALLED ON PROJECT).
 13. A DISCONNECT SHALL BE INSTALLED AT THE SERVICE POLE. WIRES FROM POWER COMPANY SHALL BE BLACK FOR LINE (HOT) AND WHITE FOR NEUTRAL.
 14. PHOTO CELL SHALL BE REQUIRED IF THE PROJECT WILL INSTALL LUMINAIRES AND/OR ILLUMINATED STREET NAME SIGNS.
 15. THE SERVING UTILITY SHALL BE CONSULTED FOR REQUIREMENTS BEFORE ORDERING ON INSTALLING EQUIPMENT.
 16. POWER SERVICE PEDESTAL, AS SPECIFIED IN THE PROJECT PLANS, WILL BE MEASURED AS A UNIT PER EACH.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
POWER SERVICE PEDESTAL	
PROJECT NO.:	PROJ. NO.:
COUNTY:	COUNTY:
FILE NAME: Final TSDA 3.6.2019.dgn	DATE: 01/25/2019
DESIGN TEAM:	DESIGN TEAM:
DATE:	DATE:
BY:	BY:
CHECKED:	CHECKED:
DATE:	DATE:
BY:	BY:
CHECKED:	CHECKED:
DATE:	DATE:
BY:	BY:
CHECKED:	CHECKED:
DATE:	DATE:



16" COMMERCIAL PEDESTAL (EXPOSED METER) NOT TO SCALE

RECOMMENDED MOUNTING BASE ENCLOSED IN CONCRETE - NOT TO SCALE

OPTIONAL MOUNTING NO BASE, MOUNT DIRECTLY ON FOUNDATION - NOT TO SCALE

STATE PROJECT NO. MISS.

GENERAL NOTES:
 1. VIDEO DETECTION (VD) WILL PROVIDE PRESENCE OR PULSE DETECTION OF VEHICLES, BICYCLES, AND PEDESTRIANS FOR TRAFFIC SIGNAL CONTROLLER INPUTS. THERE ARE TWO VARIATIONS OF VIDEO DETECTION: (1) VIDEO DETECTION PROCESSOR, TYPE 1B A SINGLE INTEGRATED CAMERA WITH VIDEO DETECTION PROCESSOR. THE WORK SHALL CONSIST OF PROVIDING ALL LABOR, MATERIALS, EQUIPMENT, AND TESTING FOR VIDEO DETECTION EQUIPMENT, COMPLETE AND READY FOR SERVICE.
 2. VIDEO VEHICLE DETECTION (VVD) WILL PROVIDE PRESENCE OR PULSE DETECTION OF VEHICLES, BICYCLES, AND PEDESTRIANS FOR TRAFFIC SIGNAL CONTROLLER INPUTS. TYPE 2 VIDEO VEHICLE DETECTION SHALL BE DESIGNED TO BE SPAN WIRE MOUNTED. THE WORK SHALL CONSIST OF PROVIDING ALL LABOR, MATERIALS, EQUIPMENT, AND TESTING FOR VIDEO DETECTION EQUIPMENT, COMPLETE AND READY FOR SERVICE.
 3. THE MULTI-SENSOR VEHICLE DETECTION (MSVD) WILL PROVIDE DETECTION OF VEHICLES ON A ROADWAY USING A MULTI-SENSOR DETECTION FOR TRAFFIC SIGNAL CONTROLLER INPUTS. THE MULTI-SENSOR SHALL UTILIZE TWO (2) DIFFERENT SENSORS OF DIFFERENT TECHNOLOGIES TO DETECT VEHICLES. THE MODULE SHALL PROCESS INFORMATION FROM BOTH VIDEO IMAGING AND RADAR SENSORS SIMULTANEOUSLY IN REAL-TIME. THE WORK SHALL CONSIST OF PROVIDING ALL LABOR, MATERIALS, EQUIPMENT, AND TESTING FOR VIDEO DETECTION EQUIPMENT, COMPLETE AND READY FOR SERVICE.
 4. INSTALL VIDEO DETECTION PROCESSOR UNIT(S) INSIDE CONTROLLER CABINET UNLESS OTHERWISE NOTED ON PLANS.
 5. AIM THE CAMERA SO THE HORIZON IS NOT VISIBLE IN THE FIELD OF VIEW.
 6. INSURE WATER-TIGHT CABLE ENTRY AND EXIT POINTS FOR CONNECTIONS.
 7. CONTRACTOR TO USE MANUFACTURERS SUPPLIED OR APPROVED CABLE, CONNECTIONS AND MOUNTING HARDWARE.
 8. DETECTION SUPPLIER TO ASSIST CONTRACTOR WITH IDENTIFYING MOUNTING POSITION (LOCATION ON ARM, MOUNTING HEIGHT, ETC.).
 9. POWER AND VIDEO / MULTI-SENSOR CABLE PROVIDED SHALL BE INSTALLED IN CONFORMANCE WITH MANUFACTURER'S ORIGINAL VIDEO DETECTION PERFORMANCE. THE POWER AND VIDEO / MULTI-SENSOR CABLE MAY BE INSTALLED UNDER THE SAME OUTER JACKET. THE CABLES WILL BE MEASURED BY THE LINEAR FOOT, MEASURED HORIZONTALLY ALONG THE CONDUIT. THE SENSER CABLE OR MUST RUN AND VERTICALLY ALONG THE POLE.
 10. SURGE PROTECTION DEVICES SHALL BE PROVIDED FOR ALL NETWORK AND VIDEO DETECTION DEVICES AS RECOMMENDED BY THE MANUFACTURER.
 11. ALL DETECTION UNITS SHALL BE NETWORKABLE DEVICES AND BE ON THE MDOT NETWORK IF NOTED ON PLANS.

48" TO 74" EXTENSION BRACKET HORIZONTAL OR VERTICAL MOUNT

USE MOUNTING BRACKET ADAPTOR

CABLE LENGTHS AVAILABLE FOR 4" THROUGH 1/2" BANDING MAY BE USED

NOTE: TYPICAL TUBE LENGTH IS 74", BUT ARE AVAILABLE UP TO 15'.

VIDEO DETECTION EXTENSION BRACKET
NOT TO SCALE

VERTICAL SURFACE MOUNTING BRACKET

HORIZONTAL MOUNTING BRACKET
NOT TO SCALE

TYPICAL CAMERA MOUNTING BRACKETS
NOT TO SCALE

VIDEO DETECTION MOUNT (MAST ARM)
NOT TO SCALE

NOTE: TYPICAL BEST ALIGNMENT FOR SIGNAL MAST ARM INSTALLATION IS LINING UP THE CAMERA IN LINE WITH THE LANE LINE BETWEEN THE LEFT TURN AND THROUGH APPROACH LANES FOR NON 3 LANE APPROACH LANES.

VIDEO DETECTION CAMERA

EXTENSION BRACKET (74" TYPICAL)

YIELD SIGN ON FLASHING YELLOW ARROW

SENSOR MOUNTING PLATE

STAINLESS STEEL CLAMPS

MULTI-SENSOR DETECTOR

MULTI-SENSOR DETECTION MOUNT (MAST ARM)
NOT TO SCALE

NOTE: TYPICAL BEST ALIGNMENT FOR SIGNAL MAST ARM INSTALLATION IS LINING UP THE MULTI-SENSOR CENTERED BETWEEN THE LANE LINE BETWEEN THROUGH AND LEFT TURN APPROACH LANES FOR 3 LANE APPROACH OR CENTERING TOTAL APPROACH LANES FOR NON 3 LANE APPROACH LANES.

VIDEO DETECTION SYSTEM CAMERA

MULTI-SENSOR DETECTION SYSTEM UNIT

TYPICAL INTERSECTION LAYOUT
NOT TO SCALE

VIDEO DETECTION SYSTEM CAMERA

MULTI-SENSOR DETECTION SYSTEM UNIT

WIDEN STREET PHASES 3, 4, 5, 6

MAJOR STREET PHASES 1, 2, 5 or 6

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
VIDEO / MULTI-SENSOR DETECTION FOR TRAFFIC SIGNALS	
PROJ. NO. :	WORKING NUMBER
COUNTY :	SHEET NUMBER
FILE NAME: E:\1001_1505_3_16_2019_400	DATE: 03-16-2019
DESIGNER: TSC	DATE: 03-16-2019

STATE PROJECT NO. MISS.

SIGN LEGEND

WORKING NUMBER
SHEET NUMBER

GENERAL NOTES:

- ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY. ANY ADDITIONAL SIGNS SHOULD BE INCLUDED UNDER PAY ITEM 618-A, MAINTENANCE OF TRAFFIC.
- POST MOUNTED SIGNS SHALL HAVE A 7' MINIMUM MOUNTING HEIGHT.
- PAYMENT FOR ALL SIGNS, CONES, DRUMS, CONCRETE BARRIERS, STEEL PLATES AND TRAFFIC CONTROL PLANS SHALL BE INCLUDED UNDER PAY ITEM 618-A, MAINTENANCE OF TRAFFIC.
- APPROACH SIDE TRAFFIC CONTROL TO BE USED WHEN WORK OCCURS ON THE APPROACH SIDE OF A DIVIDED HIGHWAY. TRAFFIC CONTROL IS NOT NEEDED WHEN WORK IS CONFINED TO THE APPROACH SIDE ONLY.
- FOR A DIVIDED HIGHWAY SITUATION, A SECOND SET OF ADVANCE WARNING SIGNS SHALL BE ERECTED IN MEDIAN AREA (8' MIN. MEDIAN WIDTH REQUIRED).

LEGEND

DRUMS (30" MAXIMUM SPACING) - CONES SHALL BE NARROW PROFILE WITH A MINIMUM HEIGHT OF 28 INCHES AND A MINIMUM WEIGHT OF TEN (10) POUNDS. CONES SHALL BE NARROW PROFILE WITH A MINIMUM HEIGHT OF 28 INCHES AND A MINIMUM WEIGHT OF FIFTEEN (15) POUNDS. ALL CONES SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.

SIGNS - SEE SIGN LEGEND MIN. SIZE 48" X 48", BLACK ON ORANGE BACKGROUND

PLATES WITH TABLE 18" STOPSLOW PADDLES, ACCEPTED AS PROPER TRAFFIC CONTROL DEVICES SHALL BE USED. HAND HELD FLAGS SHALL NOT BE USED FOR FLAGGING OPERATION.

M.P.H.	FEET	BUFFER	TAPER LENGTH (Feet)
20	15		25
30	30		50
40	45		75
50	60		100
60	75		125
70	90		150
80	105		175
90	120		200
100	135		225
110	150		250
120	165		275
130	180		300
140	195		325
150	210		350
160	225		375
170	240		400
180	255		425
190	270		450
200	285		475
210	300		500
220	315		525
230	330		550
240	345		575
250	360		600
260	375		625
270	390		650
280	405		675
290	420		700
300	435		725
310	450		750
320	465		775
330	480		800
340	495		825
350	510		850
360	525		875
370	540		900
380	555		925
390	570		950
400	585		975
410	600		1000
420	615		1025
430	630		1050
440	645		1075
450	660		1100
460	675		1125
470	690		1150
480	705		1175
490	720		1200
500	735		1225
510	750		1250
520	765		1275
530	780		1300
540	795		1325
550	810		1350
560	825		1375
570	840		1400
580	855		1425
590	870		1450
600	885		1475
610	900		1500
620	915		1525
630	930		1550
640	945		1575
650	960		1600
660	975		1625
670	990		1650
680	1005		1675
690	1020		1700
700	1035		1725
710	1050		1750
720	1065		1775
730	1080		1800
740	1095		1825
750	1110		1850
760	1125		1875
770	1140		1900
780	1155		1925
790	1170		1950
800	1185		1975
810	1200		2000
820	1215		2025
830	1230		2050
840	1245		2075
850	1260		2100
860	1275		2125
870	1290		2150
880	1305		2175
890	1320		2200
900	1335		2225
910	1350		2250
920	1365		2275
930	1380		2300
940	1395		2325
950	1410		2350
960	1425		2375
970	1440		2400
980	1455		2425
990	1470		2450
1000	1485		2475

WORK AREA

BUFFER AREA

CONSIDERED MINIMUM DISTANCE ENGINEERS TO DETERMINE APPROPRIATE SPACING IN THE FIELD

TRAFFIC CONTROL PLAN AHEAD (TYPICAL SIGNAL INSTALLATION)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

PROJECT NO. 3-1.6.2019.0001

COUNTY: OKALA

FILENAME: E:\road\1903\3-1.6.2019.0001.dwg

DATE: 03/03/2019

SCALE: 1/8" = 1'-0"

DATE: 03/03/2019

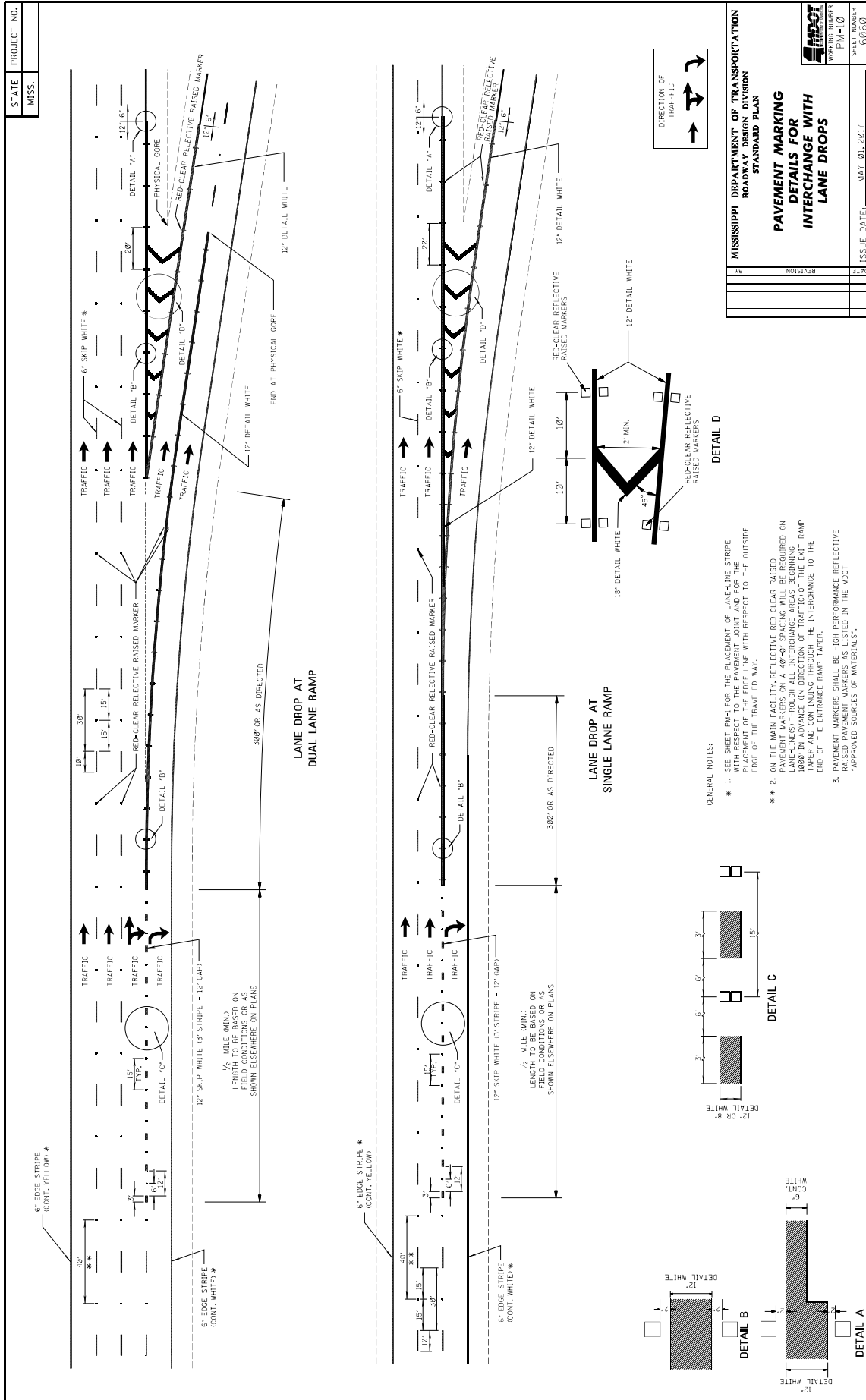
SCALE: 1/8" = 1'-0"

DRUM PLACEMENT ON LOW SHOULDERS OR WIDENING

CONTRACTOR SHALL PLACE PLASTIC DRUMS ADJACENT TO ROADWAY IN AREAS WHERE THE WIDENING HAS NOT BEEN CONSTRUCTED TO WITHIN THE CURB AND GUTTER. DRUMS TO BE PLACED AS SHOWN IN DETAILS, LEFT FOR NIGHT OPERATION OR SUSPENSIONS OF WORK. COST TO BE ABSORBED UNDER PAY ITEM 618-A.

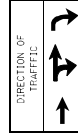
TRAFFIC CONE

CONES SHALL BE NARROW PROFILE WITH A MINIMUM HEIGHT OF 28 INCHES AND A MINIMUM WEIGHT OF TEN (10) POUNDS. CONES SHALL BE NARROW PROFILE WITH A MINIMUM HEIGHT OF 28 INCHES AND A MINIMUM WEIGHT OF FIFTEEN (15) POUNDS. ALL CONES SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.



MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
ROADWAY DESIGN DIVISION	
STANDARD PLAN	
REVISION	DATE

PAVEMENT MARKING
DETAILS FOR
INTERCHANGE WITH
LANE DROPS
 P.W-10
 SHEET NUMBER
 000260
 ISSUE DATE: MAY 01, 2017



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3282

CODE: (SP)

DATE: 4/20/2021

SUBJECT: COOPERATION BETWEEN CONTRACTORS

PROJECT: NH-0003-01(202)/108234301 - Jackson County

The Bidder's Attention is hereby call to Subsection 105.07, Cooperation Between Contractors, of the 2017 Edition of the Mississippi Standard Specification for Road and Bridge Construction.

Federal Aid Project No. BR-9385-00(017) / 107705301000 in Jackson County intersects this project at SR 609. The Contractors shall cooperate with each other and with the Department during construction of these projects.

The successful bidder shall familiarize himself with the existing contracts referred to above and comply with the provisions of Subsection 105.07, Cooperation Between Contractors.

"General Decision Number: MS20210135 01/01/2021

Superseded General Decision Number: MS20200135

State: Mississippi

Construction Type: Highway

County: Jackson County in Mississippi.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021

SUMS2010-058 08/04/2014

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 14.63	0.00
CEMENT MASON/CONCRETE FINISHER...	\$ 14.04	0.00
ELECTRICIAN.....	\$ 25.57	6.79
HIGHWAY/PARKING LOT STRIPING: Truck Driver (Line Striping Truck).....	\$ 14.75	0.00
INSTALLER - SIGN.....	\$ 12.75	0.00

INSTALLER: Guardrail.....	\$ 11.81	0.00
IRONWORKER, REINFORCING.....	\$ 15.50	0.00
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 11.25	0.00
LABORER: Common or General.....	\$ 10.90	0.00
LABORER: Flagger.....	\$ 11.42	0.00
LABORER: Grade Checker.....	\$ 16.13	0.00
LABORER: Landscape.....	\$ 11.23	0.00
LABORER: Luteman.....	\$ 12.88	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 12.70	0.00
LABORER: Pipelayer.....	\$ 14.88	0.00
LABORER: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	\$ 13.19	0.00
OPERATOR: Asphalt Spreader.....	\$ 14.71	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 15.88	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 11.86	0.00
OPERATOR: Broom/Sweeper.....	\$ 13.62	0.00
OPERATOR: Bulldozer.....	\$ 15.94	0.00
OPERATOR: Concrete Saw.....	\$ 15.50	0.00
OPERATOR: Crane.....	\$ 15.89	0.00
OPERATOR: Distributor.....	\$ 14.47	0.00
OPERATOR: Grader/Blade.....	\$ 16.95	0.00
OPERATOR: Loader.....	\$ 15.99	0.00
OPERATOR: Mechanic.....	\$ 18.44	0.00
OPERATOR: Milling Machine.....	\$ 16.04	0.00
OPERATOR: Oiler.....	\$ 12.22	0.00
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 13.60	0.00
OPERATOR: Roller (All Types)....	\$ 14.32	0.00
OPERATOR: Scraper.....	\$ 14.00	0.00
OPERATOR: Tractor.....	\$ 13.88	0.00
TRUCK DRIVER: Flatbed Truck.....	\$ 14.72	0.00

TRUCK DRIVER: Lowboy Truck.....	\$ 13.01	0.00
TRUCK DRIVER: Mechanic.....	\$ 12.31	0.00
TRUCK DRIVER: Water Truck.....	\$ 17.08	0.00
TRUCK DRIVER: Dump Truck (All Types).....	\$ 13.68	0.00
TRUCK DRIVER: Semi/Trailer Truck.....	\$ 14.36	0.00

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

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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 a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 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. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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.

=====

END OF GENERAL DECISION

..

SUPPLEMENT TO FORM FHWA-1273

DATE: 12/17/2018

SUBJECT: **Federal Contract Provisions for Subcontracts and Cargo Preference Act**

Federal 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 the subcontract. The federal contract provisions (FHWA-1273, SUPPLEMENT TO FORM FHWA-1273, NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246), DAVIS-BACON AND RELATED ACT PROVISIONS (WAGE RATES)) must be physically incorporated as part of the subcontract. A completed Mississippi Department of Transportation Form CAD-521 and Form CAD-725 must be attached to the CAD-720.

Cargo Preference Act

The Contractor is hereby advised of the requirements set forth in the following Attachment (Title 46 - Shipping) as it pertains to the implementation of Cargo Preference Act (CPA) requirements in the Federal-aid Highway Program.

By signing this contract, the Contractor agrees to conform to the requirements of the CPA.

Attachment

Title 46- Shipping

Volume: 8

Date: 2014-10-01

Original Date: 2014-10-01

Title: Section 381.7 - Federal Grant, Guaranty, Loan and Advance at Funds Agreements.

Context: Title 46- Shipping. CHAPTER II- MARITIME ADMINISTRATION, DEPARTMENT OF TRANSPORTATION. SUBCHAPTER J - MISCELLANEOUS. PART 381 - CARGO PREFERENCE-U.S.- FLAG VESSELS.

§ 381.7 Federal Grant, Guaranty, Loan and Advance of Funds Agreements.

In order to insure a fair and reasonable participation by privately owned United States-flag commercial vessels in transporting cargoes which are subject to the Cargo Preference Act of 1954 and which are generated by U.S. Government Grant, Guaranty, Loan and/or Advance of Funds Programs, the head of each affected department or agency shall require appropriate clauses to be inserted in those Grant, Guaranty, Loan and/or Advance of Funds Agreements and all third party contracts executed between the borrower/grantee and other parties, where the possibility exists for ocean transportation of items procured, contracted for or otherwise obtained by or on behalf of the grantee, borrower, or any of their contractors or subcontractors. The clauses required by this part shall provide that at least 50 percent of the freight revenue and tonnage of cargo generated by the U.S. Government Grant, Guaranty, Loan or Advance of Funds be transported on privately owned United States-flag commercial vessels. These clauses shall also require that all parties provide to the Maritime Administration the necessary shipment information as set forth in § 381.3. A copy of the appropriate clauses required by this part shall be submitted by each affected agency or department to the Secretary, Maritime Administration, for approval no later than 30 days after the effective date of this part. The following are suggested acceptable clauses with respect to the use of United States-flag vessels to be incorporated in the Grant, Guaranty, Loan and/or Advance of Funds Agreements as well as contracts and subcontracts resulting therefrom:

(a) *Agreement Clauses.* "Use of United States-flag vessels:

"(1) Pursuant to Pub. L 664 (43 U.S.C. 1241(b)) at least 50 percent of any equipment, materials or commodities procured, contracted for or otherwise obtained with funds granted, guaranteed, loaned, or advanced by the U.S. Government under this agreement, and which may be transported by ocean vessel, shall be transported on privately owned United States-flag commercial vessels, if available.

"(2) Within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (a)(1) of this section shall be furnished to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590."

(b) *Contractor and Subcontractor Clauses.* "Use of United States-flag vessels: The contractor agrees --

"(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

"(2) To furnish within 20 days following the date of loading for shipments originating within the United

States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

"(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

(Reorganization Plans No.21 of 1950(64 Stat. 1273) and No. 7 of 1961 (75 Stat. 840) as amended by Pub. L 91.469 (84 Stat 1036) and Department of Commerce Organization Order 10-8 (38 FR 19707, July 23, 1973)) (42 FR 57126, Nov. 1, 1977]

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

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

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.

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

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.

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 contractor). "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 41 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

(12/04/2018)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-102-2

CODE: (IS)

DATE: 11/22/2017

SUBJECT: **Bidding Requirements and Conditions**

Section 102, Bidding Requirements and Conditions, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-102.01--Prequalification of Bidders. Delete the last sentence of the third paragraph of Subsection 102.01 on page 13, and substitute the following.

The Bidder's Certificate of Responsibility number must be on file with the Department's Contract Administration Division prior to request for permission to bid.

907-102.02--Contents of Proposal Forms. Delete the fourth paragraph in Subsection 102.02 on page 13, and substitute the following.

Prospective bidders must complete an online request for permission to be eligible to bid a project. Upon approval, the bidder will be authorized to submit a bid electronically using Bid Express at <http://bidx.com>.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-108-4

CODE: (SP)

DATE: 10/07/2020

SUBJECT: Subletting of Contract

Section 108, Prosecution and Progress, of the 2017 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. Delete the third sentence of the tenth paragraph of Subsection 108.01.1 on the bottom of page 72.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-109-3

CODE: (SP)

DATE: 02/23/2021

SUBJECT: Measurement and Payment

Section 109, Measurement and Payment, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-109.01--Measurement of Quantities. Delete the sixth full paragraph of Subsection 109.01 on page 88, and substitute the following.

If appropriate based on the specific circumstances of the project, the Contractor may request that material specified to be measured by the cubic yard or ton be converted to the other measure. The Contractor must submit this request to the Engineer. The Engineer will provide an approval or denial in writing. The decision is in the sole discretion of the Engineer. If approved, 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 Work.

907-109.04.1--Supplemental Agreement. Delete the second paragraph of Subsection 109.04.1 on page 90.

907-109.06--Partial Payment.

907-109.06.2--Advancement on Materials. Delete the next to last paragraph of Subsection 109.06.2 on page 95, and substitute the following.

Materials for which an advanced payment has been allowed must be paid for by the Contractor within 30 days of the estimate on which the advanced payment was first allowed and proof of said payment must be verified by the supplier. If proof of payment is not furnished within the allowable 30 days, the advanced payment will be deducted on subsequent current estimates until such time that proof of payment is furnished.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-603-2

CODE: (SP)

DATE: 01/17/2017

SUBJECT: Cured-In-Place Pipe

Section 603, Culverts and Storm Drains, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as modified by this special provision, is applicable to Cured-In-Place Pipe Only.

907-603.01--Description. This work shall consist of the installation of a resin-impregnated flexible tube, which is formed to the original conduit by use of a hydrostatic head. The resin is cured using hot water under hydrostatic pressure within the tube. The Cured-In-Place Pipe (CIPP) will be continuous and tight fitting. This work shall meet the requirements of ASTM Designations: F 1216, F 1743 and D 790, as modified by this specification.

The Contractor is advised that the liquid flowing through the pipe is storm water.

907-603.01.1--Qualification of Contractor. The person(s) or firm performing the work described in this specification shall be knowledgeable of trenchless rehabilitation products and installation procedures in accordance with the following minimum experience requirements:

The rehabilitation product must have a minimum of 1,000,000 linear feet or 4,000 manhole-to-manhole line sections of successful drainage collection system installation. In addition, at least 50,000 linear feet of the product shall have been in successful service within the State for a minimum of five years.

The manufacturer of the rehabilitation product must provide third party test results supporting the long term performance and structural strength of the product and such data shall be satisfactory to the State. Test samples shall be prepared so as to simulate installation methods and trauma of the product. No product will be approved without independent third party testing verification.

The person(s) or firm performing the work must have had at least five (5) years of active experience in the commercial installation of the product. In addition, the person(s) or firm must have successfully installed at least 50,000 feet of the product in drainage collection systems.

Both the rehabilitation manufacturing and installation processes shall operate under a quality management system which is third-party certified to ISO 9000 or other internationally recognized organization standards. Proof of certification shall be required.

At the preconstruction conference or prior to starting CIPP installation, the Contractor shall furnish evidence of the following requirements.

- (A) A signed statement from the person(s) or firm performing the work that the project site has been visited, and that the drainage system has been inspected.
- (B) Ability of the Contractor/firm responsible for installation of the CIPP to complete a project of this type. This is to be supported by a list containing a detailed description of the requirements listed above. This list shall include project locations and names/phone numbers of the project owner's representatives who can verify the Contractor/firm's participation on the project, and the names of the person(s) who were in charge of the Contractor's operations.

907-603.02--Materials.

907-603.02.1--Tube. The sewn tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM Designation: F 1216 or F 1743, Section 5. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.

The wet out tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the Design thickness.

The tube shall be sewn to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.

The outside layer of the tube, before wet out, shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate monitoring of resin saturation during the resin impregnation (wet out) procedure.

The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.

The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.

Seams in the tube shall be stronger than the non-seamed felt.

The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed five feet. Such markings shall include the Manufacturers name or identifying symbol.

907-603.02.2--Resin. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured within the tube composite meets the

requirements of ASTM Designations: F1216 and F 1743, the physical properties herein, and those which are to be utilized in the Design of the CIPP for this project. The resin shall produce CIPP which will comply with the structural and chemical resistance requirements of this specification.

907-603.02.3--Design Requirements. The CIPP shall be designed as per ASTM Designation: F 1216, Appendix X.1. The CIPP design shall assume no bonding to the original pipe wall.

The Contractor must have performed long-term testing for flexural creep of the CIPP pipe material. Such testing results are to be used to determine the Long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (Tube and Resin) and general workmanship of the installation and curing. A percentage of the instantaneous flexural modulus value, as measured by ASTM Designation: D 790, will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Values in excess of 50% will not be applied unless substantiated by qualified third party test data. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in Design.

The Enhancement Factor, K, to be used in 'Partially Deteriorated' Design conditions shall be assigned a value of seven (7). Application of Enhancement Factors (K) in excess of seven shall be substantiated through independent test data.

The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occur during testing of field samples, new samples will be cut from the work. Any reoccurrence may cause rejection of the work.

The cured CIPP pipe material shall conform to the following structural properties.

MINIMUM PHYSICAL PROPERTIES

<u>Property</u>	<u>Test Method</u>	<u>Cured Composite *</u>	<u>Cured Composite **</u>
Modulus of Elasticity	ASTM D 790 (short term)	250,000 psi	400,000 psi
Flexural Stress	ASTM D 790	4,000 psi	4,500 psi

* minimum per ASTM Designation: F 1216

** 400,000 psi Resin

The required structural CIPP wall thickness shall be based as a minimum, on the physical properties above and in accordance with the Design Equations in the Appendix of ASTM Designation: F 1216, and the following design parameters:

Design Safety Factor	2.0
Retention Factor for Long-Term Flexural Modulus to be used in Design <i>as determined by Long-Term tests</i>	assume 70%
Ovality	vitrified clay - assume 2%
Enhancement Factor, k	Subsection 907-603.02.3
Groundwater Depth, above invert of the existing pipe	0.0 feet
Soil Depth, above crown of the existing pipe	0 to 6 feet
Soil Modulus	Assume sand - 3,000 PSI
Soil Density	assume 120 lbs. per ft ³
Live Load	H20 Highway

Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

907-603.02.4--Testing Requirements. The CIPP shall meet the chemical resistance requirements of ASTM Designation: F 1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.

Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

The Contractor may be required to submit test results from field installations of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified have been achieved in previous field applications. Samples for this project shall be made and tested as described in Subsection 907-603.03.3.

The Contractor shall furnish the Engineer with three (3) copies of the manufacturer's certification stating that the materials used meets the requirements of this specifications.

907-603.02.5--Bypassing. The Contractor, when required, shall provide for the flow around the pipe designated for repair. Plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system shall make the bypass. The pump(s) and bypass line(s) shall be of adequate capacity to accommodate the flow.

907-603.03--Construction Requirements.

907-603.03.1--Installation.

907-603.03.1.1--Cleaning. All pipe which is scheduled to be lined-in-place shall be cleaned prior to lining.

Lines designated for cleaning shall be scheduled with the Engineer. Daily logs shall be maintained to record the location of the lines cleaned, the lengths of the lines cleaned, the volume and type of

debris removed from the line, and other pertinent information to assist the Engineer with regard to the condition of the line.

Cleaning shall generally be accomplished from the upstream manhole. If an obstruction prevents cleaning from the upstream manhole, the Contractor shall attempt to remove the obstructions from the downstream manhole. If obstructions prevent the proper cleaning, the Engineer may order a point repair as hereinafter specified.

Acceptable cleaning method are:

Bucket Machine: Rod the line with power driven steel rods of sufficient length, gauge and augers to loosen all solids and materials. Remove the loosened solids by means of a clam-shell bucket or other acceptable means dragged through the line. Brush the line with mechanically driven power brushes. Flush the line with clean water.

Hydraulic Cleaning: High velocity clean water shall be pumped through the line at 800 to 1000 psi. The hydraulic cleaning shall be accomplished with self-propelled nozzles specifically designed to clean and flush the lines. The cleaning shall be accomplished with as many passes as necessary to properly clean the system.

The Contractor shall be responsible for removing and disposing of all debris collected during the cleaning operation in accordance to the applicable solid waste disposal regulations in the State of Mississippi.

The Contractor shall have equipment available to remove roots which have penetrated the pipe.

The selection of the equipment necessary to perform the cleaning operation shall be the sole responsibility of the Contractor. If the equipment fails to properly clean the pipe, the Contractor shall replace the equipment at his own expense.

907-603.03.1.2--Video Inspection. All pipe which is scheduled to be lined-in-place shall be televised after pipe cleaning but prior to lining.

Video inspection shall be performed by experienced personnel trained in locating breaks, obstacles and service connections using closed-circuit color television camera pulled through the selected line. The Contractor's inspector shall view the video during the inspection and shall verbally identify the sources and estimated quantity and location of infiltration into the system.

A written video report log and video CD shall be furnished on each line inspected. The observations are to be recorded on a video inspection report form. This log shall indicate the internal condition of the line, the deviations in line and grade, abnormal conditions of the pipe barrel and joints, and the location and quantity of each source of infiltration and inflow. The distance from the beginning manhole shall be noted for each observation made on the report form. Photographs of each defect shall be made from the video monitor for further study and justification for rehabilitation.

907-603.03.2--Installation. CIPP installation shall be in accordance with ASTM F1216, Section 7, or ASTM F1743, Section 6, with the following modifications.

907-603.03.2.1--Resin Impregnation. The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the potential loss of resin during installation through cracks and irregularities in the original pipe wall.

The Contractor shall designate a location where the tube will be impregnated with resin using distribution rollers and vacuum to thoroughly saturate the tube felt fiber prior to installation. The Contractor shall allow the Engineer to inspect the materials and impregnation procedure.

907-603.03.2.2--Tube Insertion. The tube shall inserted through an existing manhole or other approved access point.

The tube can be installed in the pipe using either inversion or a pull-in method as defined within the relevant ASTM standards and fully extend to the next designated manhole or termination point.

If pulled into place, a power winch or its equivalent should be utilized and care should be exercised not to damage the tube as a result of pull-in friction.

Temperature gauges shall be placed between the tube and the host pipe's invert position to monitor the temperatures during the cure cycle.

Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam pressure in accordance with the Resin Manufacturer's recommended cure schedule.

A cool-down process shall be conducted that complies with the Resin Manufacturer's specification.

907-603.03.2.3--Sealing at Manholes. If the CIPP fails to make a tight seal at a manhole, the Contractor shall apply a seal at that point. The seal will be of a material compatible with the CIPP material.

907-603.03.2.4--Reinstatement Of Connections. It is the intent of these specifications that lateral connections be re-opened without excavation, utilizing a remotely controlled cutting device, monitored by a closed circuit television.

Contractor shall certify a minimum of two complete functional cutters plus key spare components are on the job site before each installation or are in the immediate area of the jobsite and can be quickly obtained.

Unless otherwise directed by Engineer, all laterals will be reinstated. No additional payment will be made for cutting or excavation for the purpose of reopening connections. The Contractor will be responsible for all costs and liability associated with such cutting/excavation and restoration

work.

907-603.03.3--Field Control. CIPP samples shall be prepared for each installation designated by the Engineer or approximately 20 percent of the project's installations. Pipe physical properties will be tested in accordance with ASTM F1216 or ASTM F1743, Section 8, using either method. The flexural properties must meet or exceed the values listed in this specification, Table 1 of ASTM F1216 or the values submitted to the Engineer for this project's CIPP wall design, whichever is greater.

Wall thickness of samples shall be determined as described in paragraph 8.1.6 of ASTM F1743. The minimum wall thickness at any point shall not be less than 87.5 percent of the submitted minimum design wall thickness based on the design information provided in paragraph 1.4.3 of this specification.

Visual inspection of the CIPP shall be in accordance with ASTM F1743, Section 8.6.

907-603.03.4--Clean-Up. The Contractor shall maintain the project site in a reasonable neat and orderly condition, free from accumulations of waste materials and rubbish during the entire CIPP installation period. Crates, cartons, trash, and flammable waste materials shall be removed from the work areas by the end of each working day. Trash or debris shall not be disposed of by burning on project site.

Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

907-603.04--Method of Measurement. Cured-in-place pipe of the sizes designated, completed and accepted, will be measured by the linear foot.

907-603.05--Basis of Payment. Cured-in-place pipe, measured as prescribed above, will be paid for at the contract unit price per linear foot, which shall be full compensation for all labor, tools, equipment, testing, design requirements, bypass construction, video inspection, lateral connections, and all other incidentals necessary to complete the work.

Payment will be made under:

907-603-D: ___ " Cured-In-Place Pipe - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-603-3

CODE: (SP)

DATE: 01/23/2018

SUBJECT: Video Pipe Inspection

Section 603, Culverts and Storm Drains, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby modified as follows.

907-603.01--Description. After the last paragraph of Subsection 603.01 on page 383, add the following.

This work also includes the video inspection of drainage systems.

After Subsection 603.03.9.3 on page 390, add the following.

907-603.03.10--Video Pipe Inspection. All drainage pipe involved in the work shall be video inspected to determine the condition of the pipe system before and after the work is performed, unless otherwise advised. The drainage system shall be video inspected by the Contractor in the presence of the Engineer or the Engineer's representative. A video recording for each line inspected shall be furnished to the Engineer. The line location (station number) and distance traversed by the camera shall be recorded on a standard compact disc (CD).

Video equipment used for inspecting the drainage system shall be capable of the following minimum requirements:

- (1) Providing color video inspection of the pipeline. The color camera must have a minimum 400-line horizontal resolution.
- (2) Video inspecting up to 300 linear feet of drainage pipe, by pushing, pull cabling, jetting or tractoring the camera through the line and recording the condition on video tape.
- (3) Equipped with a video monitor capable of allowing live viewing of the video inspection.
- (4) Displaying and recording on the video tape, the date, line identification, footage and type of pipe deficiency.
- (5) Recording the distance traversed by the camera to within 0.5 feet, allowing for overlapping of distances if a reversal is required to permit full-length inspection.

Any foreign materials that restricts the movement of the inspection equipment or impairs the quality of the video within the drainage system shall be flushed from the system. Flushing of the

drainage system will be by water jetting or other methods approved by the Engineer. Costs associated with flushing the system will not be made under separate payment. The system shall be re-inspected after flushing in the same manner as the initial inspection as described above. Re-inspection of the system shall be at no additional cost to the State.

907-603.04--Method of Measurement. After the last paragraph of Subsection 603.04 on page 390, add the following.

Video pipe inspection will be measured by the linear foot of drainage pipe inspected. The length to be paid will be the slope length of the pipe for each inspection.

907-603.05--Basis of Payment. After the second paragraph of Subsection 603.05 on page 390, add the following.

Video pipe inspection, measured as prescribed above, will be paid for at the contract unit price per linear foot of drainage pipe inspected, which price shall be full compensation for furnishing all labor, equipment, CDs, tools and incidentals necessary to complete the work.

After the last pay item listed on page 393, add the following.

VIDEO PIPE INSPECTION

907-603-V: Video Pipe Inspection, All Sizes - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

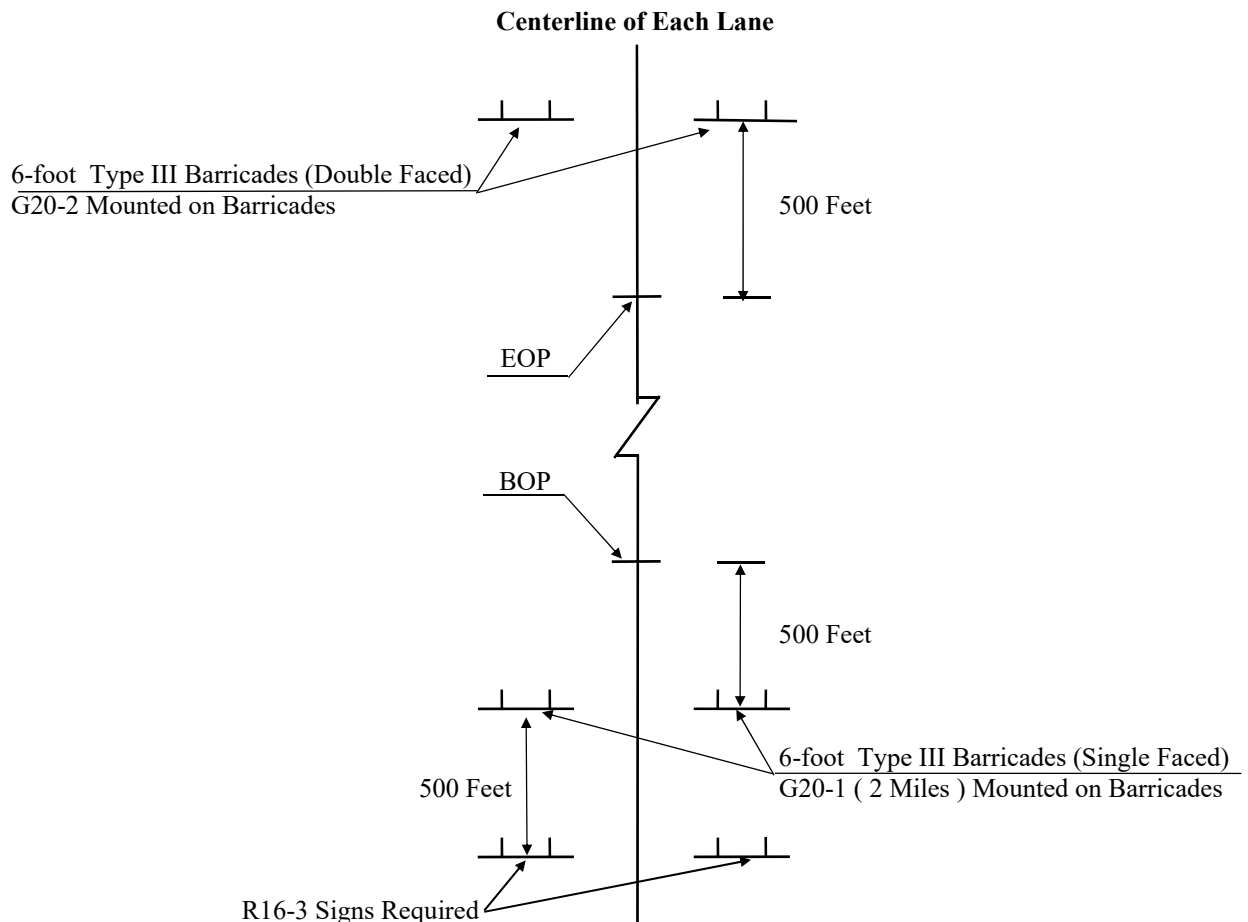
SUPPLEMENT TO SPECIAL PROVISION NO. 907-618-4

DATE: 03/30/2021

PROJECT: NH-0003-01(202) / 108234301 -- Jackson County

After the first paragraph of Subsection 907-618.01.2 on page 1, add the following.

Additional traffic control devices will be required as follows.

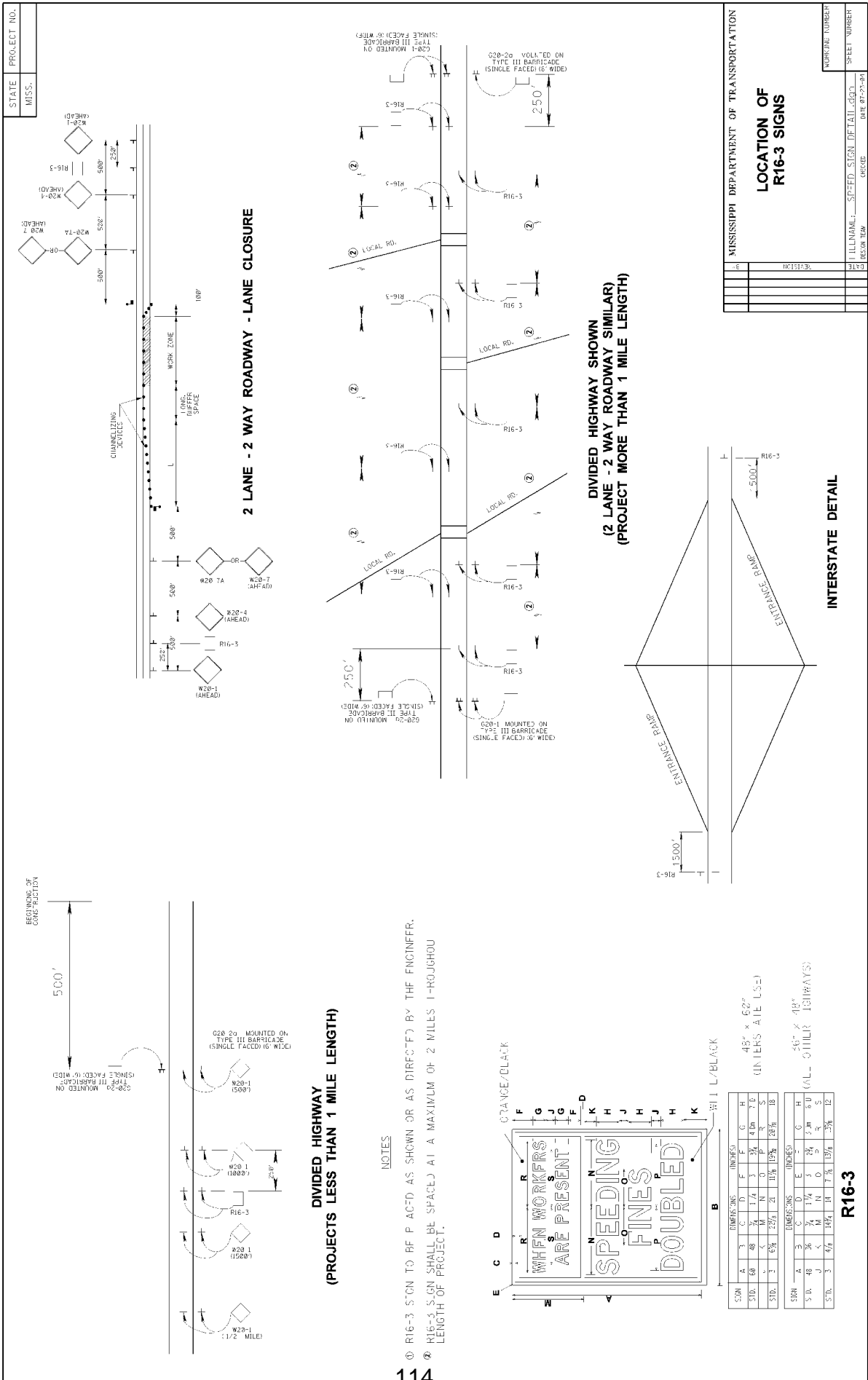


ADDITIONAL TRAFFIC CONTROL SIGNS REQUIRED:

- 14 - W20-1 "AHEAD" signs required. One (1) sign is required at each local road or street entering the project.
- 4 - R16-3 "SPEEDING FINES DOUBLED" signs required.

R16-3 signs shall be spaced in accordance with sheet titled "Location of R16-3 Signs".

All construction signs and barricades shown on this page shall be included in the bid price for Pay Item 618-A, Maintenance of Traffic. Fluorescent orange sheeting shall be used on all construction and traffic control signs except for R16-3 which shall be black legend and border on white background.



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-618-4

CODE: (SP)

DATE: 02/01/2018

SUBJECT: Additional Signing Requirements

Section 618, Maintenance of Traffic and Traffic Control Plan, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-618.01.2--Traffic Control Plan. At the end of Subsection 618.01.2 on page 441, add the following:

For compliance with the traffic control plan, the Contractor will be required to install and maintain **traffic control devices** at various locations throughout the project. Payment for these **devices** will be included in the price bid for pay item no. 618-A, Maintenance of Traffic per lump sum.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-624-1

CODE: (SP)

DATE: 01/17/2017

SUBJECT: Inverted Profile Thermoplastic Traffic Stripe

Section 907-624, Inverted Profile Thermoplastic Traffic Stripe, is hereby added to and made part of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

907-624.01--Description. Inverted profile thermoplastic pavement markings consists of furnishing materials and placing inverted profile thermoplastic pavement markings in reasonably close conformity with these specifications and the details shown on the plans or established.

Inverted profile thermoplastic pavement markings, high contract, shall consist of furnishing materials and placing inverted profile thermoplastic pavement markings over a black thermoplastic pavement marking in order to enhance the marking's visibility.

907-624.02--Materials.

907-624.02.1--General. The inverted profile thermoplastic marking material shall consist of an alkyd/maleic or hydrocarbon based formulation. The material shall be so manufactured as to be applied to the pavement in a molten form, with internal and surface application of glass spheres, and upon cooling to normal pavement temperature, shall produce an adherent, reflectorized pavement marking of specified thickness and width, capable of resisting deformation.

Materials shall be obtained from approved sources as listed on the Department's "List of Approved Sources" for Inverted Profile Thermoplastic Pavement Marking Materials. The material shall not scorch, break down, discolor, or deteriorate when held at the application temperature for four hours or when reheated four times to the application temperature. Temperature-vs-viscosity characteristics of the plastic material shall remain constant when reheated four times, and shall be the same from batch to batch.

The thermoplastic material shall be a product especially compounded for pavement markings. The pavement markings shall maintain their original dimension and shall not smear or spread under normal traffic at temperatures below 140°F. The markings shall have a uniform cross section. Pigment shall be evenly dispersed throughout its thickness. The exposed surface shall be free from tack and shall not be slippery when wet. The material shall not lift from pavement in freezing weather. Cold ductility of the material shall be such as to permit normal movement with the pavement surface without chipping or cracking.

Black thermoplastic compound for the placement of inverted profile thermoplastic pavement markings, high contract, shall consist of a hydrocarbon or alkyd/maleic based formulation.

The manufacturers of the thermoplastic compound, glass beads and epoxy primer sealer shall furnish to the Engineer three copies of certified test reports showing results of all tests specified herein and shall further certify that the materials meet all requirements. The Contractor shall provide the warranty as specified herein to the Engineer.

907-624.02.2--Inverted Profile Thermoplastic Material. The thermoplastic material shall consist of homogeneously mixed pigments, fillers, resins and glass beads, and shall be available in both white and yellow. The material shall be free from all skins, dirt, and foreign objects. Materials shall conform to AASHTO M 249 with the following modifications:

907-624.02.2.1--Intermixed Glass Beads. The thermoplastic material shall contain a minimum of 40 percent Class H glass beads by weight. Class H glass beads shall meet the requirements of ASTM D 1155, and shall be coated with an adhesion promoting coating which shall also provide moisture resistance as tested by AASHTO M 247, Section 4.4.2. Class H beads shall have a minimum of 70 percent true spheres and the +20 sieve shall be tested visually.

The gradation of the Class H beads shall meet the following:

<u>U. S. Standard Sieve</u>	<u>% Passing</u>
12	100
14	95 - 100
16	80 - 100
18	30 - 100
20	15 - 100
30	10 - 100
50	0 - 50
100	0 - 5

907-624.02.2.2--Binder Content. The binder content of the thermoplastic material shall be 19 percent minimum.

907-624.02.2.3--Titanium Dioxide. The titanium dioxide shall meet ASTM D 476, Type II, Rutile grade - 10 percent minimum titanium content.

907-624.02.2.4--Yellow Pigment. The yellow pigment for the yellow thermoplastic material shall be five (5) percent minimum.

907-624.02.2.5--Specific Gravity. The specific gravity of the thermoplastic pavement marking material shall not exceed 2.35.

907-624.02.2.6--Flow Characteristics.

907-624.02.2.6.1--Flowability. After heating the thermoplastic material for four (4) hours ±5 minutes at 425 ±3°F and testing flowability, the white thermoplastic shall have a maximum percent residue of 22 percent and the yellow thermoplastic shall have a maximum residue of 24 percent.

907-624.02.2.6.2--Flow Resistance. The material shall exhibit a maximum flow of 10%. The material's ability to form ribs on the markings shall be evaluated by casting a disc of material approximately 3.5 inches wide by 1.0 inch long by and 0.60 inch deep. After the material is cooled to ambient temperature, measure the exact height. The material shall then be stored at 190°F for four (4) hours. After the material is cooled to ambient temperature, re-measure the exact height and express the flow resistance as a flow percentage.

907-624.02.2.7--Reflectivity. The initial reflectance for the in-place marking shall have a minimum reflectance value of 450 mcd/ft² for white and 350 mcd/ft² for yellow, when measured with a MiroLux Ultra 30 retroreflectometer, or approved equal.

907-624.02.2.8--Wet Reflectivity. The initial reflectance for the in-place marking when wet shall have a minimum reflectance value of 200 mcd/ft² for white and 175 mcd/ft² for yellow, when measured with an approved retroreflectometer. The stripe shall be wetted utilizing a pump type sprayer for five (5) seconds. After 30 seconds, place the retroreflectometer on the stripe and measure the reflectance.

907-624.02.2.9--Inverted Profile. The thermoplastic pavement marking material shall be applied to have individual profiles having a minimum height of 0.140 inches with the recessed inverted profiles having a thickness of 0.025 to 0.050 inches. The profiles shall be well defined, spaced approximately one (1) inch apart, and not excessively run back together.

907-624.02.3--Black Pavement Marking Material for High Contrast Inverted Profile Pavement Markings.

907-624.02.3.1--General. In the molten state, the material shall not give off fumes that are toxic or otherwise injurious to persons or property. The manufacturer shall provide material safety data sheets for the product.

The temperature versus viscosity characteristic of the plastic material shall remain constant and the material shall not deteriorate in any manner during three reheating processes. There shall be no obvious change in color of the material as a result of up to three reheatings, or in maintaining the material at application temperature up to an aggregate time of four (4) hours, or from batch to batch. The maximum elapsed time after application at which normal traffic will leave no impression or imprint on the new stripe shall be 30 seconds when the air and road surface temperature is approximately 68 ±5°F. The applied stripe shall remain free from tack and shall not lift from the pavement under normal traffic conditions within a road temperature range of -20°F to 150°F. The stripe shall maintain its original dimensions and placement. Cold ductility of the material shall be such as to permit normal dimensional distortion as a result of tire impact within the temperature range specified.

The material shall provide a stripe that has a uniform thickness throughout its cross section.

907-624.02.3.2--Binder. The binder shall be hydrocarbon or alkyd/maleic based. The binder shall consist of a homogeneous mixture of pigment, fillers, resins, waxes and plasticizers. The total

binder content shall be well distributed throughout the compound. The binder shall be free from all foreign objects or ingredients that would cause bleeding, staining or discoloration. The binder shall be 19 percent minimum by weight of the thermoplastic compound.

907-624.02.3.3--Pigment. The pigment used for black pavement marking compound shall be as required and shall be uniformly distributed throughout the marking compound.

907-624.02.3.4--Filler. The filler to be incorporated with the resins shall be a white calcium carbonate, silica or any approved substitute.

907-624.02.3.5--Specific Gravity. The specific gravity of the marking compound shall not exceed 2.0.

907-624.02.3.6--Softening Point. After heating the marking compound for 4 hours \pm 5 minutes at $375 \pm 3^\circ\text{F}$ and testing in accordance with ASTM E 28, the material shall have a minimum softening point of 180°F as measured by the ring and ball method.

907-624.02.3.7--Tensile Bond Strength. After heating the marking compound for 4 hours \pm 5 minutes at $375 \pm 3^\circ\text{F}$, the tensile bond strength shall exceed 180 psi when tested in accordance with ASTM D 4806. The material shall be applied to unprimed, sandblasted Portland cement concrete block at a thickness of 0.0625-inch and at a temperature of $375 \pm 3^\circ\text{F}$. The test shall be conducted at room temperature.

907-624.02.3.8--Impact Resistance. After heating the marking compound for 4 hours \pm 5 minutes at $375 \pm 3^\circ\text{F}$, the impact resistance shall be a minimum of 50 inch-pounds minimum when tested in accordance with ASTM D 2794. No cracks or bond loss shall occur when a 0.0625-inch thick film drawdown is made at $375 \pm 3^\circ\text{F}$ on an unprimed sandblasted Portland cement concrete block. The sample is tested with a male indenter 5/8-inch and no female Die at room temperature.

907-624.02.3.9--Identification. Each package of material shall be stenciled with the manufacturer's name, the type of material and specification number, the month and year the material was packaged and lot number. The letters and numbers used in the stencils shall be a minimum of 1/2 inch in height.

907-624.02.3.10--Packaging. The material shall be packaged in suitable containers that will not adhere to the product during shipment and storage. The container of pavement marking material shall weigh approximately 50 lbs. Each container shall designate the color, type of resin, type of application and user information. The label shall warn the user that the material shall be heated in the range of 350° to 425°F .

907-624.02.3.11--Storage Life. The material shall meet the requirements of this specification for a period of one year. The material must also meet uniformly with no evidence of skins or unmelted particles for this one-year period. The manufacturer shall replace any material not meeting the above requirements.

907-624.02.3.12--Certifications. The material manufacturer shall furnish a certified copy of material test reports to the Engineer.

907-624.02.4--Drop-On Glass Beads. Drop-on glass beads shall be separated into two (2) classes, as follows:

907-624.02.4.1--Class G Glass Beads. Class G glass beads shall be coated with an adhesion promoting coating which shall also provide moisture resistance as tested by AASHTO M 247, Section 4.4.2 and shall exhibit the following characteristics:

- **Color and Clarity:** The glass beads shall be colorless and clear, and shall be free of carbon residues.
- **Index of Refraction:** minimum 1.50
- **Roundness:** The glass beads shall have a minimum of 80% true spheres per screen for the two highest sieve quantities, determined visually, and a maximum of 3% angular particles per sieve, determined visually. The remaining sieves shall have a minimum of 75% true spheres, determined visually per aspect ratio using microfiche reader.
- **Air Inclusions:** 10% maximum
- **Specific Gravity:** The specific gravity of the glass beads shall be a minimum of 2.50.
- **Gradation:** The gradation of Class G glass beads shall be as follows:

<u>U. S. Standard Sieve</u>	<u>% Passing</u>
12	100
14	100 - 95
16	100 - 80
18	100 - 20
20	90 - 20
30	100 - 50
Pan	100 - 90

All Class G glass beads shall be coated with an adhesion promoting coating.

907-624.02.4.2--Class H Glass Beads. Class H glass beads shall meet the requirements of ASTM D 1155, and shall be coated with an adhesion promoting coating which shall also provide moisture resistance as tested by AASHTO M 247, Section 4.4.2. Class H beads shall have a minimum of 70 percent true spheres and the +20 sieve shall be tested visually.

The gradation of the Class H beads shall meet the following:

<u>U. S. Standard Sieve</u>	<u>% Passing</u>
16	99 - 100
20	75 - 100
30	55 - 95
50	10 - 35
100	0 - 5

907-624.03--Construction Requirements.

907-624.03.1--Equipment. The application equipment shall be specifically designed for placing thermoplastic material in a hot molten state on the pavement surface utilizing a pressure type application method. The thermoplastic stripe shall be formed by a die that is allowed to drag along in proximity with the pavement surface. The die is pulled forward by a special linkage that will allow it to automatically level itself as to float and remain parallel with the pavement surface. The traffic stripe shall be formed by reason that the hot thermoplastic material is forced under pressure through four sides to the die onto the pavement surface. The top of the die shall be enclosed and provide entry means for the hot molten thermoplastic material to enter the die cavity. The bottom of the die shall contain a movable door that is remote controlled so as to start or stop the flow of thermoplastic material onto the pavement surface. When the movable door is open, thermoplastic material can flow through the die and will apply a thermoplastic stripe that will be formed rearward of the advancing die. The pavement surface shall be at the bottom of the die enclosure. Thermoplastic material shall be fed to the die under pressure through flexible oil-jacketed stainless steel hoses. The thermoplastic material must be either pumped or fed from a pressure vessel to the die under pressure in order to obtain the proper adhesion with the pavement surface.

The system shall consist of a low pressure drop-on type glass bead gun, (bead coat #1). The thermoplastic die shall be oil-jacketed on four (4) sides and is formed from a single solid block of steel. The glass bead gun shall dispense glass beads onto the hot thermoplastic stripe from a height of approximately one (1) inch above the pavement surface. The point at which the glass beads strike the surface of the stripe shall be approximately three inches (3”) behind the strike point of the thermoplastic material itself. This reflective bead coat #1 shall utilize Class G glass beads as specified herein, and shall provide a surface coating of 50 percent of the thermoplastic stripe surface. Of this 50 percent stripe coverage, at least 50 percent of the beads shall be embedded to a depth of 60 percent of their diameter.

A second curtain coater, low pressure drop-on type glass bead gun capable of applying a continuous sheet or ribbon of glass beads, shall follow at an interval of approximately 10 inches behind the first bead gun. This second glass bead gun shall apply bead coat #2 which will form a continuous drop-on coat of Class H glass beads immediately in front of the profiling device. This second curtain of glass beads shall have a low impact speed so that they are not forced into the stripe under pressure.

A special rotatable wheel profiling device shall be located approximately eight (8) inches behind bead gun #2. This rotatable wheel device shall be approximately seven (7) inches in diameter and shall have a plurality of spaced projections located around its circumference. The profiling device shall be wider than the stripe being applied in order that the stripe shall be adequately covered. The projections on the rotatable profiling device shall have an angular profiling surface set at an angle to the pavement surface. The rotatable profile device shall be mounted with an automatic leveling device to the same carriage assembly as the thermoplastic gun. This is required so that a traffic stripe of accurate and uniform definition can be obtained. The inverted profile grooves shall be pressed into the hot molten thermoplastic stripe within one (1) second of the thermoplastic material application in order to insure proper bead adhesion to the stripe. Using rollers to place grooves in the traffic stripe utilizing a separate vehicle or grooves that are not pressed within one

(1) second of the thermoplastic material application will not be allowed. To insure that no thermoplastic material adheres to the wheel as it rotates and profiles the stripe, a small air atomizer water jet shall apply a thin mist coat of water to the rotatable profile wheel. It is the intent of this specification that a minimum amount of water be used and that no water puddles greater than ¼ inch in diameter be allowed to accumulate on the pavement surface in proximity to the freshly placed stripe. Excess water on the pavement surface can cause bond failure of the thermoplastic material.

All parts of the thermoplastic holding tank including manifolds, hoses, pipes, dies, etc., shall be oil-jacketed to insure accurate temperature control. The thermoplastic material shall be preheated in kettles designed specifically for that purpose. Each kettle of preheated thermoplastic material shall be properly mixed and heated to the correct application temperature. The preheated material shall then be fed to the thermoplastic gun for application.

The striping machine shall contain enough glass beads and water to apply one full kettle of thermoplastic material.

907-624.03.2--Cleaning of Pavement Surface. Immediately before application, the areas to receive markings shall be cleaned thoroughly using equipment capable of cleaning without damaging the pavement surface. This will include, but not be limited to, all vegetation, loose soil, oils, and other debris. On areas of pavement cured with compound, the membrane shall be removed completely by "shot" blasting, sand blasting or other approved method. Striping shall follow as closely as practical after the pavement surface has been cleaned.

907-624.03.3--Application Over Existing Striping. Where shown on the plans or directed by the Engineer, the existing traffic stripe shall be removed by grinding or sandblasting. When placing inverted profile thermoplastic pavement markings on existing pavement that has more than one light coat (pavement not showing through stripe) of striping material, the existing stripe shall be removed to the point that 80 percent of the pavement surface is visible.

Removal of existing stripe will be paid for as a separate item of work.

Where unsatisfactory striping performed by the Contractor must be removed and replaced in accordance with these specifications, the Contractor shall use the removal method described above. No payment will be made for removal or replacement of the Contractor's unsatisfactory striping.

907-624.03.4--Surface Conditions. When placing inverted profile thermoplastic pavement markings, no striping shall be permitted when the pavement surface temperature is less than 60°F. A non-contact infrared pyrometer shall be furnished by the Contractor for use by the Engineer for verification of the temperature. Striping shall not be performed when there is moisture on the pavement surface or when winds exceed 12 mph. When unseen moisture is suspected to be present, a moisture test shall be performed. The test shall be as follows:

- 1) Place a piece of roofing felt on the pavement surface.
- 2) Pour 0.5 gallon of thermoplastic material at application temperature onto the paper.

- 3) After two (2) minutes, lift the paper and inspect to see if moisture has been drawn from the pavement.
- 4) If moisture is present, striping is not to begin until the surface is moist free.

Documentation of weather and pavement conditions shall be recorded as part of completing the MDOT Inverted Profile Thermoplastic Pavement Marking Inspectors Report.

907-624.03.5--Application. Prior to the placement of pavement markings, the Contractor shall furnish the Engineer three copies of the manufacturer's warranty stating that the manufacturer will guarantee the pavement marking to meet the requirements of this specification.

The thermoplastic material shall be preheated and thoroughly mixed. The application temperature of the thermoplastic material shall be between 400°F and 430°F. A digital thermometer complete with a 24-inch probe shall be furnished by the Contractor for use by the Engineer for verification of the temperature.

When measured at the highest point of the profile, the cold thickness of the in-place thermoplastic stripe shall be a minimum of 0.140 inch for Inverted Profile Thermoplastic Pavement Markings. The thickness of the thermoplastic material in the bottom of the profiles shall range from 0.025 to 0.050 inch. The individual profiles shall be located transversely across the stripe at intervals of approximately one (1) inch. The bottoms of these intervals shall be between 3/32 inch and 5/16 inch wide. In order to drain water and to reflect light, it is normal for the top surface of the inverted profiles to be irregular. The application rate of thermoplastic material for Inverted Profile Thermoplastic Pavement Markings shall be a minimum of 2700± pounds per mile for a continuous 6-inch stripe.

The application rate for Class G glass beads (bead coat #1) shall be 300± pounds per mile for 6-inch continuous stripe.

The application rate for Class H glass beads (bead coat #2) shall be 300± pounds per mile for 6-inch continuous stripe.

The thickness of the striping materials shall be verified periodically (at least every 1320 feet) and any thickness more than five (5) percent under the designated thickness shall be reworked. A consistent, uncorrected under-run will not be allowed and the Contractor will be required to install the specified minimum thickness of 0.140 inch. A wet thickness gauge and cold thickness gauge shall be furnished by the Contractor for use by the Engineer for the verification of film thickness.

When striping over existing painted stripe (one light coat), on old oxidized asphalt, on all concrete surfaces or on asphalt surfaces when ambient temperatures are below 70°F, a two component epoxy primer sealer shall be used and installed as recommended in writing by the thermoplastic material manufacturer. The epoxy primer sealer shall be EX255/EX256 as manufactured by Crown Paint Company of Oklahoma City, Oklahoma, or approved equal. The Contractor shall furnish certification of compatibility of the epoxy primer sealer to be used with the thermoplastic material supplied. If an alternate epoxy primer sealer to the EX255/EX256 is used, the Contractor

shall furnish a mill analysis and proof of adequate performance of the alternate epoxy primer sealer when used with thermoplastic pavement markings.

907-624.03.6--Inverted Profile Thermoplastic Traffic Stripe, High Contrast. Before applying the black pavement marking material, the Contractor shall remove any dirt, glaze, grease or any other material that would reduce the adhesion of the thermoplastic to the pavement.

The pavement marking material shall be installed in a molten state by the spray method at a minimum temperature of 350°F and a maximum temperature of 425°F. Scorching or discoloration of material shall be cause for rejection by the Engineer. The machinery shall be constructed so that all mixing and conveying parts, up to and including the thermoplastic gun, maintain the material in the molten state.

The pavement marking materials shall not be applied when air and pavement surface temperatures are below 60°F or when the surface of the pavement contains any evidence of moisture.

The pavement marking material shall be applied at a thickness of not less than 0.040-inch.

The equipment used to install hot applied pavement marking material shall provide continuous mixing and agitation of the material while maintaining a minimum temperature exceeding 400°F. A strainer shall be in place between the main material reservoir and the gun to prevent accumulation and clogging. The equipment shall be constructed for easy accessibility to parts requiring cleaning and maintenance.

After the black thermoplastic pavement markings are applied, inverted profile thermoplastic markings shall be placed over the black thermoplastic pavement markings in accordance with the specifications and to the dimensions and details shown on the plans or established.

907-624.03.7--Warranty. The manufacturer shall warrant that the inverted profile thermoplastic markings will meet the minimum performance level of 150 mcd/fc/sq. ft. dry and 75 mcd/fc/sq. ft. wet for a period of 48 months from the date of final inspection when exposed to normal roadway conditions regardless of the average daily traffic. Failure to meet this requirement will result in the total replacement of the portion of the stripe shown to be below these minimums. All costs of labor, material and other incidentals necessary for the replacement of unacceptable pavement markings shall be at no additional costs to the State.

Compliance will be determined by an average brightness reading over a minimum zone marking length of 300 linear feet, using an approved reflectometer. The zone of measurement referred to includes centerline stripe, edge lines and skip lines.

Performance Requirements:	White		Yellow	
	<u>Dry</u>	<u>Wet</u>	<u>Dry</u>	<u>Wet</u>
Initial Reflectivity, mcd/fc/sq. ft.	450	200	350	175
48-Month Retained Reflectivity	150	75	150	75

The measurement procedure for this warranty will entail a visual night inspection by a manufacturer representative and a MDOT representative to identify areas of the installation, which appear to be below the specified minimum, warranted reflectance value. All reflectance measurements for dry conditions shall be made on a clean dry surface at a minimum temperature of 40°F. All reflectance measurements for wet conditions shall be made using the setting conditions of Subsection 907-624.02.2.8 at a minimum temperature of 40°F.

Measurement intervals for installations with areas less than, or equal to, three (3) miles shall be at a minimum of three (3) check points for each zone. These check points should include the start point, approximate mid-point and the end point.

Measurement intervals for installations with areas greater than three (3) miles shall be at a minimum of three (3) check points, one at the start point, one at the end point and additional measurements spaced at 3-mile intervals between the start and end points of the area in question.

The number of measurements at each check point for each zone will be as follows:

- (A) Skip Lines: Eighteen (18) measurements, distributed over six (6) skip lines, shall be made at each check point.
- (B) Center Lines and/or Edge Lines: Eighteen (18) measurements shall be made over 300 linear feet of continuous stripe.

When taking reflectivity measurements, the value of the measurement shall be determined by averaging three measurements; one at the left edge of the stripe, one at the center of the stripe and one at the right edge of the stripe.

In addition, the reflectance values measured at each check point shall be averaged by zone to determine conformance to the minimum warranted reflective values.

907-624.04--Method of Measurement. Inverted profile thermoplastic traffic stripe of the type specified will be measured by the mile or by the linear foot, as indicated, from end-to-end of individual stripes. In the case of skip lines the measurement will include skips. The length used to measure centerline and edge stripes will be the horizontal length computed along the stationed control line. Inverted profile thermoplastic detail traffic stripe will be measured by the linear foot from end-to-end of individual stripes. Measurements will be made along the surface of each stripe and will exclude skip intervals where skips are specified. Stripes more than six (6) inches in width will be converted to equivalent lengths of six-inch widths.

907-624.05--Basis of Payment. Inverted profile thermoplastic traffic stripe, measured as prescribed above, will be paid for at the contract unit price per mile or linear foot, as applicable, which shall be full compensation for completing the work.

Payment will be made under:

907-624-A:	6" Inverted Profile Thermoplastic Traffic Stripe, Skip White *	- per linear foot or mile
907-624-B:	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous White *	- per linear foot or mile
907-624-C:	6" Inverted Profile Thermoplastic Traffic Stripe, Skip Yellow *	- per linear foot or mile
907-624-D:	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous Yellow *	- per linear foot or mile
907-624-E:	Inverted Profile Thermoplastic Detail Traffic Stripe, <u>Color</u> *	- per linear foot

* High Contrast may be specified

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-632-1

CODE: (IS)

DATE: 11/15/2017

SUBJECT: Traffic Signal Cabinet Assemblies

Section 632, Traffic Signal Cabinet Assemblies, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

Delete Section 632 on pages 517 thru 538, and substitute the following.

SECTION 907-632 - TRAFFIC SIGNAL CABINET ASSEMBLIES

907-632.01--Description. This work consists of furnishing, assembling, configuring and installing all component materials and software required to form completed traffic signal controller assemblies, closed loop master controller assemblies and signal system installation of the types specified, in conformity with these specifications, to ensure fully operational traffic signal installations as shown on the plans.

907-632.02--Materials.

907-632.02.1--Cabinet Assembly. Cabinet Assemblies shall meet the NEMA 3R requirements and be constructed principally of 0.125-inch thick, 5052-H32 aluminum. The aluminum shall have a mill finish per NEMA TS 2 7.7.3. Intermittent welds may be used for construction and any unwelded cabinet seams shall be sealed with clear RTV silicone. All external fasteners shall be stainless steel and no holes will be allowed in top of cabinet.

The door handles shall be stainless steel or cast aluminum. Door hinges shall be of the continuous type with a stainless steel hinge pin. Rivets are not be used to attach the hinge. The main door stop rod shall be constructed using stainless steel. The door stop mechanism shall be adjustable and capable of being securely latched in multiple opened positions including 90 degrees and a maximum of 120 degrees. The brackets attaching the stop rod to the door and cabinet shall be aluminum and welded in place. The main door cylinder lock shall be a #2 key type lock. Two (2) traffic industry standard No. 2 keys shall be provided with each cabinet and shall be made using heavy duty key blanks.

Extruded aluminum channels permanently attached to the right and left cabinet sides shall be provided for attaching adjustable shelving and mounting of other component panels. The cabinet shall have two (2) shelves installed. Both shelves shall be provided with the front edge pre-drilled with 0.25-inch holes located twelve (12) inches apart.

907-632.02.2--Physical Features.

907-632.02.2.1--Pull Out Drawer. A pull out drawer shall be installed and centered under the

bottom shelf. The drawer shall be made of 0.080-inch thick, 5052-H32 aluminum and come out on full extension drawer slides. The pull out drawer shall provide an approximate 16-inch x 14-inch working area and have the ability to bear a constant 25 pound burden. There shall be a compartment for document storage. The lid shall be hinged at the rear, to gain access to the storage area. The drawer will be used to store documents as well as support a notebook computer. The drawer slides shall be of the full extension ball bearing type. Dimensions of the drawer shall be large enough to support a notebook computer and a drawer of sufficient size to hold at least two (2) copies of the cabinet drawings and other related cabinet documentation. The surface of the lid shall have a non-slip surface.

907-632.02.2.2--Cabinet Lighting. Cabinets shall be provided with a minimum of two (2) white light LED modules. One (1) lighting module shall be installed along the front top section of the cabinet and the second lighting module shall be installed underneath the bottom cabinet shelf in such a location as to provide direct lighting of the load bay area of the cabinet but must not interfere with the cabinet drawer operation.

Both LED lighting modules shall be controlled by a NEMA rated, commercial quality, pushbutton door switch. The cabinet lighting shall turn on when the cabinet main door is opened and shall turn off when the main door is closed or an ON/OFF NEMA rated, commercial quality, toggle switch mounted on the inside cabinet door service panel shall be provided to turn both LED lighting modules on or off.

907-632.02.2.3--Police Panel Switches. Police panel switches shall be provided with all controller cabinets. All switches shall be hard wired and labeled as to their function.

NORMAL-FLASH: When this switch is in the FLASH position, all signal indications shall transfer to the flashing mode. AC power shall be removed from the load switches when the signal indications transfer to the flashing mode.

The controller unit shall operate in accordance with appropriate specifications during the flashing mode. When the switch is placed in the NORMAL position, transfer from the flash mode to normal operation shall be made in accordance with uniform code flash requirements.

SIGNAL ON-OFF: AC power shall be removed from the signal heads and the intersection will become dark when this switch is in the OFF position.

MANUAL CONTROL ON-OFF: When this switch is in the ON position, a logic ground shall be applied to the manual control enable input of the controller unit.

INTERVAL ADVANCE INPUT JACK: A manual jack shall be installed on the police panel. The jack shall inter-mate with a 3-circuit, ¼-inch diameter phone plug. The tip and ring (middle) circuits of the jack shall be connected to the logic ground and the interval advance inputs of the controller unit. When the manual hand cord is plugged into the jack and the pushbutton is pressed, logic ground shall be connected to the interval advance input of the controller unit.

When specified in the contract documents, an interval advance cord shall be provided. The cord

shall have a minimum length of three (3) feet. It shall have a 1/4-inch diameter, three circuit plug connected to one end and a manual pushbutton enclosed in a hand-held enclosure at the other end. A complete cycle (push-release) of the manual pushbutton shall terminate the controller unit interval which is active except the vehicular yellow and red clearance intervals. Cycling the push-button during the vehicular yellow or all red clearance intervals shall not terminate the timing of those intervals.

907-632.02.2.4--Service Panel Switches. Service panel switches shall be hard wired and clearly labeled to identify as to their functions. Service panel switches shall be mounted on the service panel located on the inside of the main cabinet door. Alternate switch locations may be described in the plans or contract documents but final switch design and location shall be approved by the Engineer prior to cabinet fabrication.

NORMAL-FLASH: When this switch is in the FLASH position, all signal indications shall transfer to the flashing mode. AC power shall be removed from the load switches when the signal indications transfer to the flashing mode.

The controller unit shall operate in accordance with appropriate specifications during the flashing mode. When the switch is placed in the NORMAL position transfer from the flash mode to normal operation shall be made in accordance with uniform code flash requirements.

CONTROLLER ON-OFF: When this switch is in the OFF position, AC power shall be removed from the controller. When this switch is returned to the ON position, the controller unit shall perform normal start up functions and resume normal operation in accordance with the applicable specification.

STOP TIME-RUN-NORMAL: A 3-position manual switch shall be provided which places the controller into Stop Time mode manually or through remote input.

VEHICLE DETECTORS: A 3-position switch shall be provided for each vehicle and pedestrian detector circuit. All switches shall be located on a panel mounted on the inside of the main cabinet door. The switch panel shall be labeled CALL SWITCH. Labeling of phase number and intended function (vehicles or pedestrian calls) shall be provided for each switch.

The vehicle detector switch functions are defined as follows:

- Locked Call Call is continually placed into the controller unit.
- Off (center) Vehicle detector is connected to the controller unit vehicle detector input, i.e. normal detector operation.
- Momentary Call Call is continuous as long as the switch is manually held in this position.

907-632.02.2.5--Police and Service Panel Locations. The police and service panels shall be constructed of 5052-H32 0.125-inch thick aluminum.

The police panel shall be located behind the police door which is enclosed within the main door.

The police door shall be hinged and provided with a neoprene gasket seal. Access to any portion or equipment contained behind the main cabinet door shall not be accessible through any part of the police panel. The police panel shall be of appropriate dimensions to accommodate all switch or devices described within this specification, the plans or contract document. The police door shall be provided with a treasury #2 key type lock and two (2) keys for the police door lock shall be provided with each cabinet.

The service panel shall be mounted on the inside portion of the main cabinet door, adjacent to the back side of the police panel or on the left hand side of the cabinet.

907-632.02.2.6--Cabinet Ventilation. Cabinets shall be vented to allow dissipation of the heat generated by the equipment contained within. All cabinets shall have a thermostatically controlled exhaust fan located at the top of the cabinet that is capable of 100 cubic feet per minute air displacement. The thermostat shall be mounted on the inside top of the cabinet and shall have a nominal temperature range from 80°F to 170°F.

The intake vent shall be louvered or equivalent design to prevent rain infiltration. The vent area will be located along the bottom portion of the cabinet door. A 16-inch x 12-inch x 1-inch disposable pleated air filter shall be provided on the inside portion of the cabinet and shall fully cover the vent area.

907-632.02.2.7--Air Filter Assembly. Air filters shall be one piece and shall be held firmly in place against the cabinet door in order to prevent dust from bypassing the perimeter of the filter and shall fully cover the vent area. Wing nuts or thumbscrews are preferred. Air filter shall be a 16-inch x 12-inch x 1-inch disposable pleated filter.

907-632.02.2.8--Cabinet Sizes.

907-632.02.2.8.1--Type I Cabinet. A Type I cabinet, 51”H x 30”W x 18”D, may be used for both pole and base mounted cabinets that require a maximum eight (8) position load bay. Pole mounted cabinets do not require rear access.

907-632.02.2.8.2--Type II Cabinet. A Type II cabinet, 51”H x 36”W x 18”D, may be used for both pole and base mounted cabinets that require a maximum twelve (12) position load bay. Pole mounted cabinets do not require rear access.

907-632.02.2.8.3--Type III Cabinet. A Type III cabinet, 56”H x 44”W x 27”D, shall be used for base mount installations and shall require a sixteen (16) position load bay and rear access door.

907-632.02.2.8.4--Type IV Cabinet. A Type IV dual chamber cabinet, 56”H x 57”W x 29”D, shall be used for base mount installations and shall require a sixteen (16) position load bay, rear access door, and external generator plug. When called for in the plans, a UPS shall be housed inside this cabinet.

907-632.02.2.8.5--Type V Cabinet. A Type V cabinet, 77”H x 44”W x 27”D, shall be used for base mount installations and shall require a sixteen (16) position load bay and rear access door.

907-632.02.3--Power Distribution Panel. The power panel shall be wired to provide the necessary power to all equipment. It shall be manufactured from 0.125-inch thick, 5052- H32 aluminum. The power panel shall house the following components: Main Breaker, Auxiliary Breakers, and Terminal Block. The panel shall be of such design so as to allow a technician to easily access the main and auxiliary breakers.

A 3-position terminal block with a removable insulated cover accepting up to AWG #4 stranded wire shall be supplied for accepting only the incoming power lines. This terminal block shall be in advance of and supply only the 30-amp main breaker, 10-amp and 5-amp Auxiliary breakers, AC neutral buss and earth ground buss.

907-632.02.3.1--Ground and Neutral Busbars. Cabinet grounding shall meet the requirements set forth in Subsection 722.09 for grounding and ground rods. A solid copper ground busbar shall be mounted on the side of the cabinet wall adjacent to the power panel for the connection of chassis ground wires. If more than one (1) ground busbar is used in a cabinet, a minimum of an AWG #6 copper wire shall be used to bond them.

The copper ground busbar shall have a minimum of thirteen (13) connector points, each capable of securing at least one (1) AWG #6 conductor.

A solid copper neutral busbar shall be mounted on the side of the cabinet wall adjacent to the power panel for the connection of AC neutral wires.

The copper neutral busbar shall have a minimum of thirteen (13) connector points, each capable of securing at least one (1) AWG #6 conductor.

907-632.02.3.2--Terminal Strips. Conductors shall be terminated on terminal strips with insulated terminal lugs. When two (2) or more conductors are terminated on field wiring terminal strip screws, a terminal ring lug shall be used for termination of those conductors. The voltage and current rating of terminal strips shall be greater than the voltage and current rating of the wire which is terminated on the terminal strip.

907-632.02.3.3--Cabinet Receptacles. A 3-wire 115 Volt AC (15A) Ground Fault Circuit Interrupt (GFCI) duplex receptacle shall be provided in the cabinet for maintenance use. It shall be securely mounted near the bottom right side of the cabinet and easily accessible.

Two (2) 3-wire 115 Volt AC (15A) non-GFCI protected outlets shall be installed, one on each side of the cabinet. These two (2) outlets are used for communication or other auxiliary equipment.

907-632.02.3.4--Operating Line Voltage. All equipment shall be designed to operate from a 120 volt, 60 cycle AC supply. Operation shall be satisfactory at voltages from 105 volts to 130 volts. All operating voltages into and out of the controller shall be NEMA level DC voltages except for the controller AC power source (Connector A, Pin p – AC-Control and Pin U – AC Common).

907-632.02.3.5--Circuit Breakers. Circuit breakers shall meet the requirements set forth in

Subsection 722.07. A 30-amp main breaker, with a minimum of 10,000 amp interrupting capacity, shall be provided for all cabinets to supply power to the controller, MMU, signals, and rack power supply.

Two (2) auxiliary breakers shall be provided. The first breaker, 10-amp, shall supply power to the fan, light, GFCI utility receptacle and two (2) auxiliary standard receptacles. The second breaker, 5-amp, shall be installed to supply power for the Controller Unit and MMU2. The above circuit breakers line side shall be jumpered together and will be fed from an external main circuit. A third 5-amp breaker shall be required if an ITS camera panel is called for in the plans.

907-632.02.3.6--Main Line Arrestors. Surge protection shall be provided that meets the requirements set forth in Subsection 722.12. A main line arrestor shall be provided to reduce the effects of voltage transients on the AC power line. It shall be installed after the circuit breaker. The main line arrestor shall be sufficient to protect all equipment and devices as per the plans and the following minimum specifications.

- Multi-stage Hybrid Design
- Series induction filtering
- Thermally protected Metal Oxide Varistors (TMOV's)
- Operating Voltage: 120 VAC
- Clamping Voltage: 395 VAC
- Operating Current: 15 A
- Peak Surge Current: 50 kA/Mode, 100 kA/Phase
- Operating Frequency: 47-63Hz
- EMI Attenuation: 40 dB Typ
- SPD Technology: TMOV's w/ W-C Filter
- Modes of Protection: L-N, L-G, N-G
- Status Indication: Power On & TMOV's Functional
- Connection Type: ¼-20 Stainless Steel Stud
- Operating Temperature: -40°F to +185°F

907-632.02.3.7--Solid State Main Line Relay (SSR). A normally-open, 75-amp, hybrid SSR shall be provided on the power distribution panel. The relay shall include a LED indicator to verify circuit power.

907-632.02.4--Terminal Facilities Board. The Terminal Facility shall be a hardwired load bay for NEMA TS 2 Type 1 actuated controllers. The load bay shall include either eight (8), twelve (12) or sixteen (16) load switch positions, as specified by the plans, and shall be centered along the back of the cabinet below the bottom shelf.

All wires terminated behind the backboard, as well as any additional panels, shall be soldered. No pressure or solderless connectors shall be used, unless they are soldered to the wire and tab after connection.

907-632.02.4.1--Load Switches and Flashers. Solid State Load Switches, compatible with low

wattage LED signals, shall be provided for the sequence called for on the plans. The load switch sockets shall be wired for triple-signal load switches conforming to NEMA TS 1-1994 and NEMA TS 2-2003 requirements.

The flasher socket shall be wired for and provided with a Type 3, two (2) circuit Solid State Flasher conforming to NEMA TS 1-1994 and NEMA TS 2-2003 requirements. It shall be possible to flash either the amber or red indication on any load switch outputs. It shall be possible to easily change the flash indication from the front side of the panel using readily available tools such as a screwdriver. A nominal flash rate of 50 to 60 FPM shall be provided. Flash rate shall be stable when used with generators or inverters.

Support(s) shall be provided to support the Flasher and Load Switches at some point approximately half of the total length from the panel surface. Sufficient area beneath the Load Switch or Flasher shall be clear in order to allow for free flow of air across the Load Switches or Flasher. Load Switches and Flashers must be provided with LED indicator lights on the side facing the cabinet door.

907-632.02.4.2--Flash Transfer Relay. All flash transfer relays, as a minimum, shall meet NEMA TS 1 requirements. The number of relays that shall be supplied with each cabinet shall accommodate the number of signal phases as indicated in the project plans. The coil of the flash transfer relay must be de-energized for flash operation.

907-632.02.5--Cabinet Wiring. Controller cabinets shall be wired in accordance with the signal phasing plans. If phases are indicated as omitted for future use, or if phases are not shown to be used in the plans, the cabinet shall be wired for use of the phases shown as future or unused. Load Switches shall not be provided for future or unused phases.

Wiring in the cabinets shall conform to the requirements of the National Electrical Code (NEC) and all of these specifications. All conductors in the cabinet shall be stranded copper. All wiring shall be laced. All wiring shall be in accordance as specified by Section 636 and Subsection 722.03 for Electric Cable and IMSA Specification 19 and/or 20 for Signal Wiring.

Connector harnesses for controller, conflict monitor, vehicle detectors, and accessory equipment (including NEMA defined Card Rack with power supply and pre-wired optical detection slots) shall be provided and wired into the cabinet circuitry. Connecting cables for controller and conflict monitor harnesses shall be sleeved in a braided mesh. All wires shall be securely terminated on terminal strips. The lay of the interconnect cable between the components must be such that when the door is closed, it does not press against the cables or force the cables against the various components inside the cabinets.

All communication wiring shall be bundled and routed independently of all other wiring. All live conductors shall be covered with suitable insulating material. All equipment grounds shall run directly and independently to the grounding bus.

All wires shall be cut and terminated as close as possible to the proper length before assembly. Consideration of equipment location adjustments must be made when determining appropriate

wire lengths. Excessive lengths of wire or cable shall not be allowed. All line voltage conductors used in controller cabinet shall conform to the following color code:

- AC Neutral: White
- AC Hot: Black
- Safety Ground: Green

907-632.02.5.1--Signal Terminal Arrestor Grounding Bar. A field terminal arrestor grounding bar shall be provided along the back portion of the cabinet for the installation of signal arrestors. This bar shall be attached using an AWG #10 stranded copper to the earth ground circuitry.

907-632.02.5.2--Signal Terminal Arrestors. The field terminal arrestor shall be a three (3) circuit protective device intended for use on traffic control load relay outputs. The arrestor shall be furnished with three (3) leads and a grounding stud which will be used to attach the arrestor to the grounding bar. The field terminal arrestor shall meet the following minimum specifications:

- Operating Voltage: 120 VAC
- Clamping Voltage: 475 VAC
- Peak Surge Current: 10 kA
- Operating Frequency: 47 – 63 Hz
- SPD Technology: MOV's
- Connection Type: Wire Leads
- Lead Wire: 14 AWG 12" Length
- Ground Stud: 10 x 32 5/8" Length
- Operating Temperature: -40°F to +185°F

907-632.02.6--Accessory Components.

907-632.02.6.1--Traffic Actuated Controller Unit. The fully actuated controller unit shall, at a minimum, meet the requirements of both NEMA TS 1-1989 and NEMA TS 2-2003 requirements for actuated controller units. The controller shall be of the TS 2 Type 2 configuration. The controller shall be provided with the multiple communication interface devices or properties as defined below.

- 10 Base-T Ethernet with front panel RJ-45 connector
- IEEE defined MAC address
- EIA-232 port
- External Serial Fiber options for both single and multi-mode (optional as per plans)
- External FSK 1200 bps modem (optional as per plans)
- D connector with 37 pin configuration for TS 1 compatibility
- USB port for signal controller database upload/download to the controller flash
- Controller
- ECOMM Compatible

The controller unit must have an alphanumeric backlit LCD display with a minimum of sixteen

(16) lines at 40 characters per line. The controller must be air-cooled with sufficient ventilation openings and capable of operating between -30°F and 165°F. The controller unit must be provided with a time-of-day clock, automatic daylight savings time adjustment and a power supply for maintaining SRAM during a power outage. The controller unit shall be capable of being used in a Closed-Loop System and must be capable of operating in the role of master controller in a Closed Loop System. The controller unit firmware shall be fully compatible with the Department's existing Traffic Signal Management Software. The Contractor shall ensure all controller firmware versions are compatible with the existing Traffic Signal Management Software that the Regional Department staff currently utilizes prior to submitting the controller for approval. The Contractor shall notify the Department if any special controller configuration or firmware is needed prior to submitting the controller for approval based on project requirements.

Where Flashing Yellow Arrow (FYA) operations are being used, all traffic signal controller firmware shall be capable of delaying the onset of the flashing yellow arrow.

All operator entered data shall be stored and backed up on to a flash memory device provided with the controller unit at no cost. This flash memory device shall require no battery to support value storage. No internal components of circuitry shall require battery support. The database shall be able to be backed up to a USB drive via the USB drive on the controller.

Traffic Actuated Controllers shall be of the Type shown on the plans. Type 1 Controllers shall have a Linux based processor and a minimum of one (1) USB port. Type 2 Controllers shall have the same features as Type 1 Controllers with the addition of an ATC backplane.

Type 3 Controllers shall have all features of the Type 2 Controller with the addition of the ATC module. All three (3) types of actuated controllers shall have Master controller capability, and if required shall be designated with 'M' in the plans.

907-632.02.6.2--Closed Loop Master Controller Unit. When called for in the plans, this work also consists of furnishing, installing and configuring the equipment, software and accessories necessary to connect one (1) traffic Closed-Loop Master Controller to its corresponding central or portable PC-based Traffic Computer Facility Control System via a communications connection. The communications or network connection device will be either existing or provided by the Contractor.

907-632.02.6.2.1--General. The Master shall monitor intersections in the system, display status and operational state and provide traffic flow data from intersection vehicle detectors. The Master shall include all communications equipment and software necessary to provide reporting to a remote terminal as well as upload/download of all local intersection data and provide timing synchronization. Communications to local controllers from the Master and from the Master to the central-office computer facility shall be by FSK, 900 MHz Radio, Broadband Radio, Serial Fiber, Ethernet, Fiber, Cell Modem or Leased Line, as indicated in the plans. The Master shall be able to run on the same controller simultaneously operating the intersection, with the local signal control software, on any given controller unit.

907-632.02.6.2.2--System Configuration. The system architecture shall be designed to minimize

the effect of equipment failures on system operation and performance. The system consists of four (4) principal elements:

- Local System Intersection Controllers
- Communication (Telemetry Links)
- On-Street Master(s)
- Central-Office Computer Software

907-632.02.6.2.3--Local System Intersection Controller. The local system intersection controllers connected to the Master controller unit shall be capable of controlling a fully actuated two (2) to sixteen (16) phase intersection and shall meet or exceed NEMA TS 1-1989 and TS 2-2003 standards for fully actuated traffic control units. The local controller shall have internal communication capability with direct access to the data memory. The local system controller shall be capable of processing controller and detector data and provide all necessary intersection control functions. The local system intersection controller shall meet the requirements of the Traffic Actuated Controller Unit.

907-632.02.6.2.4--Communications (Telemetry) Links. The communications links for the "Closed-Loop" System shall perform the following functions:

- Provide the medium (radio/fiber/hardware/etc.) for two-way communications between the On-Street Master and the local intersection controllers.
- Provide the medium for two-way communication between the On-Street Master and the central-office computer facility.
- Error checking shall be included in both mediums to assure transmission and reception of valid data.

907-632.02.6.2.5--On-Street Master. The On-Street Master may be located at an intersection and connected via the communication network to at least 32 local intersection controllers. The Master shall be capable of implementing Traffic Responsive Control, Time Base Control, Manual Control or Remote Control modes of operation.

Analysis of sampling sensor data from at least 64 system detectors and corresponding selection of the best Traffic Responsive timing pattern shall be provided by the On-Street Master during the Traffic Responsive mode of operation.

Automatic and continuous monitoring of system activity shall be provided by the On-Street Master to include both Master and intersection alarm conditions.

System parameter entry shall be provided via the On-Street Master including all Master and local intersection assignment and group parameters. Master parameters shall include:

- System coordination setup and pattern data entry by group
- System time base event scheduler
- System traffic responsive computational and pattern selection setup by group
- Intersection system group and detector assignments

The On-Street Master shall provide comprehensive system report generation including, as a minimum: system, intersection, detector and failure status and history reports in addition to system performance reporting.

A RS-232C interface shall be provided on the On-Street Master to allow for printing of reports or for interconnecting to a remote central site.

To enhance overall system operation and increase system management flexibility, the On- Street Master shall also support two-way dial-up communications to a central office computer for control, monitoring, data collection and for timing pattern updating purposes, all from a remote central office location. Continuous, seven (7) days/week - 24 hours/day, system monitoring shall be enhanced by the On-Street Master's capability to automatically dial-up the central office computer upon detection of user defined critical alarm conditions.

907-632.02.6.2.6--System Functional Requirements.

907-632.02.6.2.6.1--Operator Interface. In order to provide ease in programming and operation, the system shall provide a simplified user-friendly menu format at each local, master and central office facility. No special programming skills shall be required for the user to fully access and operate this control and monitoring system at any level.

All programming, both of the local intersection controllers and the On-Street Master(s) shall be via a front panel keyboard and display, driven by English Language menus. All data change entries will be automatically verified against established ranges prior to acceptance to prevent programming data errors. Data access shall be controlled by user- definable access controls.

907-632.02.6.2.6.2--System Traffic Control. The system shall have the capability of controlling a minimum of sixteen (16) vehicle phases and eight (8) pedestrian phases. The system shall have the capability of implementing a minimum of four (4) timing rings, fifteen (15) alternate sequences, and sixteen (16) offsets.

The system shall provide the capability of selecting any of the following operational modes on a group basis:

- Traffic Responsive
- Time Base (Time-of-Day/Day-of-Week)
- Remote (External Command)
- Manual (Operator Entry)

The system shall be capable of implementing system FLASH and system FREE operation. The system shall have the capability to command, on/off based on time, up to eight (8) independent special functions.

907-632.02.6.2.6.3--Detectors. The system shall have the capability of accepting and processing data from at least 632 system detectors for Traffic Responsive program selection.

907-632.02.6.2.6.4--Pattern Selection. In addition to providing Manual and Remote program selection capability, the Master shall provide for Traffic Responsive and Time Base modes of operation for timing pattern selection.

907-632.02.6.2.6.4.1--Traffic Responsive Mode. Traffic plan selection in the Traffic Responsive mode shall be user-enabled and supplied with the controller, per the plans and specifications. The pattern selection shall be based on sampling detector volume and occupancy analysis by the On-Street Master.

907-632.02.6.2.6.4.2--Time Base Mode. The system shall provide the capability of implementing time-of-day, day-of-week and week-of-year control for each of the two (2) groups using an internal time clock referenced to the 60-Hz AC power line frequency for its time base. The Time Base mode shall contain automatic adjustment for leap year and daylight savings time changes.

The system Time Base mode shall provide, as a minimum, 100 events each capable of requesting any of the 48 traffic control patterns along with Traffic Responsive override enable or auxiliary events consisting of enable/disable any of up to four (4) system-wide special functions and setting sample and log interval time periods.

907-632.02.6.2.6.5--System Control Priority. The system coordination control (program-in-effect) for each group shall be selected on a priority basis. The priority from highest to lowest shall be as follows:

- Manual Control Entry
- External Control (Remote Command)
- Time Base Control (Time-of-Day/Day-of-Week) (Traffic Responsive control will prevail whenever Traffic Responsive Override Enable is active and the selected cycle length is greater than that being commanded by Time Base)
- Traffic Responsive Control

907-632.02.6.2.6.6--Measures of Effectiveness. The system shall have the capability to report selected Measures of Effectiveness (MOE's) on an intersection basis. MOE calculations shall be made on all phases by the local system intersection controller and as a minimum shall include measures such as: volume, number of stops, delays and green utilization. These measures shall be calculated on the basis of the active timing plan. Alternate ways of reporting MOE'S may be approved on a case-by-case review.

907-632.02.6.2.6.7--Uploading and Downloading. The system shall provide, for any selected local system intersection controller, the capability of uploading and downloading any or all, new or modified local intersection parameters from the central-office computer and the Department Central Traffic Signal Management Software, and shall include, as a minimum, all: Phase Timing and Unit Data; Coordination Data, Time Base Data; Preemption Data, System Communication Parameters, System Traffic Responsive Data, and any other System Data residing at the intersection such as Detector Diagnostic Values, Report Parameters and Speed Parameters.

During either uploading or downloading operations, normal traffic control operations shall not be suspended. All data shall be continually accessible and may be displayed at the On- Street Master or the central office computer.

907-632.02.6.2.6.8--System Monitoring and Diagnostics. The system shall automatically and continually monitor system activity and log/report occurrences of Master and intersection alarm conditions. All alarm condition events shall include at the intersection, (Master and central-office computer) an alpha-numeric description of the event as well as the time and date of occurrence.

As a minimum, monitored master alarms conditions shall include:

- Insufficient or Improper Data
- Failed Computational Channels
- Failed System Detectors
- Intersection Communication Failure
- Failed Controllers
- Minimum of six (6) special user defined alarms for user application flexibility
- Monitored intersection alarms conditions shall include as a minimum:
 - Cycle Faults and Failures
 - Coordination Failures
 - Voltage Monitor
 - Conflict, Local and Remote Flash Conditions
 - Preempt
 - Local Free
- Minimum of six (6) special user defined alarms for additional user flexibility.

When the Master detects a critical alarm condition, as defined by the user, it shall automatically dial-up the central office computer and report the condition. On a BUSY or NO ANSWER, the system may be programmed, at user option, to alert a secondary computer.

The system shall also automatically and continually monitor, verify and attempt to correct Sync Pulse, Time Base Clock and Pattern-In-Effect. The system shall provide capabilities to perform diagnostics on system and local detectors, communications and intersection operations. When a fault has been detected, an indication shall be provided. It shall be possible to isolate the fault to the failed unit from controls and indicators available on the Master unit. Auxiliary equipment such as a data terminal or CRT shall not be required to identify the failure.

907-632.02.6.2.6.9--Real Time Display. The Master shall provide for any selected local system intersection controller, real-time status information on its front panel. Real-time intersection status information shall include simultaneous display of: vehicle and pedestrian signal and detector status by phase, overlap signal status and cars waiting count by phase. Real-time controller status information shall include simultaneous display of: two (2) Ring Active timers, On/Next, Call/Recall and Hold/Omit Status by phase, Coordination, Preempt and Stop Time Status.

907-632.02.6.2.6.10--System Management. The system, without hardware changes but with its

ability to directly modify Master and intersection parameters, shall provide the user system configuration and operational controls of the following functions: add/delete controllers and system detectors, enable Traffic Responsive mode, assign intersections to groups, assign system detectors to computational channels and channels to pattern select routines, and assign special and/or standard detectors as system detectors for use with computational channels or to track activity.

907-632.02.6.2.6.11--System Logging and Reports. The system shall automatically and continually process system data and log/report on occurrence of changes in intersection status, system detector status, communications status, controller status and local detector status in addition to system program changes, Traffic Responsive computations, measures of effectiveness and performance.

907-632.02.6.2.6.12--Security. The On-Street Master shall provide for a user-specified security code entry before any data may be altered. In order to view any parameter, security code entry shall not be required. Security access shall be automatically rescinded approximately ten (10) minutes after either access was gained or the last parameter change was entered. The Master and local controller shall have the ability via keyboard to disable security code requirements, allowing for perpetual access without requiring hardware changes.

907-632.02.6.2.7--Design Characteristics. The On-Street Master shall be designed to operate in either an office or field environment and shall be suitably housed in a separate enclosure or in a local intersection cabinet. The Master shall be designed to meet the following electrical and mechanical requirements:

907-632.02.6.2.7.1--Programming and Security. Operator programmable data entry shall be accomplished through panel keyboard(s). The Master shall prevent the alteration of keyboard set variables prior to the user having entered a specific access code through the keyboard. The Master shall maintain user-programmable variables in non-volatile memory with a battery-backed RAM to assure continued efficient system operation.

907-632.02.6.2.7.2--Test and Repair. To enhance maintenance and trouble-shooting activities, On-Street Masters shall include resident diagnostics as a standard. No extender- cards, special tools or PROMs shall be necessary to fully maintain these components. The Master unit design shall ensure that all printed circuit boards be readily accessible for maintenance testing purposes. All fuses, connectors and controls shall be accessible from the front of the Master unit.

907-632.02.6.2.8--Traffic Signal System Software. All Traffic Signal System Software shall be compatible with the latest version of the Department's existing Master and local controllers and existing Traffic Signal Management Software for the Department region.

907-632.02.6.2.8.1--Traffic Signal Closed Loop Software. The Traffic Signal Closed-Loop Software shall provide the ability to manage Master and local controller databases including the uploading and downloading of data parameters. The software shall provide status information and provide reporting capabilities for Master and local controller data, alarms and logs.

907-632.02.6.2.8.2--Traffic Signal System Workstation Software. The Traffic Signal System Workstation shall provide the ability to manage Master and local controller databases including the uploading and downloading of data parameters. The software shall provide status information and provide reporting capabilities for Master and local controller data, alarms and logs.

The Traffic Signal System Workstation Software shall also be capable of operating as a network-connected user workstation to existing centralized signal systems and their associated databases.

When disconnected from the centralized signal system, the software shall be capable of running as a standalone system similar to the Closed-Loop Software. Under this mode, the software shall provide management, report and status functions for Master and local controllers. Under Standalone Mode of operation the software shall allow for its own database(s) for data management without the need for connecting to a centralized signal system database.

907-632.02.6.2.9--Services. Technical services shall be provided, as required, to assist in installation and initial setup of the Closed-Loop Master System and its sub-components. Technical assistance with database migration and/or setup, as well as the development of graphics (such as master maps and local intersection depictions) and the assignment of associated attributes such as detectors, phasing, signals, etc., shall be provided as required. Additionally, training shall be provided on a basic or advanced target user level, as required.

907-632.02.6.3--Malfunction Management Unit (MMU2). The Malfunction Management Unit (MMU2) shall be a shelf-mountable, sixteen (16) channel, solid-state, IP addressable MMU. The MMU2 shall accomplish the detection of, and response to, improper and conflicting signals and improper operating voltages in a traffic signal controller assembly, including support for four (4) section Flashing Yellow Arrow (FYA) left turn displays. The MMU2 shall be capable of running a minimum of twelve (12) different modes of FYA operation.

The MMU2 shall meet or exceed Section 4 requirements of the NEMA Standards Publication No. TS 2-2003 including NEMA TS 2 Amendment #4-2012 and provide downward compatibility to NEMA Standards Publication No. TS 1-1989: Type 12 Operation, in addition to those specifications set forth in this document.

The MMU2 shall include a graphics based Liquid Crystal Display (LCD) to view the current monitor status and navigate the unit's menus. An RJ-45 Ethernet Port shall be provided for communications.

A built-in Diagnostic Wizard shall be provided that displays detailed diagnostic information regarding the fault being analyzed. This mode shall provide a concise view of the signal states involved in the fault, pinpoint faulty signal inputs and provide guidance on how the technician should isolate the cause of the malfunction. The Diagnostic Wizard shall be automatically invoked when the MMU2 is in the fault mode and the HELP button is pressed. It shall also be automatically invoked when the MMU2 is in the Previous Fail (PF) event log display and the HELP button is pressed.

A built-in Setup Mode shall be provided that automatically configures the Dual Indication Enable, Field Check Enable, Red Fail Enable and Minimum Yellow Plus Red Clearance Enable parameters from user input consisting only of channel assignment and class (vehicle, ped, pp-turn, FYA, etc.) responses.

The MMU2 shall be capable of operating in the Type 12 mode with SDLC communications enabled on Port 1. The Channel Status display shall operate in the Type 12 configuration and provide the Field Check function for up to four (4) Pedestrian Walk inputs.

In the interest of reliability and repair ability, printed circuit board mounted MS connectors shall not be acceptable. Internal MS harness wire shall be a minimum of nineteen (19) strand AWG 22 wire.

907-632.02.6.4--NEMA defined Card Rack and Power Supply. A minimum of one (1) NEMA compliant detector card rack with five (5) slot positions (first slot for power supply and four (4) available slots) shall be provided in each cabinet. The detector rack shall be installed on the bottom shelf of the cabinet. The power supply for the NEMA defined card slots shall be provided as a 175W minimum with four (4) independent regulated channels of 24 VDC each rated at 0.75 amps over the full NEMA operating temperature range of -30°F to +165°F. The output should be regulated to 24 VDC +/- 15%. Each of the four (4) outputs shall be independently fused, each with a separate LED for displaying output and fuse status for each of the four (4) outputs. Each of the four (4) outputs shall be protected against voltage transients by a minimum 1500 watt suppressor. All card racks shall be wired for the type detection shown in the plan sheets.

Card Guides shall be provided on the top and bottom of the card rack for each connector position.

907-632.02.6.5--In-Cabinet Network.

907-632.02.6.5.1--Communications Arrestor. The Controller Cabinet network shall consist of an SDLC connection between the Controller Unit and MMU2. Surge suppression for this network shall meet the requirements set forth in Subsection 722.12 and the following minimum requirements below:

- Operating Voltage: 5 VDC
- Clamping Voltage: 8 VDC
- Operating Current: 1.5 A
- Peak Surge Current: 47 A (10x1000 μ s)
- Frequency Range: 0 to 20 MHz
- Insertion Loss: < 0.1 dB at 20 MHz
- SPD Technology: SAD
- Connection Type: DB-15
- Operating Temperature: -40°F to +185°F

907-632.02.6.6--System Communications.

907-632.02.6.6.1--Traffic Signal Ethernet Switch. When specified in the plans or contract

documents, a traffic signal Ethernet switch shall be installed in the cabinet assembly. It shall meet the requirements for the type specified in Section 907-663. Ethernet patch cables of sufficient length shall be provided for all supplied Ethernet ready cabinet components. The switch and all components shall be connected and configured.

907-632.02.6.6.2--Fiber Optic Patch Panel. When specified in the plans or contract documents, fiber optic attenuator patch cords shall be installed in the cabinet assembly as specified in Section 907-661.

907-632.02.6.6.3--Wireless Communications. When specified in the plans or contract documents, wireless communication components shall be installed in the cabinet assembly and shall be as specified in Section 907-662.

907-632.02.6.6.4--Serial Port Server or Terminal Server. When specified in the plans or contract documents, serial port servers shall be installed in the cabinet assembly and shall be as specified in Subsection 907-663.02.2.

907-632.02.6.6.5--GPS Clock. This work includes furnishing a Global Positioning System (GPS) Synchronization clock that can be used to sync the internal clocks in traffic signal controllers when coordination is desired, but communication is not necessary. The GPS Clock System shall provide GPS based time and date synchronization to provide coordination of traffic controllers to a common time base. The system shall process GPS Time data using a tamper/vandal resistant GPS antenna and correct for Time Zone, Daylight Savings Time, Leap Years, and GPS Leap Seconds. The processed time information shall be sent to the traffic controller in the native format for the respective controller. A contact closure synchronization pulse with variable pulse width shall be available for a once per day update. If the GPS antenna is blocked for up to one (1) hour prior to scheduled time of synchronization, the system shall synchronize the traffic controllers with less than 0.4 seconds variance from the accuracy provided under normal operation with GPS satellites in view.

- The GPS Clock shall also meet the following minimum specifications:
- Input Voltage: 9-24 VDC
- Current Draw: 150 mA (max) at 12 VDC: 125 mA (max) at 24 VDC
- Contact Closure: 750 mA at 30 VDC
- Temperature Rating: -29.4°F to +167°F

GPS unit shall be mounted to the traffic signal controller cabinet as per the manufacturer's recommendation. Any and all holes created in the cabinet for the purpose of mounting the GPS unit shall be sealed to the satisfaction of the Engineer at no direct pay.

907-632.02.6.6.6--Power-Over-Ethernet Arrestor. Surge suppression that meets the requirements set forth in Subsection 722.12 shall be provided. In addition, the following minimum specifications shall be supplied for loads that require Power-Over-Ethernet with isolated shielded or non-shielded cable:

- Operating Voltage: 48 VDC
- Clamping Voltage: 68 VDC
- Operating Current: 0.75 A per Pin Continuous
- Peak Surge Current: 10 kA
- Insertion Loss: < 0.1 dB
- SPD Technology: GDT, SAD, with series PTC
- Modes of Protection: All Lines (1-8) Protected (L-L) and (L-G): Signal High- Low; High-Ground; Low-Ground
- Transmission Speeds: 10BaseT; 100BaseT; 1000BaseT
- Connection Type: RJ-45
- Operating Temperature: -40°F to +185°F

907-632.02.7--Detector Panel. A vehicle detector harness shall be provided to connect the detector panel to the card rack. The detector panel shall accept the connection of sixteen (16) field loop inputs and four (4) pedestrian detector inputs.

907-632.02.7.1--Detector Input Arrestors. Field Loop and Pedestrian input arrestors shall meet the requirements set forth in Subsection 722.12. Field loop arrestors shall have differential and common mode protection and be provided with the following minimum specifications:

- Operating Voltage: 75 VDC
- Clamping Voltage: 130 VDC
- Peak Surge Current: 250 A
- SPD Technology: Silicon Break-Over
- Operating Temperature: -40°F to +185°F

Pedestrian input arrestors shall be a four (4) circuit device provided with the following minimum specifications:

- Operating Voltage: 30 VDC
- Clamping Voltage: 36 VDC
- Operating Current: 0.15 A
- Peak Surge Current: 10 kA (8 x 20 μ s)
- Frequency Range: 0 to 20 MHz
- Insertion Loss: < 0.1 dB at 20 MHz
- SPD Technology: GDT, SAD, with Series PTC
- Connection Type: Terminal Block with compression lugs; Terminals accept up to 10 AWG
- Operating Temperature: -40°F to +185°F

907-632.02.8--System Detectors. The controller shall have the ability to receive input data from up to eight (8) special system detectors in addition to the normal actuated controller unit phase detectors. The user shall have the option to assign any of the phase detectors as “system detectors”.

907-632.02.9--Preemption. The cabinet shall be completely wired to accept and service calls from preemption phase selector modules, associated optical detector units and GPS units. Optical detector units and GPS unit cabinet components shall be as specified in Section 639. Provision for two (2) standard card modules shall be accommodated in a separate card rack for preemption. The preemption card rack shall provide a minimum of eight (8) channels.

Provisions shall also be made in the cabinet to accommodate Railroad Preemption when specified in the plans or contract documents. Railroad Preemption shall meet the requirements set forth in Section 639. While it is not necessary that a Railroad Preemption interface board be provided with the cabinet, the cabinet and back panel shall be designed so that a Railroad Preemption interface panel that uses a relay to isolate the track switch from the controller cabinet circuitry can be installed. Preempt 1 and 2, in the case of gate down preemption, shall be reserved for Railroad Preemptions; all subsequent preemptions shall be reserved for Emergency Vehicle, Fire Station, or Police Preemption.

907-632.02.10--Uninterruptable Power Supply. When specified in the plans or contract documents an Uninterruptable Power Supply (UPS) System shall be installed in the cabinet assembly. The UPS shall be installed in the cabinet and meet the requirements set forth in Section 633.

907-632.02.11--Power Service Pedestal. A Power Service Pedestal shall be provided as described in Section 631.03.2.

907-632.03--Construction Requirements.

907-632.03.1--Mounting. Traffic Signal Cabinet Assemblies shall be wall or pole mounted, base mounted on a concrete cabinet pad, or base mounted using a composite enclosure as specified below and as shown in the plans.

Power Service Pedestal shall be base mounted on a concrete cabinet pad or on a composite enclosure as specified below and as shown in the plans.

907-632.03.1.1--Wall or Pole Mounted. Wall or pole mount hardware shall be provided for mounting cabinets in specific installations as indicated in the design plans. Wall or pole mounted cabinets shall be manufactured with rigid tabs, rigid brackets or other acceptable configuration for attachment of the cabinet to the wall or pole support. Rigid attachment devices must allow for field alignment of cabinet to the wall or pole support.

907-632.03.1.2--Concrete Cabinet Pad. Concrete foundations shall be constructed of Class B concrete in specific installations as indicated in the design plans.

Cabinets for installation on a concrete base shall be manufactured with rigid tabs, rigid brackets or other acceptable configuration for attachment of the cabinet bottom to its flat support structure. Rigid attachment devices must allow for field alignment of cabinet with the support base. Concrete base construction details shall be provided in the design plan drawings.

907-632.03.1.3--Composite Enclosure. Cabinets for installation on a composite enclosure base shall be manufactured with rigid tabs, rigid brackets or other acceptable configuration for attachment of the cabinet bottom to its' flat support structure. Rigid attachment devices must allow for field alignment of cabinet with the composite enclosure. Composite enclosure attachment details shall be provided as shown in the plans.

907-632.03.2--Documentation. Documentation packages shall be delivered for each unit at the same time as the equipment to which it pertains.

A minimum of two (2) sets of complete schematic drawings and equipment documentation shall be supplied with each cabinet. The first copy shall be placed in a clear re-sealable print pouch of sufficient size to accommodate one (1) complete set of folded cabinet prints and placed in the pull-out drawer of the cabinet and the second copy shall be provided to the Department. Comprehensive controller data shall be included as part of the cabinet documentation package and shall be placed in the cabinet drawer pouch. Digital copies of all cabinet documentation shall be provided to the Department before final acceptance.

The documentation packages shall contain a schematic wiring diagram of the controller cabinet assembly and all auxiliary equipment. The schematic wiring diagram, including a symbols legend, shall show in detail all integrated circuits, transistors, resistors, capacitors, inductors as well as switches and indicators. All parts shown shall be easily identified on both in the cabinet and on the schematic diagram. Model numbers shall be used on schematic diagram when available.

A complete physical description of the signal cabinet assembly shall be provided to include at least the physical dimensions of the unit, weight, temperature ratings, voltage requirements, power requirements, material of construction, and complete performance specifications.

A complete set of operation guides, user manuals, and performance specifications shall be provided.

Detailed programming instructions, preventative maintenance requirements, and troubleshooting procedures shall also be provided for the controllers. These documents shall fully cover all programming procedures and programmable options capable of being made to the controllers and associated traffic control equipment. Instructions for modifications within the range of the capabilities of the unit such as changes in phases or sequences and programming matrix boards shall be included.

An intersection diagram shall be provided on the cabinet door showing geometric configuration, lane use assignments, controller cabinet and signal pole locations, vehicle and pedestrian signal head locations, vehicle and pedestrian detector zone locations, ring-barrier phasing diagram, and detector channel assignments. The intersection diagram shall be labeled with, at a minimum, a North Arrow, main street name(s), side street name(s), signal pole numbers, vehicle and pedestrian head type(s), detector zone designations, volume density and phase recall requirements, flash sequence. All field wires within the cabinet shall be labeled to coincide with those shown on the intersection diagram.

907-632.04--Method of Measurement. Traffic Signal Cabinet Assembly will be measured as a unit per each.

Remove and Replace Existing Traffic Signal Cabinet Assembly will be measured as unit per each.

Modify Existing Traffic Signal Cabinet will be measured as a unit per each.

Solid State Traffic Actuated Controller, of the type specified in the project plans, will be measured as a unit per each.

Signal Software License, of the type specified in the project plans, will be measured as a unit per each.

Malfunction Management Unit, of the type specified in the project plans, will be measured as a unit per each.

Card Rack, of the type specified in the project plans, will be measured as a unit per each.

GPS Clock, as specified in the project plans, will be measured as a unit per each.

Power Service Pedestal, as specified in the project plans, will be measured as a unit per each.

All pay items shall be inclusive of all materials, work, system integration, testing and incidentals necessary for a complete and operable unit in place and accepted. All removal, turn on, and acceptance of equipment, devices, traffic signals, and traffic signal assemblies shall follow Section 631 - Traffic Signal Systems-General prior to payment.

907-632.05--Basis of Payment. Traffic Signal Cabinet Assembly, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for furnishing, installing, configuring, wiring, testing, and mounting foundation construction, cabinets, relays, terminals, circuit breakers, modules, coordination and time base control programs, connectors wiring, overlap equipment, load switches, power cables, power supplies, controller mechanism and housing, MMU2, mounting material, all other materials, and all equipment, labor, tools, and incidentals necessary to complete the work.

Remove and Replace Existing Traffic Signal Cabinet Assembly, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for furnishing, installing, configuring, wiring, testing, cabinets, relays, terminals, circuit breakers, modules, coordination and time base control programs, connectors wiring, overlap equipment, load switches, power cables, power supplies, controller mechanism and housing, MMU2, mounting material, all other materials, removal, disposal, transfer, storage, and/or resetting of components that are existing, all other components included in the traffic signal cabinet, and all equipment, labor, tools, and incidentals necessary to complete the work.

Modify Existing Traffic Signal Cabinet, measured as prescribed above, will be paid for at the

contract unit price per each, which price shall be full compensation for furnishing, installing, configuring, and mounting all components, wiring, and devices; rewiring, reconfiguring, removal, disposal, transfer, storage, and/or resetting of existing components and devices, installing or changing coordination and time base control programs in the traffic signal cabinet assemblies, testing, final cleanup, all equipment, labor, tools, and incidentals necessary to complete the work.

Solid State Traffic Actuated Controller, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for all labor, equipment, tools, materials inclusive of the controller mechanism(s) and housing(s), all power cables, power supplies, wiring, factory and manufacturing inspection, attachment hardware, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances, and all incidentals necessary to provide a fully functional traffic controller ready for use. It shall also include all documentation including operations and maintenance manuals and other material necessary to document the operation of the traffic controller.

Signal Software Licenses, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for all labor, equipment, tools, materials inclusive of furnishing, installing and configuring the Signal Software, all power cables, power supplies, wiring, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, appurtenances, and all incidentals necessary to provide fully functional Signal Software ready for use. It shall also include all documentation including operations and maintenance manuals and other material necessary to document the operation of the Signal Software.

Malfunction Management Unit, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for all labor, equipment, tools, materials inclusive of furnishing, installing and configuring the Malfunction Management Unit (MMU2), all power cables, power supplies, wiring, attachment hardware, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances, and all incidentals necessary to provide a fully functional Malfunction Management Unit (MMU2) ready for use. It shall also include all documentation including operations and maintenance manuals and other material necessary to document the operation of the Malfunction Management Unit (MMU2).

Card Rack, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for all labor, equipment, tools, materials inclusive of furnishing, installing and configuring the Card Rack, all power cables, power supplies, wiring, attachment hardware, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances, and all incidentals necessary to provide a fully functional Card Rack ready for use. It shall also include all documentation including operations and maintenance manuals and other material necessary to document the operation of the Card Rack.

GPS Clock, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for all labor, equipment, tools, materials inclusive of furnishing, installing and configuring the Global

Positioning System (GPS) Clock(s), all power cables, power supplies, wiring, attachment hardware, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all incidentals necessary to provide a fully functional GPS Clock ready for use. It shall also include all documentation including operations and maintenance manuals and other material necessary to document the operation of the GPS Clock.

Power Service Pedestal, measured as prescribed above, will be paid for at the contract unit price per each for each type(s) specified in the contract, which price shall be full compensation for furnishing, installing, configuring, wiring, testing, and mounting foundation construction, cabinets, circuit breakers, connectors wiring, mounting material, all other materials, and all equipment, labor, tools, and incidentals necessary to complete the work.

Payment will be made under:

- 907-632-A: Solid State Traffic Signal Cabinet Assembly,
Type __ Cabinet, Type __ Controller - per each
- 907-632-B: Remove and Replace Existing Traffic Signal Cabinet Assembly,
Type __ Cabinet, Type __ Controller - per each
- 907-632-C: Modify Existing Traffic Signal Cabinet Assembly - per each
- 907-632-D: Solid State Traffic Actuated Controller, Type _____ - per each
- 907-632-E: Single-user Workstation Signal Software License - per each
- 907-632-F: Single-user Server Signal Software License - per each
- 907-632-G: Malfunction Management Unit - per each
- 907-632-H: Card Rack, ____ Position - per each
- 907-632-I: GPS Clock - per each
- 907-632-J: Power Service Pedestal - per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-634-3

CODE: (IS)

DATE: 01/08/2020

SUBJECT: Traffic Signal and ITS Equipment Poles

Section 634, Traffic Signal and ITS Equipment Poles, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-634.02--Materials.

907-634.02.1--Poles. Delete the bullets for Type X poles in Subsection 634.02.1 on page 542 and substitute the following.

- Type X -- Aluminum Pole for Detectors

After Type XI poles in Subsection 634.02.1 on page 542, add the following.

- Type XII -- ITS Extension Poles

907-634.02.1.1--Traffic Signal Poles. Delete the first, third, fourth, and fifth bullets in Subsection 634.02.1.1 on pages 542 and 543, and substitute the following.

- Self-supporting straight or upswept mast arm(s), in accordance with Plan details. Where possible, the mast arms shall match the adjacent signal poles in the area unless otherwise stated;
- Tag installed on shaft side opposite the mainline highway and located approximately 48 inches above the top of the Baseplate;
- Minimum nominal size of four (4) inches wide by 26 inches tall reinforced hand-hole with included terminal block(s);
- A ½-inch coarse thread grounding stud shall be located on the interior side of the pole hand-hole opening;

907-634.02.1.2--Galvanized Steel Poles for Cameras. Delete the second paragraph of Subsection 634.02.1.2 on page 543, and substitute the following.

Unless specified otherwise in the plans, poles shall be designed in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals*, as specified in the plans, including all interims and updates. Design life shall be 50 years for all poles. The design wind speed for all parts of the structure shall meet the wind requirements set forth in the latest edition of the AASHTO Wind Map, as stated in Subsection 722.02.3. The pole shall meet the design wind loading with all equipment installed.

Delete the fourth bullet in Subsection 634.02.1.2 on page 544, and substitute the following.

- Top of pole deflection shall not exceed one (1) inch deflection from center due to 30 mph (non-gust) winds or the maximum deflection allowed by Subsection 722.02.3, whichever is more restrictive, for 80-foot poles.

907-634.02.1.3--Galvanized Steel Poles for Detectors. Delete the second paragraph of Subsection 634.02.1.3 on page 546, and substitute the following.

Unless specified otherwise in the plans, poles shall be designed in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals*, as specified in the plans, including all interims and updates. Design life shall be 50 years for all poles. The design wind speed for all parts of the structure shall meet the wind requirements set forth in the latest edition of the AASHTO Wind Map, as stated in Subsection 722.02.3.

Delete the last two sentences of the fifth paragraph of Subsection 634.02.1.3 on page 546, and substitute the following.

Design wind loading shall be as indicated in Subsection 722.02.3 unless otherwise noted in the plans. The pole shall meet design wind loading with all equipment installed.

907-634.02.1.4--Aluminum Poles for Detectors. Delete the second paragraph of Subsection 634.02.1.4 on page 547, and substitute the following.

Unless specified otherwise in the plans, poles shall be designed in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals*, as specified in the plans, including all interims and updates. Design life shall be 50 years for all poles. The design wind speed for all parts of the structure shall meet the wind requirements set forth in the latest edition of the AASHTO Wind Map, as stated in Subsection 722.02.3. The pole shall meet design wind loading with detector(s) installed.

907-634.02.1.5--Structure-Mounted ITS Equipment Poles. Delete the second paragraph of Subsection 634.02.1.5 on page 548, and substitute the following.

Unless specified otherwise in the plans, poles shall be designed in accordance with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals*, as specified in the plans, including all interims and updates. Design life shall be 50 years for all poles. The design wind speed for all parts of the structure shall meet the wind requirements set forth in the latest edition of the AASHTO Wind Map, as stated in Subsection 722.02.3. For projects that are in areas with higher wind standards, the higher standard is required. The pole shall meet design wind loading with all equipment installed.

Delete the second bullet in Subsection 634.02.1.5 on page 548, and substitute the following.

- Consideration shall be given for all possible loading combinations including ice and wind loads, as stated in Subsection 722.02.

After Subsection 634.02.1.8 on page 549, add the following.

907-634.02.1.9--ITS Extension Poles. ITS extension poles are used to provide ITS devices a mounting location with a vertical or horizontal clearance away from an existing pole or structure to which they are to be attached. As such, extension poles and the mounting and attachment hardware shall be of a material that will not cause galvanic corrosion with existing or proposed equipment. If possible, the extension poles shall be similar in color to the base pole or structure, unless otherwise directed. They shall meet the requirements of the base pole, the plans, and Subsection 722.02. Design considerations shall be given to the additional loading being subjected to the base pole or structure.

907-634.02.2--Camera Lowering Device. The lowering device system shall be designed to support, raise, and lower a standard CCTV camera, lens, housing, PTZ mechanism, cabling, connectors, and other supporting field components. The camera connector box shall be cast ZA-12 (12% Al and 88% Zn) and have a minimum weight that ensures stability of the camera during raising and lowering operation. The camera connector box shall have fully gasketed doors to prevent water intrusion. The bottom of the camera connector box shall be equipped with a condensation/moisture exit system. The camera connector block shall be molded in thermoset, weather-resistant, synthetic rubber designed to handle harsh environments.

Electrical contacts must also be designed to handle harsh environments. There shall be a locking mechanism between the fixed and movable components. For the movable components, a latching mechanism shall be provided to hold the device in place (when latched all weight shall be removed from the lowering cable) and to raise or lower the assembly using the lowering tool and lowering cable. The suspension contact unit housing shall be weatherproof with a gasket to isolate the interior from dust and moisture.

All pulleys shall have sealed, self-lubricated bearings, oil tight bronze bearings, or sintered bronze bushings. The lowering cable shall be a minimum 1/8-inch diameter stainless steel aircraft cable. Internal wireways shall prevent the stainless steel lifting cable from contacting power or video cabling. The only cable permitted to move is the lifting cable, all other cables must remain stable and secure during lowering and raising operations.

The lowering tool shall consist of a lightweight metal frame and winch assembly, a quick release cable connector, an adjustable safety clutch, and a variable speed industrial duty electric drill motor. This tool shall be able to access the lifting cable through a pole hand hole, shall support itself and the load during lowering, and shall provide a means to prevent freewheeling when loaded. This tool shall have a reduction gear to reduce the manual effort required during lifting operations. In addition, this tool shall be provided with an adapter for operating the lowering device with a portable drill using a clutch mechanism. The portable lowering tool shall be included as part of the installed system. The lowering device shall include customized adapter brackets to install cylindrical type PTZ CCTV cameras that have a mounting base below the camera assembly and is require to be installed in an upright position.

907-634.03--Construction Requirements.

907-634.03.1--Foundations. Delete the last sentence of the fourth paragraph of Subsection 632.03.1 on page 550, and substitute the following.

Where foundations are constructed in areas where the pavement edge elevation and shoulder edge elevation differ more than twelve (12) inches, taller foundations may be used but must be approved by the Engineer.

907-634.04--Method of Measurement. After the last sentence of the fourth paragraph of Subsection 634.04 on page 552, add the following.

Field conditions may require taller foundations than specified in the plans. In which case, the addition concrete will be paid for at the contract bid price per cubic yard for pole foundations.

After the sixth paragraph of Subsection 634.04 on page 553, add the following.

ITS extension poles of the type specified will be measured as a unit quantity per each.

Delete the last paragraph in Subsection 634.04 on page 553 and substitute the following.

Wooden poles will be measured as a unit quantity per each.

Camera lowering device will be measured as a unit quantity per each.

907-634.05--Basis of Payment. After the fourth paragraph of Subsection 634.05 on page 553, add the following.

Camera lowering device and camera lowering tool, as described above, shall be paid for at the contract unit price per each. This price shall be full compensation for all materials, design, installation, equipment, tools, labor and incidentals associated with providing and installing the camera lowering device and the camera lowering tool.

After the sixth paragraph of Subsection 634.05 on page 553, add the following.

ITS extension poles, measured as prescribed above, will be paid for at the contract unit price per each, which price shall be full compensation for furnishing all materials, for installing the extension pole, mounting attachments as necessary, adjusting the pole to meet specific project needs, and for all equipment, tools, labor, and incidentals necessary to complete the work.

After the last paragraph of Subsection 634.05 on page 554, add the following.

Sizing poles and their appurtenances to field conditions is the Contractor’s responsibility. No separate payment will be made for designing to meet project specifications and field conditions.

Delete the pay items listed on page 554, and substitute the following.

907-634-A: Traffic Signal Equipment Pole, Type __, __’ Shaft, __’ Arm * - per each

907-634-B: Traffic Signal Equipment Pole Shaft Extension, ___' **	- per each
907-634-C: Pole Foundations, Class ___ Concrete	- per cubic yard
907-634-D: Slip Casing, ___" Diameter	- per linear foot
907-634-E: Camera Pole with Foundation, ___' Pole	- per each
907-634-F: Detector Pole with Foundation, ___' Pole	- per each
907-634-G: Traffic Signal Equipment Pole Mast Arm Extension, ___' **	- per each
907-634-H: ITS Equipment Pole, Structure Mounted, ___' Pole	- per each
907-634-I: Wood Pole, Class ___ Height ___'	- per each
907-634-J ITS Extension Pole, _____' **	- per each
907-634-K: Camera Lowering Device	- per each

* Multiple Arms may be indicated

** Additional information may be indicated

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-636-2

CODE: (IS)

DATE: 11/15/2017

SUBJECT: Electrical Cable

Section 636, Electrical Cable, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-636.01--Description. Delete the last sentence of the last paragraph in Subsection 636.01 on page 555 and substitute the following.

It shall include excavating, laying, placing tracer cable or tape, backfilling, replacing sod, aerial supports and/or pull-through conduits, as applicable; and transformer enclosures and/or terminal boxes when not placed under other items of the contract.

907-636.02--Materials. After the paragraph of Subsection 636.02 on page 555, add the following.

907-636.02.1--ITS Ground Mounted Meter Enclosure.

907-636.02.1.1--Meter Base. Meter bases shall be NEMA Type 3R with a minimum rating of 100 amps and shall meet the requirements of the local utility. The meter base shall be provided with ampere rating of meter sockets based on sockets being wired with insulated wire rated at least 167°F. The meter base shall be designed for underground service.

Meter bases shall be 4-terminal, 600 volt, single phase, 3-wire furnished with the following:

- (a) Line, load and neutral terminals accepting #8 to 2/0 AWG copper/aluminum wire,
- (b) Ringed or ringless type, with or without bypass,
- (c) Made of galvanized steel,
- (d) Listed as meeting UL Standard UL-414, and
- (e) Underground service entrance as specified.

The meter bases shall have electrostatically applied dry powder paint finish, light gray in color, with a minimum thickness of 2.4 mils.

A 1-inch watertight hub for threaded rigid conduit shall be furnished with meter base.

907-636.02.1.2--Disconnect. External electrical service disconnects shall be furnished with a single pole 50-amp inverse time circuit breaker with at least 10,000 RMS symmetrical amperes short circuit current rating in a lockable in open or closed position in accordance with National Electric Code (NEC) and be a NEMA 3R Type enclosure. The disconnect shall be listed as meeting UL Standard UL-489 and marked as being suitable for use as service equipment.

The disconnect enclosure shall be fabricated from galvanized steel and electrostatically apply dry powder paint finish, light gray in color, to yield a minimum thickness of 2.4 mils. Ground bus and neutral bus shall be provided with at least four terminals with minimum wire capacity range of number 14 through number 4.

For 480V service, a local utility approved, lockable, non-fused disconnect switch on the supply side of the meter base shall be furnished, installed, and labeled as "Utility Disconnect". A separate load side disconnect with overcurrent protection shall be provided within two feet (2') of the meter.

907-636.02.1.3--Ground Mounted – Pedestal – Service Panel. The pedestal shall be of NEMA Type 3R rainproof construction and shall be UL Listed as "Enclosed Industrial Control Equipment" (UL 508A). External construction shall comply with UL50 requirements and shall be of G90 galvanized steel with light green #14672 Federal Specification 595 polyurethane industrial grade powder paint.

Hinges shall be stainless steel and of the continuous piano hinge type.

The pedestal mounting bolts shall not be externally accessible. The pedestal shall be able to be embedded in concrete or use anchor bolts for mounting on concrete base. Either pedestal mounting base or anchor bolt kit shall be used for installation.

The service pedestal should have three separate isolated sections for metering equipment, utility termination and customer equipment.

The metering section shall be pad-lockable and sealable and have a hinged swing hood with an integral hinged polycarbonate sealable window for access to demand meters. Meter socket type shall meet the requirements of the serving utility.

The utility termination section shall be pad-lockable and sealable and shall have a stainless steel handle provided on a lift-off cover. Sufficient clearance shall be provided for a 4-inch diameter conduit for utility cables entrance. Utility landing lugs shall be UL listed and shall accommodate conductor sizes between AWG #6 – 350 kcmil.

The customer compartment door shall be hinged on the left hand side. A stainless pad-lockable hasp shall be provided to secure customer compartment. A door keeper shall be provided to keep the door in an open position. A print pocket shall be provided on the inside of the door in a weatherproof sleeve. Required UL labeling shall be located on the inside of the customer door. Distribution and control equipment shall be behind an internal dead-front door with a quarter-turn securing latch and be hinged to open more than 90 degrees. The dead-front door shall be hinged on the same side as the customer section door. All distribution and control equipment shall be factory wired using 600-volt wire sized to NEC and UL requirements.

The service pedestal shall be rated for operation at 10K minimum amps interrupting capacity (AIC). The provided documentation shall list circuit breaker combinations and those to be used for de-rated operation for series ratings. Circuit breakers shall be permanently labeled with engraved name plates.

The serving utility shall be contacted for necessary requirements before ordering or installing equipment.

907-636.02.2--ITS Ground Mounted Transformer Enclosure.

907-636.02.2.1--Disconnect. The disconnect shall meet the requirements of Subsection 907-636.01.2.

907-636.02.2.2--Ground Mounted - Pedestal – Service Panel. The ground mounted - pedestal – service panel shall meet the requirements of Subsection 907-636.01.3. In addition, the transformer shall be rated to match the requirement of the primary service and the types of load served as specified in the plans. The transformer unit shall be installed inside the enclosure and meet all applicable codes. Each transformer shall be furnished as one complete unit and wiring of multiple transformers to meet the required ratings at each enclosure location is not allowed. Step-up and Step-down transformers shall be designed specifically for each application. Reverse feeding of step-up and step-down transformers is not allowed. All transformers shall be designed for outdoor installation and rated 600 VAC and below.

907-636.04--Method of Measurement. Delete the first paragraph of Subsection 636.04 on page 557, and substitute the following.

Electric cable of the type specified, constructed as specified on the plans, will be measured by the linear foot. Measurement will be computed horizontally along the conduit, messenger cable or mast arm and vertically along the pole. Measurement in underground conduit is only in the horizontal plane and no additional quantity shall be added for conduit depth or change in elevation of the conduit. No extra length will be allowed for cable inside signal heads, drip loops, or sag in aerial supported cable. Tracer tape, when required in the plans, used with tracer cable will not be measured for separate payment but shall be included in the contract price for Tracer Cable. The terminals for the measurements of lengths will be considered specifically as the center of the pull boxes, poles, signal heads or controller cabinets.

After the first paragraph of Subsection 636.04 on page 557, add the following.

ITS Ground Mounted Enclosures, complete in place and accepted, will be measured as a unit quantity per each for a complete and operable unit in accordance with the contract provisions.

907-636.05--Basis of Payment. After the first paragraph of Subsection 636.05 on page 557, add the following.

ITS Ground mounted enclosures, measured as prescribed above, will be required wherever ground mounted meter enclosures or step-up or step-down transformers are noted as required in the plans. The enclosures shall be paid for at the contract unit price bid per each; which price shall be full compensation for any transformers (as described in the plans), foundation construction, cabinets, pedestals, meter bases, disconnects, relays, terminals, circuit breakers, sockets, hubs, buses, connectors, mounting material, all other materials for constructing, installing, connecting, testing

and final cleanup; and for all equipment, labor, tools and incidentals necessary to complete the work in accordance with the contract documents.

In the first sentence of the second paragraph of Subsection 636.05 on page 557, change “relaid” to “re-laid”.

Delete the list of pay items on pages 557 and 558, and substitute the following.

- 907-636-A: Electric Cable, Direct Burial, Type, AWG ____, ____ Conductor - per linear foot
- 907-636-B: Electric Cable, Underground in Conduit, Type, AWG ____,
____ Conductor - per linear foot
- 907-636-C: Electric Cable, Aerial Supported, Type, AWG ____,
____ Conductor - per linear foot
- 907-636-D: Electric Cable, Aerial Supported in Conduit, Type, AWG ____,
____ Conductor - per linear foot
- 907-636-E: Electric Cable, Underground in Conduit, Tracer Cable - per linear foot
- 907-636-F: Electric Cable, Repair - per linear foot
- 907-636-G: Underground Cable and Conduit, Removed - per linear foot
- 907-636-H: Underground Cable and Conduit, Removed and Re-laid - per linear foot
- 907-636-I: ITS Ground Mounted * Enclosure - per each

* Indicates Meter or Transformer Enclosure Type

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-643-1

CODE: (IS)

DATE: 11/15/2017

SUBJECT: Video Vehicle Detection

Section 643, Video Vehicle Detection System, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

Delete Section 643 on pages 601 thru 628, and substitute the following.

SECTION 907-643 - VIDEO VEHICLE DETECTION

907-643.01--Description. This section specifies the minimum requirements for Video Vehicle Detection (VVD) and Multi-Sensor Vehicle Detection (MSVD) furnished and installed in accordance with the design(s) for the location(s) designated on the project plans, in any related notice to bidders, or as directed. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, test, and operate VVD and/or MSVD.

Type 1 Video Vehicle Detection will provide presence or pulse detection of vehicles, bicycles, and pedestrians for Traffic Signal Controller inputs. There are two variations of Type 1 Video Vehicle Detection: Type 1A – camera with independent video detection processor, Type 1B – a single integrated camera with video detection processor. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, and test the Video Vehicle Detection equipment, complete and ready for service.

Type 2 Video Vehicle Detection will provide presence or pulse detection of vehicles, bicycles, and pedestrians for Traffic Signal Controller inputs. Type 2 Video Vehicle Detection shall be designed to be span wire mounted. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, and test the Video Vehicle Detection equipment, complete and ready for service.

The Multi-Sensor Vehicle Detection (MSVD) will provide detection of vehicles on a roadway using a Multi-Sensor Detection for Traffic Signal Controller inputs. The Multi-Sensor shall utilize two (2) different sensors of different technologies, video imaging and radar, to detect and track vehicles. The module shall process information from both video imaging and radar sensors simultaneously in real-time. The work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, and test the Multi-Sensor Vehicle Detection equipment, complete and ready for service.

907-643.02--Materials.

907-643.02.1--Materials Type 1 Video Vehicle Detection. The Type 1 Video Vehicle Detection shall consist of power supply, video camera, mounting brackets, and lightning protection as

recommended by the manufacturer, video detection processors/extension modules capable of processing the number of camera and phase combination video sources shown on the project plans or in the purchase order. In addition, Type 1B Video Vehicle Detector shall consist of a single integrated camera with video detection processor, a cabinet interface which mounts in a standard detector rack or as a standalone shelf mount unit.

907-643.02.1.1--Functional Requirements for Type 1 Video Vehicle Detection. The Type 1 Video Vehicle Detection configuration shall utilize video processors with one or more video inputs and one (1) video output, responding to specific site applications, camera locations and detection zones shown on the project plans. Video processors or interface modules shall be provided which plug directly into NEMA TS 1 and TS 2 detector racks without adapters. Extension modules which allow detection zones from one camera to be routed to other card slots shall also be provided if required. The system shall be Ethernet compatible with an RJ45 port. The Type 1 Video Vehicle Detection shall be able to detect vehicles and bicycles in multiple lanes using only the video image.

907-643.02.1.2--Interface Type 1 Video Vehicle Detection. The following interfaces shall be provided:

- 1) Video inputs that accept RS 170 (NTSC) signals from an external video source. A BNC type interface connector shall be provided and located on the front of the video processing unit.
- 2) A LED indicator to indicate the presence of the video signal. The LED shall illuminate upon valid video synchronization and turn off when the presence of a valid video signal is removed.
- 3) One (1) video output per processor module. The video output shall be RS 170 compliant and shall pass through the input video signal. The video output shall have the capability to show text and graphical overlays to aid in system setup. The overlays shall display real-time actuation of detection zones upon vehicle detection or presence. Control of the overlays and video switching shall also be provided through the serial communications port. The video output interface connector shall be BNC or RCA type. If RCA connector is used, an RCA to BNC adapter shall be provided.
- 4) A serial communications port on the front panel. The serial port shall be compliant with RS-232 or RS-422 electrical interfaces and shall use a DB9 or RJ45 type connector. The serial communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information.
- 5) Interface software. The interface protocol shall support multi-drop or point-to-multipoint communications. Each video detection sensor shall have the capability to be individually IP addressable either built in or with third party video server units.
- 6) Open collector contact closure outputs meeting NEMA TS-2 requirements. The open collector output will be used for vehicle detection indicators as well as discrete outputs for alarm conditions.
- 7) LED status indicators on the front panel. The LED's shall illuminate when a contact closure output occurs. Provide one output LED for each contact closure output.
- 8) A mouse compatible port (PS-2 or USB) on the front panel of the video processing unit. The mouse port shall be used as part of the system setup and configuration.

- 9) A Cabinet Interface shall be provided that is specifically designed to mount in a standard NEMA TS 1 and TS 2 detector rack without adapters or rewiring, or as a stand-alone shelf mount unit. The Interface shall operate in a temperature range from -31°F to +165°F and a humidity range from 0% to 95% relative humidity. The Cabinet Interface shall be powered by 100v to 240v AC, 50 or 60Hz. The front of the Interface shall include LED detection indications for each channel of detection. One BNC video output and detector test switches that allow the user to place calls on each channel

907-643.02.1.3--Functionality Type 1 Video Vehicle Detection. Detection zones shall be programmed via an on-board menu displayed on a video monitor and a pointing device connected to the video detection processor. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. The video detection processor shall detect vehicles, bicycles, and pedestrians in real time as they travel across each detection zone. The video detection processor shall have an RS-232 (DB9 or RJ45) port for communications with an external computer. The video detection processor port shall be multi-drop capable.

It shall be possible to upload and save all configuration data including loop placement and save the file on a computer. It shall be possible to download a configuration file from a computer to the detection device.

The video detection processor shall accept new detection patterns from an external computer through the RS-232 port when the external computer uses the correct communications protocol for downloading detection patterns.

A Windows™ based software designed for local and remote connection shall be provided for video capture, real-time detection indication and detection zone modification capability. The video detection processor shall send its detection patterns to an external computer through the RS-232 port.

The video detection processor shall default to a safe condition, such as minimum recall, fixed recall or a constant call on each active detection channel, in the event of unacceptable interference with the video signal, low visibility conditions, or power failure.

The system shall be capable of automatically detecting a low-visibility condition such as fog and respond by placing all defined detection zones in a constant call mode. The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.

907-643.02.1.4--Detection. Type 1A shall have a minimum of 24 detection zones per camera input shall be possible, and each detection zone shall be capable of being sized to suit the site and the desired vehicle detection area. Type 1B shall have a minimum of 8 detection zones per camera input shall be possible, and each detection zone shall be capable of being sized to suit the site and the desired vehicle detection area.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

Placement of detection zones shall be done by using only a pointing device, and a Graphical Interface built into the video detection processor and displayed on a video monitor, to draw the detection zones on the video image from each video camera. Detection zones created in this manner shall be compatible with the PC-based software provided with the system.

The video detection processor shall support bicycle type zones where the zone can differentiate between motorized vehicles and bicycles, producing a call for one but not the other. Bicycle zones shall only output when a bicycle is detected. The video detection processor shall provide the ability to assign a separate output channel for bicycle zones to allow traffic controllers to implement special bicycle timing for applications where the traffic controller has separate bicycle detection inputs. Bicycle zones shall have the ability to have extensions assigned to individual bicycle zones for applications where the traffic controller does not have bicycle specific detection inputs.

For Type 1A, six (6) additional count zones for bicycles shall be provided to accumulate bicycle counts at user specified intervals.

The video detection processor's memory shall be non-volatile to prevent data loss during power outages.

When a vehicle is detected crossing a detection zone, the corners or entire zone of the detection zone shall flash/change color on the video overlay display to confirm the detection of the vehicle. It shall be possible to record the operation of the unit in real time with the detection zones operating.

Detection shall be at least 98% accurate in all weather conditions, with slight degradation acceptable under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility.

The video detection processor shall maintain normal operation of existing detection zones when one (1) zone is being added or modified.

The video detection processor shall output a constant call on any detector channel corresponding to a zone being modified and shall resume normal operation upon completion.

Detection zones shall be directional to reduce false detections from objects traveling in directions other than the desired direction of travel in the detection area.

The video detection processor shall process the video input from each camera using a microprocessor at 30 frames per second at one volt, peak to peak, 75 ohms, or EIA 170 NTSC video standard.

The video detection processor shall output minimum recall, fixed recall or constant call for each enabled detector output channel if a loss of video signal occurs. The recall behavior shall be user selectable for each output. The video detection processor shall output a constant call during the background "learning" period.

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds in increments of 0.1 seconds.

Type 1A shall have up to six (6) detection zones per camera view that have the capability to count the number of vehicles detected, measure classification and speed. The data values shall be internally stored within the processor module for later retrieval through the RS-232 port. The data collection interval shall be user definable in periods of 5, 15, 30, or 60 minutes or by intersection cycle. Real-time data shall be retrieved from the PC-based software provided with the system.

907-643.02.1.5--Camera. Type 1A cameras shall be completely compatible with the video detection processor and shall be certified by the manufacturer to ensure proper system operation.

Type 1B shall be a single integrated camera with built in video detection processor.

The Video Vehicle Detection shall produce accurate detector outputs under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.009 to 930 foot-candles.

The camera shall use a color CCD sensing element with resolution of not less than 470 lines horizontal and 400 lines vertical.

The camera shall include mechanisms to compensate for changing of lighting by using an electronic shutter and/or auto-iris lens.

The camera shall include a variable focal length lens with factory preset focus that requires no field adjustment. Zooming of the camera lens to suit the site geometry by means of a portable interface device designed for that purpose. The horizontal field of view shall be adjustable. Camera configuration shall be customized for each approach based on field site conditions and the project plans.

The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.

The camera shall be housed in a weather-tight sealed enclosure. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutter at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure. The heater shall directly heat the glass lens and require less than five (5) watts over the temperature range.

Power consumption of the camera shall be 15 watts or less under all conditions.

The camera enclosure shall be equipped with separate, weather-tight connections for power and setup video cables at the rear of the enclosure. These connections shall allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module furnished under this bid item.

The video signal output by the camera shall in accordance with NTSC standards.

All necessary mounting brackets shall be mounted to pole shafts, mast arms, or other structures to mount cameras as indicated on the project plans. Mounting brackets shall result in a fixed-position mounting. Mounting Brackets shall be included at no additional cost.

907-643.02.1.6--Video Cable. The cable provided shall be as recommended by the manufacturer for optimal video detection performance. The power and video cable may be installed under the same outer jacket. The cable and installation tools shall be approved by the supplier and manufacturer's instructions must be followed to ensure proper connection.

907-643.02.1.7--Power Cable. The cable provided shall be as recommended by the manufacturer for optimal video detection performance.

Camera power cable shall be suitable for installation in conduit and in exposed sunlight environment, and UL listed.

The power and video cable may be installed under the same outer jacket. The cable and installation tools shall be approved by the supplier and manufacturer's instructions must be followed to ensure proper connection.

907-643.02.1.8--Surge Protection. Surge protection devices shall be provided for all new or added video detection devices as recommended by the manufacturer.

Video and/or Power cable shall be protected with an inline surge suppressor as recommended by the manufacturer or a panel mounted surge suppressor as recommended by the manufacturer or approved equal, installed and grounded per manufacturer's recommendations.

907-643.02.1.9--Physical and Environmental Specifications. Physical and Environmental Specifications shall be as follows.

Video Vehicle Detection Processor: The video vehicle detection processor shall operate reliably in a typical roadside traffic cabinet environment. Internal cabinet equipment and a video vehicle detection processor shall be provided that meets the environmental requirements of NEMA TS-2-2003 Section 2. If the processor is located in the sensor, it shall meet the same requirements.

Video Camera Sensor: The operating ambient temperature range shall be -30°F to 140°F. Additionally, a heater shall be included to prevent the formation of ice and condensation in cold weather. The heater shall not interfere with the operation of the video camera sensor electronics,

or cause interference with the video signal.

Vibration: Vibrations shall meet the requirements of NEMA TS 2-2003 Section 2.1.9. Shock: Shock shall meet the requirements of NEMA TS 2-2003 Section 2.1.10.

Acoustic Noise: A video camera sensor and enclosure shall be provided that can withstand 150 dB for 30 minutes continuously, with no reduction in function or accuracy.

907-643.02.2--Materials Type 2 Video Vehicle Detection. The Type 2 Video Vehicle Detection shall be span wire mounted and consist of power supply, video camera, mounting brackets, and lightning protection as recommended by the manufacturer, video detection processors/extension modules capable of processing the number of camera and phase combination video sources shown on the project plans or in the purchase order

907-643.02.2.1--Functional Requirements for Type 2 Video Vehicle Detection. The Type 2 Video Vehicle Detection configuration shall utilize video processors with one or more video inputs and one (1) video output, responding to specific site applications, camera locations and detection zones shown on the project plans. Video processors or interface modules shall be provided which plug directly into NEMA TS 1 and TS 2 detector racks without adapters. Extension modules which allow detection zones from one camera to be routed to other card slots shall also be provided if required. The system shall be Ethernet compatible with an RJ45 port. The Type 2 Video Vehicle Detection shall be able to detect vehicles and bicycles in multiple lanes using only the video image.

907-643.02.2.2--Interface Type 2 Video Vehicle Detection. The following interfaces shall be provided:

- 1) Video inputs that accept RS 170 (NTSC) signals from an external video source. A BNC type interface connector shall be provided and located on the front of the video processing unit.
- 2) A LED indicator to indicate the presence of the video signal. The LED shall illuminate upon valid video synchronization and turn off when the presence of a valid video signal is removed.
- 3) One (1) video output per processor module. The video output shall be RS 170 compliant and shall pass through the input video signal. The video output shall have the capability to show text and graphical overlays to aid in system setup. The overlays shall display real-time actuation of detection zones upon vehicle detection or presence. Control of the overlays and video switching shall also be provided through the serial communications port. The video output interface connector shall be BNC or RCA type. If RCA connector is used, an RCA to BNC adapter shall be provided.
- 4) A serial communications port on the front panel. The serial port shall be compliant with RS-232 or RS-422 electrical interfaces and shall use a DB9 or RJ45 type connector. The serial communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information.
- 5) Interface software. The interface protocol shall support multi-drop or point-to- multipoint communications. Each video detection sensor shall have the capability to be individually IP addressable either built in or with third party video server units.

- 6) Open collector contact closure outputs meeting NEMA TS 2 requirements. The open collector output will be used for vehicle detection indicators as well as discrete outputs for alarm conditions.
- 7) LED status indicators on the front panel. The LED's shall illuminate when a contact closure output occurs. Provide one output LED for each contact closure output.
- 8) A mouse compatible port (PS-2 or USB) on the front panel of the video processing unit. The mouse port shall be used as part of the system setup and configuration.
- 9) A Cabinet Interface shall be provided that is specifically designed to mount in a standard NEMA TS 1 and TS 2 detector rack without adapters or rewiring, or as a stand-alone shelf mount unit. The Interface shall operate in a temperature range from -31°F to +165°F and a humidity range from 0% to 95% relative humidity. The Cabinet Interface shall be powered by 100v to 240v AC, 50 or 60Hz. The front of the Interface shall include LED detection indications for each channel of detection. One BNC video output and detector test switches that allow the user to place calls on each channel

907-643.02.2.3--Functionality Type 2 Video Vehicle Detection. Detection zones shall be programmed via an on-board menu displayed on a video monitor and a pointing device connected to the video detection processor. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. The video detection processor shall detect vehicles, bicycles, and pedestrians in real time as they travel across each detection zone. The video detection processor shall have an RS-232 (DB9 or RJ45) port for communications with an external computer. The video detection processor port shall be multi-drop capable.

It shall be possible to upload and save all configuration data including loop placement and save the file on a computer. It shall be possible to download a configuration file from a computer to the detection device.

The video detection processor shall accept new detection patterns from an external computer through the RS-232 port when the external computer uses the correct communications protocol for downloading detection patterns.

A Windows™ based software designed for local and remote connection shall be provided for video capture, real-time detection indication and detection zone modification capability. The video detection processor shall send its detection patterns to an external computer through the RS-232 port.

The video detection processor shall default to a safe condition, such as minimum recall, fixed recall or a constant call on each active detection channel, in the event of unacceptable interference with the video signal, low visibility conditions, or power failure.

The system shall be capable of automatically detecting a low-visibility condition such as fog and respond by placing all defined detection zones in a constant call mode. The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.

907-643.02.2.3.1--Functionality for Type 2 Video Vehicle Detection. The Video Detection Processor (VDP) for the Type 2 Video Vehicle Detection shall employ Dynamic Zone

Stabilization to provide motion tracking and compensation for swaying camera sensors mounted on dual or single span wires. The VDP shall include software that discriminately detects the presence of vehicles and bicycles in single or multiple lanes using only the video image. The VDP shall compensate for swaying motions by tracking the position of the stop bar for the approaching vehicle or bicycle movement. The VDP shall compensate for low frequency (cable sag) motion due to temperature changes during the day. The VDP shall compensate for moderate frequency motion induced by winds. The VDP shall compensate for up to ± 5 degrees of tilt from vertical without any adverse detection false calls or dropped calls.

907-643.02.2.4--Detection. Type 2 shall have a minimum of 24 detection zones per camera input shall be possible, and each detection zone shall be capable of being sized to suit the site and the desired vehicle detection area. .

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

Placement of detection zones shall be done by using only a pointing device, and a Graphical Interface built into the video detection processor and displayed on a video monitor, to draw the detection zones on the video image from each video camera. Detection zones created in this manner shall be compatible with the PC-based software provided with the system.

The video detection processor shall support bicycle type zones where the zone can differentiate between motorized vehicles and bicycles, producing a call for one but not the other. Bicycle zones shall only output when a bicycle is detected. The video detection processor shall provide the ability to assign a separate output channel for bicycle zones to allow traffic controllers to implement special bicycle timing for applications where the traffic controller has separate bicycle detection inputs. Bicycle zones shall have the ability to have extensions assigned to individual bicycle ones for applications where the traffic controller does not have bicycle specific detection inputs.

Six (6) additional count zones for bicycles shall be provided to accumulate bicycle counts at user specified intervals.

The video detection processor's memory shall be non-volatile to prevent data loss during power outages.

When a vehicle is detected crossing a detection zone, the corners or entire zone of the detection zone shall flash/change color on the video overlay display to confirm the detection of the vehicle. It shall be possible to record the operation of the unit in real time with the detection zones operating.

Detection shall be at least 98% accurate in all weather conditions, with slight degradation acceptable under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility.

The video detection processor shall maintain normal operation of existing detection zones when one (1) zone is being added or modified.

The video detection processor shall output a constant call on any detector channel corresponding to a zone being modified and shall resume normal operation upon completion.

Detection zones shall be directional to reduce false detections from objects traveling in directions other than the desired direction of travel in the detection area.

The video detection processor shall process the video input from each camera using a microprocessor at 30 frames per second at one volt, peak to peak, 75 ohms, or EIA 170 NTSC video standard.

The video detection processor shall output minimum recall, fixed recall or constant call for each enabled detector output channel if a loss of video signal occurs. The recall behavior shall be user selectable for each output. The video detection processor shall output a constant call during the background "learning" period.

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds in increments of 0.1 seconds.

The processor shall have up to six (6) detection zones per camera view shall have the capability to count the number of vehicles detected, measure classification and speed. The data values shall be internally stored within the processor module for later retrieval through the RS-232 port. The data collection interval shall be user definable in periods of 5, 15, 30, or 60 minutes or by intersection cycle. Real-time data shall be retrieved from the PC-based software provided with the system.

907-643.02.2.5--Camera. Type 2 cameras shall be completely compatible with the video detection processor and shall be certified by the manufacturer to ensure proper system operation.

The Video Vehicle Detection shall produce accurate detector outputs under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.009 to 930 foot-candles.

The camera shall use a color CCD sensing element with resolution of not less than 470 lines horizontal and 400 lines vertical.

The camera shall include mechanisms to compensate for changing of lighting by using an electronic shutter and/or auto-iris lens.

The camera shall include a variable focal length lens with factory preset focus that requires no field adjustment. Zooming of the camera lens to suit the site geometry by means of a portable interface device designed for that purpose. The horizontal field of view shall be adjustable. Camera configuration shall be customized for each approach based on field site conditions and the project plans.

The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.

The camera shall be housed in a weather-tight sealed enclosure. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutter at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure. The heater shall directly heat the glass lens and require less than five (5) watts over the temperature range.

Power consumption of the camera shall be 15 watts or less under all conditions.

The camera enclosure shall be equipped with separate, weather-tight connections for power and setup video cables at the rear of the enclosure. These connections shall allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module furnished under this bid item.

The video signal output by the camera shall in accordance with NTSC standards.

All necessary mounting brackets shall be mounted to pole shafts, mast arms, or other structures to mount cameras as indicated on the project plans. Mounting brackets shall result in a fixed-position mounting. Mounting Brackets shall be included at no additional cost.

907-643.02.2.6--Video Cable. The cable provided shall be as recommended by the manufacturer for optimal video detection performance. The power and video cable may be installed under the same outer jacket. The cable and installation tools shall be approved by the supplier and manufacturer's instructions must be followed to ensure proper connection.

907-643.02.2.7--Power Cable. The cable provided shall be as recommended by the manufacturer for optimal video detection performance.

Camera power cable shall be suitable for installation in conduit and in exposed sunlight environment, and UL listed.

The power and video cable may be installed under the same outer jacket. The cable and installation tools shall be approved by the supplier and manufacturer's instructions must be followed to ensure proper connection.

907-643.02.2.8--Surge Protection. Surge protection devices shall be provided for all new or added video detection devices as recommended by the manufacturer.

Video and/or Power cable shall be protected with an inline surge suppressor as recommended by the manufacturer or a panel mounted surge suppressor as recommended by the manufacturer or approved equal, installed and grounded per manufacturer's recommendations.

907-643.02.2.9--Physical and Environmental Specifications. Physical and Environmental Specifications shall be as follows.

Video Vehicle Detection Processor: The video vehicle detection processor shall operate reliably in a typical roadside traffic cabinet environment. Internal cabinet equipment and a video vehicle detection processor shall be provided that meets the environmental requirements of NEMA TS 2-2003 Section 2. If the processor is located in the sensor, it shall meet the same requirements.

Video Camera Sensor: The operating ambient temperature range shall be -30°F to 140°F. Additionally, a heater shall be included to prevent the formation of ice and condensation in cold weather. Do not allow the heater to interfere with the operation of the video camera sensor electronics, or cause interference with the video signal.

Vibration: Vibrations shall meet the requirements of NEMA TS 2-2003 section 2.1.9. **Shock:** Shock shall meet the requirements of NEMA TS 2-2003 section 2.1 .10.

Acoustic Noise: A video camera sensor and enclosure shall be provided that can withstand 150 dB for 30 minutes continuously, with no reduction in function or accuracy.

907-643.02.3--Materials Multi-Sensor Vehicle Detection.

907-643.02.3.1--General. The Multi-Sensor Vehicle Detector shall utilize two (2) different sensors of different technologies, video imaging and radar, to detect and track licensed and unlicensed vehicles at distances up to 600 feet. The detector shall fuse vehicle information from the two sensors to provide highly accurate and precise detection for special or advanced applications.

The Multi-Sensor Vehicle Detector shall use a primary detector rack mounted processor to interface with the traffic control cabinet. The module shall process information from both video imaging and radar sensors simultaneously in real-time.

907-643.02.3.2--Detector Configuration. The proposed MSVD shall be available in various configurations to allow maximum deployment flexibility. Each configuration shall have an identical user interface for system setup and configuration. The communications protocol to each configuration shall be identical and shall be hardware platform independent.

The detector shall include software that detects vehicles in multiple lanes. Video imaging detection zones shall be defined using only an on-board video menu and a pointing device to place the zones on a video image. Up to 24 video detection zones per camera view shall be available. Two (2) additional trigger zones for the radar sensor shall be available and be configurable by using the same system setup menu on the DP. A separate computer shall not be required to program the detection zones. A pre-programmed setup tool is required to align and input radar

information and set the camera field of view (zoom and focus).

907-643.02.3.3--Multi-Sensor Vehicle Detection Hardware. The MSVD hardware shall consist of the following four (4) elements:

- 1) Video Imaging Camera Sensor
- 2) Radar Sensor
- 3) Sensor Data Combiner
- 4) Detection Processor

907-643.02.3.3.1--Video Imaging Camera Sensor. The video imaging camera sensor shall meet the following minimum requirements:

- To accommodate deployment flexibility, the MSVD camera sensor shall be compatible with the Data Processor platforms. The MSVD camera sensor shall be supplied by the MSVD manufacturer.
- The advanced camera enclosure shall utilize technology for the heating element of the front glass. The transparent coating shall not impact the visual acuity and shall be close to optically clear.
- Cable terminations at the data combiner for video and power shall not require crimping or special tools.
- The camera sensor shall allow the user to set the focus and field of view via Wi-Fi connectivity.
- The camera shall produce a useable video image of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 1.0 lux to 10,000 lux.
- The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.
- The imager luminance signal to noise ratio (S/N) shall be more than 50 dB with the automatic gain control (AGC) disabled.
- The imager shall employ three (3) dimensional dynamic noise reduction (3D-DNR) to remove unwanted image noise.
- The camera image shall employ wide dynamic range (WDR) technology to compensate for wide dynamic outdoor lighting conditions. The dynamic range shall be greater than 100 dB.
- The camera shall be digital signal processor (DSP) based and shall use a CCD sensing element and shall output color video with resolution of not less than 550 TV lines.
- The camera sensor shall include an electronic shutter control based upon average scene luminance and shall be equipped with an auto-iris lens that operates in tandem with the electronic shutter. The electronic shutter shall operate between the range of 1/1 to 1/10,000th second.
- The camera sensor shall utilize automatic white balance.
- The camera sensor shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier.

- The horizontal field of view shall be adjustable. This camera configuration may be used for the majority of detection approaches in order to minimize the setup time and spares required by the user. The lens shall be a minimum 10X zoom lens with a variable focal length.
- The lens shall also have an auto-focus feature with a manual override to facilitate ease of setup.
- The camera shall incorporate the use of preset positioning that store zoom and focus positioning information. The camera shall have the capability to recall the previously stored preset upon application of power.
- The camera shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications. The housing shall allow the camera to be rotated to allow proper alignment between the camera and the traveled road surface.
- The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view.
- The camera enclosure shall be designed so that the pan, tilt and rotation of the camera assembly can be accomplished independently without affecting the other settings.
- The camera enclosure shall include a proportionally controlled heater design that maximizes heat transfer to the lens. The output power of the heater shall vary with temperature, to assure proper operation of the lens functions at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.
- The glass face on the front of the enclosure shall have an anti-reflective coating to minimize light and image reflections.
- When mounted outdoors in the enclosure, the camera shall operate in a temperature range from -29°F to +165°F and a humidity range from 0% RH to 100% RH.
- Measurement of satisfactory video shall be based upon DP system operation.
- The camera sensor shall acquire its power from the sensor data combiner.
- Recommended camera placement height shall be 18 to 33 feet above the roadway, and over the traveled way on which vehicles are to be detected. For optimum detection the camera should be centered above the traveled roadway. The camera shall view approaching vehicles at a distance not to exceed 350 feet for reliable detection (height to distance ratio of 10:100). Camera placement and field of view (FOV) shall be unobstructed and as noted in the installation documentation provided by the supplier.
- The video signal shall be fully isolated from the camera enclosure and power cabling.
- A weather-proof protective cover shall be provided to protect all terminations at the camera.

907-643.02.3.3.2--Radar Sensor. The radar sensor shall meet the following minimum requirements:

- The radar sensor shall operate in the 24 GHz frequency band.
- The radar detection range shall be 600 feet minimum, $\pm 5\%$.
- The radar sensor shall be able to track up to 20 independent objects simultaneously.
- Object speed detection shall be within a range of zero (0) to 150 mph ± 1.0 mph.
- The radar sensor shall be able to detect vehicles in one (1) to four (4) traffic lanes.
- The radar sensor shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications. The housing shall allow the radar to be adjusted to allow proper alignment between the sensor and the traveled road surface.

- When mounted outdoors in the enclosure, the radar shall operate in a temperature range from -29°F to +165°F and a humidity range from 0% RH to 100% RH.
- The radar sensor shall communicate with the sensor data combiner.
- The radar sensor shall acquire its power from the sensor data combiner.
- Data and power cables between the radar sensor and sensor data combiner shall be fully isolated from the sensor enclosure.

907-643.02.3.3.3--Multi-Sensor Vehicle Detection Assembly. Multi-Sensor Vehicle Detection Assembly shall meet the following requirements:

- Both camera and radar sensors shall be housed in an overall, single enclosure assembly.
- The maximum power consumption for the Multi-Sensor Vehicle Detection Assembly shall be less than ten (10) watts typical, 20 watts peak.

907-643.02.3.3.4--Sensor Data Combiner. The sensor data combiner (if required) shall meet the following minimum requirements:

- A sensor data combiner that combines sensor information from both video and radar sensors shall be employed.
- Sensor data combiner shall supply primary power to each sensor unit.
- Sensor data combiner shall facilitate digital communications between the sensor data combiner and each of the sensor units.
- Sensor data combiner shall get its primary power from an AC power source using industry standard 3-conductor cabling.
- Sensor data combiner shall communicate with the detection processor using a single coax cable. Both video imaging and radar data shall use the single coax cable.
- The sensor data combiner shall also employ industry standard Wi-Fi connectivity for remote sensor system setup using a mobile programming device such as a netbook or tablet computer. Video camera and radar sensor shall be able to be configured independently.
- Sensor data signal shall be fully isolated from the mechanical enclosure and power cabling.
- Cable terminations at the sensor data combiner shall not require crimping tools.
- The Sensor Data Combiner shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications.

907-643.02.3.3.5--Detection Processor. The detection processor shall meet the following minimum requirements:

- Each sensor input shall accept RS170 (NTSC) or CCIR (PAL) signals from an external video source. The interface connector shall be BNC type and shall be located on the front of the processing unit. The sensor input shall have the capability to be terminated into 75-ohms or high impedance (Hi-Z) using dip switches or software control from the user menu. The sensor input shall also facilitate the data from the radar sensor.
- A LED indicator shall be provided to indicate the presence of the sensor signal. The LED shall illuminate upon valid sensor synchronization and turn off when the presence of a valid

sensor signal is removed.

- One (1) video output shall be provided. The video output shall be RS170 or CCIR compliant and shall pass through the input video signal. For multi-channel video input configurations, a momentary push-button shall be provided on the front panel to cycle through each input video channel. In the absence of a valid sensor signal, the channel shall be skipped and the next valid sensor signal shall be switched. The real time video output shall have the capability to show text and graphical overlays to aid in system setup. The video output interface connector shall be positive locking BNC type. Friction type (e.g. RCA type) connectors shall not be allowed.
- A communications port shall be provided on the front panel. The communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information. The interface protocol shall be documented or interface software shall be provided. Each MSVD shall have the capability to be addressable. The DP shall support data rates of 1200 bps to 230,400 bps, inclusive.
- Open collector (contact closure) outputs shall be provided. Four (4) open collector outputs shall be provided for the single or dual channel rack-mount configuration. Additionally, the DP shall allow the use of extension modules to provide up to 24 open collector contact closures per camera input. Each open collector output shall be capable of sinking 30 mA at 24 VDC. Open collector outputs will be used for vehicle detection indicators as well as discrete outputs for alarm conditions. The DP outputs shall be compatible with industry standard detector racks assignments.
- Logic inputs such as delay/extend or delay inhibit shall be supported through the appropriate detector rack connector pin or front panel connector in the case of the I/O module. For DPs and extension modules, four (4) inputs shall be supported via detector rack interface. The I/O module shall accommodate eight (8) inputs through a 15-pin "D" connector.
- Detection status LEDs shall be provided on the front panel. The LEDs shall illuminate when a contact closure output occurs. The front panel of the DP shall have detector test switches to allow the user to manually place calls on each DP output channel. The test switch shall be able to place either a constant call or a momentary call depending on the position of the switch.
- A USB mouse port shall be provided on the front panel of the rack mount detection processing unit. The mouse port shall not require special mouse software drivers. The mouse port shall be used as part of system setup and configuration.
- Extension modules (if required) shall be connected to the DP by an 8-wire twisted-pair cable with modular RJ45 connectors. DP and EM communications shall be accommodated by methods using differential signals to reject electrically coupled noise.
- Extension modules (EM) shall be available to eliminate the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack to provide additional open collector outputs. The extension module shall be available in both two (2) and four (4)-channel configurations. The DP and EM shall be specifically designed to mount in a standard detector rack, using the edge connector to obtain power, provide contact closure outputs and accept logic inputs (e.g. delay/extend). No adapters shall be required to mount the DP or EM in a standard detector rack. Detector rack rewiring shall not be required.
- The DP shall utilize non-volatile memory technology to store on-board firmware and

operational data.

- The DP shall enable the loading of modified or enhanced software through the EIA232 or USB port (using a USB thumb drive) and without modifying the DP hardware.
- The DP and EM shall be powered by 12 or 24 volts DC. DP and EM modules shall automatically compensate for either 12 or 24 VDC operation. DP power consumption shall not exceed 7.5 watts. The EM power consumption shall not exceed three (3) watts.
- The DP shall operate satisfactorily in a temperature range from -40°F to +165°F and a humidity range from zero (0) %RH to 95 %RH, non-condensing as set forth in NEMA specifications.
- A video surge suppresser shall be provided for each sensor input. The surge suppresser shall be appropriately grounded to the cabinet ground rod using AWG 14 minimum.

907-643.02.3.4--Detection Software. The detection software shall meet the following general system functions:

- Detection zones shall be programmed via an on board menu displayed on a video monitor and a pointing device connected to the DP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. A separate computer shall not be required for programming detection zones or to view system operation.
- The DP shall store up to three (3) different detection zone patterns in non-volatile memory. The DP can switch to any one of the three (3) different detection patterns within one (1) second of user request via menu selection with the pointing device. Each configuration shall be uniquely labeled and able to be edited by the user for identification. The currently active configuration indicator shall be displayed on the monitor.
- The DP shall detect vehicles in real time as they travel across each detection zone.
- The DP shall accept new detection patterns from an external computer through a communications port when the external computer uses the correct communications protocol for downloading detection patterns. A Windows™ based software designed for local or remote connection and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.
- The DP system shall have the capability to automatically switch to any one of the stored configurations based on the time of day which shall be programmable by the user.
- The DP shall send its detection patterns to an external computer through the communications port when requested when the external computer uses the appropriate communications protocol for uploading detection patterns.
- The DP shall default to a safe condition, such as a constant call on each active detection channel, in the event of unacceptable interference or loss of the sensor signal.
- The system shall be capable of automatically detecting a low-visibility condition such as fog and respond by placing all effected detection zones in a constant call mode. A user-selected alarm output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s). The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.
- Up to 24 detection zones per camera input shall be supported and each detection zone can be sized to suit the site and the desired vehicle detection region.
- The DP shall support two (2) independent trigger points for radar outputs for dilemma

zone applications.

- The DP shall provide up to 24 open collector output channels per sensor input using one or more extension modules.
- A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single approach of traffic movement.
- Placement of detection zones shall be done by using only a pointing device, and a graphical interface built into the DP and displayed on a video monitor or laptop computer to draw the detection zones on the video image from each video camera.
- When a vehicle is detected within a detection zone, a visual indication of the detection shall activate on the video overlay display to confirm the detection of the vehicle for the zone.
- Detection shall be at least 98% accurate in good weather conditions, with slight degradation possible under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility. Detection accuracy is dependent upon site geometry, camera placement, camera quality and detection zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.
- The DP shall provide dynamic zone reconfiguration (DZR). DZR enables normal operation of existing detection zones when one zone is being added or modified during the setup process. The new zone configuration shall not go into effect until the configuration is saved by the operator.
- Detection zone setup shall not require site specific information such as latitude and longitude to be entered into the system.
- The DP shall process the video input from each camera at 30 frames per second. Multiple camera processors shall process all video inputs simultaneously.
- The DP shall output a constant call during the background learning period of no more than three (3) minutes.
- Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.
- Up to six (6) video detection zones per sensor input shall have the capability to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the communications port.
- In addition to the count type zone, the DP shall be able to calculate and/or acquire average speed and lane occupancy using both video and radar sensors. These values shall be stored in non-volatile memory for later retrieval.
- The DP shall have an "advance" zone type where detection outputs to the traffic controller are compensated for angular occlusion and distance.
- The user shall have the ability to enable or disable the display of the phase information on the video output.
- The DP shall have the capability to change the characteristics of a detection zone based on external inputs such as signal phase. Each detection zone shall be able to switch from one zone type (i.e. presence, extension, pulse, etc.) to another zone type based on the signal state. For example, a zone may be a "count" zone when the phase is green but change to a "presence" zone type when the phase is not green. Another application would be zone type

of “extension” when the signal phase is green and then “delay” when red.

- The DP shall aid the user in drawing additional detection zones by automatically drawing and placing zones at appropriate locations with only a single click of the mouse. When the user wishes to modify the location of a zone, the DP shall allow the user move a single zone, multiple zones or all zones simultaneously.
- On-screen zone identifiers shall be modifiable by the user. The user shall be allowed to select channel output assignments, zone type, input status, zone labels or zone numbers to be the identifier.
- For multiple camera input DPs, the user shall have the ability to enable automatic video output switching. The dwell time for each sensor input shall be user programmable.
- For the radar sensor zones the output can be triggered by presence of a vehicle only or by presence of a vehicle above a speed defined by the user.

907-643.02.3.5--Multi-Sensor Cable. The cable to be used between the Multi-Sensor Vehicle Detection Assembly and the DP in the traffic cabinet shall be per manufacturer’s specifications. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. BNC plug connectors shall be used where applicable. The cable, BNC connector, and crimping tool shall be approved by the supplier of the MSVD, and the manufacturer's instructions must be followed to ensure proper connection.

907-643.02.3.6--Power Cable. The power cabling shall be per manufacturer’s specifications. The cabling shall comply with the National Electric Code, as well as local electrical codes.

907-643.03--Construction Requirements. The Construction and testing requirements for Type 1, Type 2, and Multi-Sensor Vehicle Detection are the same.

907-643.03.1--General Requirements. The Contractor shall perform the following:

- 1) Install all sensors, system processors and associated enclosures and equipment at the locations specified in the plans, in any related notice to bidders, per manufacturer’s recommendations, or as directed.
- 2) Install all cabinet-mounted equipment in the intersection equipment cabinet or as specified in the plans.
- 3) Cabling from all sensors shall be installed in accordance with the manufacturer's recommendations.
- 4) Make all necessary adjustments and modifications to the total VVD/MSVD prior to requesting inspection for system/device acceptance.
- 5) Mount the sensors as per manufacturer’s recommendations or as shown in the plans.
- 6) Mount the sensors so as to view approaching traffic unless otherwise directed.
- 7) Optimize the sensors location and zone of detection as directed by the Engineer, or authorized designee.
- 8) Adjust the sensor zoom lens to match the width of the road/detection area, and minimize lane vehicle occlusion.
- 9) Fasten all other cabinet components, with hex-head or Phillips-head machine screws insulated with nuts (with locking washer or insert) or into tapped and threaded holes. Do not use self-tapping or self-threading fasteners.

- 10) Provide electrical cables for video, communications signaling and power supply between the cabinet and the VVD/MSVD image sensor cameras as recommended by the manufacturer, and as required for a fully functional System.

907-643.03.2--Contractor Training. Installation of the Video Vehicle Detection shall be as recommended by the manufacturer and performed by a Contractor trained and certified by the supplier. Where time does not reasonably permit training of the installing Contractor, a supplier factory representative shall supervise and assist a Contractor during installation of the Video Vehicle Detection.

Installation of the Multi-Sensor Vehicle Detection shall be as recommended by the supplier and performed by a Contractor with factory-certified installers and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

907-643.03.3--Blank.

907-643.03.4--Warranty. The Video Vehicle Detection shall be warranted to be free of manufacturer defects in materials and workmanship for a period of three (3) years from the date of final acceptance. Equipment covered by the manufacturer's warranties shall have the registration of that component placed in the Department's name prior to final inspection. The Contractor is responsible for ensuring that the vendors and/or manufacturers supplying the components and providing the equipment warranties recognize the Department as the original purchaser and owner/end user of the components from new. During the warranty period, the supplier shall repair or replace with new or refurbished material, at no additional cost to the State, any product containing a warranty defect, provided the product is returned postage-paid by the Department to the supplier's factory or authorized warranty site. Products repaired or replaced under warranty by the supplier shall be returned prepaid by the supplier.

The Multi-Sensor Vehicle Detector shall be warranted to be free of manufacturer defects in materials and workmanship for a period of three years (3) from the date of final acceptance.

During the warranty period, technical support shall be available from the supplier via telephone within four (4) hours of the time a call is made by the Department, and this support shall be available from factory certified personnel. During the warranty period, updates and corrections to Control Unit Software shall be made available to the Department by the supplier at no additional cost.

907-643.03.5--MDOT Employee Training. When called for in the Plans, the Contractor shall submit to the Project Engineer for approval a detailed Training Plan including course agendas, detailed description of functions to be demonstrated and a schedule. The Contractor must also submit the Trainer's qualifications to the Project Engineer for approval prior to scheduling any training. The training must include both classroom style training and hands-on training in the field of the maintenance and troubleshooting procedures required for each component. The training should also consist of a hands-on demonstration of all software configuration and functionality where applicable.

The supplier of the detection system shall, at a minimum, provide a 16-hour operations and maintenance training class with suitable documentation for up to eight (8) persons selected by the Department. The operations and maintenance class shall be scheduled at a mutually acceptable time and location.

907-643.03.6--Maintenance and Technical Support. The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the detection system. Spare parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale of said spare parts.

The suppliers shall maintain an ongoing program of technical support for the detection system. This technical support shall be available via telephone or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale of said technical support services.

The installation or training support shall be provided by a factory-authorized representative and shall be a minimum IMSA-Level II Certified Traffic Signal Technician.

All product documentation shall be written in the English language.

907-643.04--Method of Measurement. Video Vehicle Detection Sensor of the type specified will be measured as a unit per each.

Video Vehicle Detection Cable and/or Power Cable will be measured by the linear foot, measured horizontally along the conduit, messenger cable or mast arm and vertically along the pole.

Video Vehicle Detection Training will be measured as a lump sum after the completion of all training.

Multi-Sensor Vehicle Detection of the type specified will be measured as a unit per each.

Multi-Sensor Detection Cable and/or Power Cable will be measured by the linear foot, measured horizontally along the conduit, messenger cable or mast arm and vertically along the pole.

907-643.05--Basis of Payment. Video Vehicle Detection Sensor, measured as prescribed above, will be paid for at the contract unit price per each, which price shall be full compensation for installation, system integration, documentation, system software, and testing of a complete video detection sensor site including video camera sensor/processor, the sensor environmental enclosure, attachment hardware and brackets, completion of all testing requirements and all work, equipment and appurtenances as required to provide and install a complete video detection system. The price bid shall also include all system documentation including: shop drawings, operations and maintenance manuals, wiring diagrams, block diagrams and other materials necessary to document the operation of the Video Vehicle Detection Sensor. This price shall be full compensation for all labor, tools, materials, equipment and incidentals necessary to complete the work.

Video Vehicle Detection Cable and/or Power Cable will be paid at the contract unit price per linear

foot, which price shall be full compensation for all labor, materials, equipment tools, furnishing, installing, system integration, connections, testing, and all incidentals necessary to complete the work.

Video Vehicle Detection Training, measured as prescribed above, will be paid for at the contract unit lump sum price, which price shall be full compensation for all training costs.

Multi-Sensor Vehicle Detection Sensor, measured as prescribed above, will be paid for at the contract unit price per each, which price shall be full compensation for installation, system integration, documentation, and testing of a complete Multi-Sensor Vehicle Detection Sensor site including video imaging camera sensor, radar sensor, sensor data combiner, detection processor, system software, the sensor environment enclosure, attachment hardware and brackets, completion of all testing requirements and all work, equipment and appurtenances as required to provide and install a complete Multi-Sensor Vehicle Detection Sensor. The price bid shall also include all system documentation including: shop drawings, operations and maintenance manuals, wiring diagrams, block diagrams and other materials necessary to document the operation of the multi-sensor detection system. This price shall be full compensation for all labor, tools, materials, equipment and incidentals necessary to complete the work.

Multi-Sensor Detection Cable and/or Power Cable will be paid at the contract unit price per linear foot, which price shall be full compensation for all labor, materials, equipment tools, furnishing, installing, system integration, connections, testing, and all incidentals necessary to complete the work.

Payment will be made under:

- 907-643-A: Video Vehicle Detection Sensor, Type ____ - per each
- 907-643-B: Video Vehicle Detection Cable - linear foot
- 907-643-C: Video Vehicle Detection Power Cable - linear foot
- 907-643-D: Video Vehicle Detection Training - lump sum
- 907-643-E: Multi-Sensor Vehicle Detection Sensor - per each
- 907-643-F: Multi-Sensor Vehicle Detection Cable - linear foot
- 907-643-G: Multi-Sensor Vehicle Detection Power Cable - linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-687-3

CODE: (SP)

DATE: 12/03/2018

SUBJECT: Traffic Recorder Classification System

Section 907-687, Traffic Recorder Classification System, is hereby added to and made a part of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-687 - TRAFFIC RECORDER CLASSIFICATION SYSTEM

907-687.01--Description. This work consists of furnishing Traffic Recorder Classification Systems of the types specified which includes assembling, constructing, erecting, and installing a new complete system in conformity with these specifications to insure properly operating units in accordance with the designs and at the locations shown on the plans, or as directed. This axle detector system should classify vehicles in all lanes of traffic. Submittals shall be sent directly to the Planning Analysis Section of the Planning Division with a copy of the cover letter sent to the Project Engineer. The submittals will be returned within a seven (7) business day period from when they are received.

The Contractor shall include all hardware and software necessary to operate the field station unattended, which includes a battery backup and modem. The station is to operate continuously without human intervention.

The system may be a Traffic Recorder Classification Permanent System (907-687-A) or a Traffic Recorder Classification Short Term Permanent System (907-687-B). The type of system shall be defined in the plans or contract documents.

The Traffic Recorder Classification Permanent System shall require an AC power source and communication source via a data communication phone line as referenced in the plans.

The Traffic Recorder Classification Short Term Permanent System shall not require an AC power source and communication source via a data communication phone line.

Both systems shall utilize two (2) Class 1 Brass Linguini (BL) Piezo strips as utilized by Mikros RAKTEL 8010 System or latest system as approved by MDOT and one (1) loop per lane in all lanes as recommended by the manufacturer.

The person(s) performing the installation of the Mikros RAKTEL Piezo Classification System must be certified by Mikros or an authorized Mikros representative in the installation procedures of the Mikros RAKTEL Piezo Classification System and must be on the job site at each installation when the Mikros RAKTEL Systems are being installed. Certification can be acquired from Mikros or an authorized Mikros representative as long as a certified Mikros representative is on site to assist during the installation. Details regarding Mikros certification can be acquired through direct

communication with Mikros or an authorized Mikros representative. Any delays in the construction due to the certification process will not be grounds for an extension of the completion date.

A multiplexer shall be required for sites utilizing two (2) Mikros RAKTEL Systems in order for both systems to have access to one phone line.

The Contractor shall provide three (3) copies of all manuals on Installation, Operating, Schematics, and Maintenance for the entire System.

The BL Piezo sensors, equipment cabinet, inductive loops, cables, leads and electronic hardware and software will be furnished, installed, tested, calibrated and made operational by the Contractor. The Contractor shall provide all services required for construction, tests, the satisfactory performance period(s), and miscellaneous usage on this project until the site inspection of the project. Deposits, customer charges, connection cost, etc., associated with the System up to and including the date of the site inspection (Subsection 907-687.03.18.1--Site Inspection) of the System shall be the responsibility of the Contractor. At least five (5) business days prior to starting work, the Contractor shall provide notice to the MDOT Planning Division and the MDOT Project Office so that a representative of the Planning Division can be on site while the work is being performed.

907-687.02--Materials. The materials used in the traffic recorder classification system shall conform to the requirements of these specifications as set out herein. Prior to the scheduled start of work, the Contractor shall provide the Engineer with submittals on the following items and shall obtain the Engineer's approval before starting affected work. The Contractor shall use new materials and equipment. Any existing traffic counting equipment at the site is the sole property of the MDOT and shall not be removed by the Contractor.

907-687.02.1--Sensors. Vehicle axle detectors shall utilize piezoelectric cable in a sensor assembly and be of a type that has been shown to be successful for vehicle classification in both asphaltic and concrete pavements. BL Piezo sensor length shall be eleven (11) feet minimum. Sensors as delivered from manufacturer shall include a shielded transmission cable of sufficient length for a continuous run to the equipment cabinet without splicing.

907-687.02.1.1--Automatic Traffic Recorder Station. Piezoelectric Cable/Sensors shall be as those utilized by Mikros RAKTEL 8010 System or latest system as approved by MDOT. Sensitivity dispersion shall be Class 1, $\pm 5\%$.

907-687.02.2--Shielded Transmission Cable. Coaxial cable type RG58 C/U shall conform to IMSA 50-2 for polyethylene insulated, polyethylene jacketed cable, AWG #14. Cable shall meet the requirements of Section 640 for the Standard Specifications.

907-687.02.3--Conduit and Pull Boxes. Conduit and pull boxes shall meet the requirements of Section 637 of the Standard Specifications.

907-687.02.3.1--Under Roadways. Conduits under the roadway shall be Schedule 80 PVC or coated rigid galvanized steel.

907-687.02.3.2--Other Conduit. Other conduit shall be Schedule 40 PVC direct buried conduit unless noted otherwise.

907-687.02.3.3--Pull Boxes. Pull boxes shall be size Type 2 and the cover does not require words inscribed on the top.

907-687.02.4--Loop Wire. Loop wire, IMSA 51-3, AWG #14 stranded copper, shall meet the requirements of Subsection 722.03 of the Standard Specifications.

907-687.02.5--Loop Sealant. Loop sealant shall be "Traffic Loop Sealant" as manufactured by 3M Corporation, or approved equal.

907-687.02.6--Sensor Cement. The sensor assembly shall be cemented into the pavement with an epoxy resin of a type recommended by the sensor manufacturer.

907-687.02.7--Equipment Cabinet. The installation and setup of the equipment cabinet and all its applications must comply with all requirements of the plans. The Contractor will install the equipment cabinet along the highway right of way at a location approved by the Engineer. The equipment cabinet shall utilize a locking door. The housing shall be positioned so that the data collector will be approximately four (4) feet above the ground and mounted on a pole as depicted in the plans. Lightning protection shall be provided for each installation. A 5/8-inch by 12-foot ground rod shall be used with AWG #6 copper conductors. Class B concrete shall be used for equipment cabinet footings and 4' x 6' x 4" concrete work pad.

907-687.03--Construction Requirements. The general layout of the work shall conform to the details shown on the typical installation plans and shall be verified at each location with the Project Engineer. No hazards, such as open holes on site during construction, shall be left overnight.

All traffic control shall meet the requirements as defined in the most updated Manual on Uniform Traffic Control Devices.

907-687.03.1--Manufacturer's Recommendations. Sensors must be installed in accordance with the approved procedures and specifications provided by the sensor manufacturer. All sensors and connecting cables, shall be positioned and installed to assure compatibility with the inductive loops to provide electrical signals for vehicle classification.

907-687.03.2--Conflicts. Conflicts between any pieces of equipment, which if installed as shown in relation to any previously installed equipment that may impair the proper operation of that equipment, shall be resolved by the Contractor as approved by the Engineer.

907-687.03.3--Conduit Runs. The number of conductors, conduits and fittings necessary to produce an operative system as specified herein shall be provided by the Contractor. All joints, connections, etc. shall be completely water and moisture tight. Shielded transmission cable and wire leads shall be installed in conduit from paved shoulders to pull boxes.

907-687.03.4--Slots in Pavement. All slots required in pavement and paved shoulders shall be

cut with diamond blade power saw. Edges shall be straight, smooth and true. Depth shall be uniform.

907-687.03.4.1--Loop Slots. Slots for loop wire shall be ¼-inch minimum width. Slot depth shall be 2½ inches in asphalt and 1½ inches in concrete. Diagonal slots shall be cut at corners by overlapping cuts so that the entire slot intended for wire has full depth. There shall be no jagged edges or protrusions which may damage wire. When the top lift of asphalt is an Open Graded Friction Course, the loops shall be cut in the top immediate lift beneath the open graded friction course.

907-687.03.4.2--Cable Slots. Slots for cable shall be 3/8-inch width ($\pm 1/16$ ") and 2¼-inch depth. To ensure that the slots are full depth, all turns and overlay cuts shall not exceed 45 degrees. There shall be no jagged edges or protrusions which may damage cable. Cable leads from each sensor shall be run in individual saw cut slots at a minimum spacing of 12 inches.

907-687.03.4.3--Sensors Slots. Slots for sensors shall be of the width and depth specified by the sensor manufacturer. Cavity of sensor slots may be made with chisel between saw cut sides, but the bottom shall be smooth and level without protrusions. At the base of the side of the sensor slot, a ½-inch diameter hole shall be drilled at a 45 degree angle every 10 inches. In overlays of four inches (4") or less, the slot shall extend to the top of the course below the overlay. Before placing sensor, the slot shall be cleaned with compressed air.

907-687.03.5--Loop Assemblies. Inductive loop assemblies shall meet the requirements of Section 635 of the Standard Specifications.

907-687.03.6--Inspection. Pavement slots shall be inspected at time of sensor and cable installation. Surfaces shall be clean and dry, free of all dust, grit, moisture and other contaminants that might affect sealant or cement bond.

907-687.03.6.1--Sensor Check. Prior to final installation, sensor assembly shall be placed in position in slot and inspected for compliance with manufacturer's requirements as to clearance, surface alignment, etc. Sensor output shall be checked using an oscilloscope or other test equipment recommended by the sensor manufacturer.

907-687.03.6.2--Cable Inspection. The cable shall not have any cuts, nicks, abrasions or breaks in the insulation at the time of filling slot with sealant. Any sensor having defects in the shielded transmission cable shall be replaced.

907-687.03.6.3--Loop Inspection. The loop wire shall not have any cuts, nicks, abrasions or breaks in the insulation before or after installation in the slot. Loop inductance shall be 124 microhenries.

907-687.03.7--Sensor Installation. Approved epoxy cement shall completely fill the cavity spaces and surround all four sides of the sensor assembly. All excess epoxy cement shall be removed from pavement surface and sensor to conduit to prevent damage during installation. Sensor installation shall be protected from traffic until epoxy cement is sufficiently cured.

907-687.03.8--Sleeves. Flexible sleeve or other protection shall be provided for shielded cable at sensor ends to prevent damage. The Contractor shall take care to insure that the sleeve is not filled with epoxy cement. In addition, the Contractor shall provide flexible sleeve, approximately 12 inches long, at pavement construction joints including joints between lanes and between pavement and paved shoulder.

907-687.03.9--Cable and Wire Installation. The cable or lead wires shall be placed in the bottom of the slot so that there are no kinks, curls, straining or stretching of the insulation. The two loop lead wires shall be twisted two to five turns per foot before placement in the slot. The loop wire must be protected from water at all times. In the event that the loop wire is going to be spliced, the wire must be sealed with a 3M 82-A Series Power Cable Splice Kit, or approved equal. Loop wires may not lay in the pull boxes exposed to water and moisture during the construction and installation of the traffic recorder classification system. There shall be no splicing the sensor cables. The sensor cables must be a continuous run from the sensor to the equipment cabinet. Special care shall be taken in seating the cable and wire so that the insulation will not be broken or abraded. No sharp tools such as screwdriver or metal object shall be used for this operation.

907-687.03.9.1--Conditions. The Contractor shall install the sealant in strict adherence to the manufacturer's recommendation and these specifications. No sealant shall be installed during inclement weather or under any condition, which might introduce moisture into the pavement slots.

907-687.03.9.2--Sealant. The viscosity of the sealant shall be such that it can be readily placed in the slot, completely surround the wires, displace all air and fill the slot so that the sealant is flush with the roadway surface. The finished installation shall be waterproof and present a neat workmanlike appearance. Minimum required clearance shall be maintained to cable and wire.

907-687.03.9.3--Protection. The sealant shall be sufficiently hardened before opening to traffic.

907-687.03.10--Cleaning. All excess encapsulate and sealant shall be removed from pavement surface, inductive loop, and sensor after installation. A hand grinder shall be used, if necessary, to smooth out rough or high areas that might affect sensor operation.

907-687.03.11--Tags. Each shielded transmission cable and pair of lead wires shall be uniquely identified by an insulated, waterproof tag in every pull box.

907-687.03.12--Trenching and Backfilling. All trenching shall be done by mechanical means and all sides shall be straight and vertical. Width of trenches shall not exceed eight (8) inches on either side of placed conduits. All backfill shall be made with a friable material, which has been approved by the Engineer. Material shall be placed in compacted lifts as approved by the Engineer. The site, including shoulders and grassing, shall be returned to its original condition.

907-687.03.13--Jacking or Boring. Approved jacking or boring methods shall be used where a conduit must be placed under an existing roadway. Jacking/boring pits shall be kept a minimum of five (5) feet from the edge of shoulder, and care shall be taken not to disturb existing pavement. Excessive use of water or other methods, which could undermine pavements, shall not be permitted. The jacking/boring site must be returned to its undisturbed state upon completion of the operation. Only experienced labor shall be used for jacking/boring work. Conduit shall be not

less than 36 inches below pavement surface.

907-687.03.14--Pull Boxes. The location of the pull boxes must be approved by the Project Engineer. Pull boxes shall be set on 12-inch minimum thickness washed gravel. Holes for drainage shall be provided in bottom of pull box. Conduit entering pull box shall be located so as to leave the major portion of the box clear.

907-687.03.15--Conduit. Conduit shall be laid to a depth of not less than 36 inches below the finished grade, except at conduit ends. All conduits shall be run at least 10 feet outside shoulder unless otherwise approved. One size of conduit shall be used for each run; no reducing couplings will be permitted.

907-687.03.16--Conductor Installation. Before placing shielded cable or wire leads in conduit, the conduit shall be cleaned with compressed air and rigid metal conduit shall be cleaned with a mandrel. Only approved lubricants which will not injure conductor insulation while pulling cables shall be used.

Loop splices shall be made in pull boxes only, soldered, and sealed in an approved power cable splice kit. An insulation equal in rating and thickness to the conductor insulation shall be provided.

907-687.03.17--Plant Establishment. Any areas of vegetation disturbed during the installation of the classification system, pull boxes, equipment cabinets, etc. shall be graded and grassed / solid sodded to the satisfaction of the Engineer to return the area to its condition prior to construction. It also may be necessary to install temporary erosion control devices during the installation process. Unless pay items for these items of work are included in the bid items, the cost of this work will be included in other items bid.

907-687.03.18--System Acceptance. The Contractor shall be required to demonstrate to the Engineer the satisfactory operation of each device installed on this project.

907-687.03.19--Material Warranty. The following warranty stipulations are in addition to those covered by Subsection 106.01 of the Standard Specifications.

907-687.03.19.1--Site Inspection. After meeting the consecutive polling requirement, a site inspection may be made upon completion of an individual site but must be made before the final inspection of the project.

The Contractor, with MDOT's representatives present to verify that the site is working properly, shall test all Traffic Recorder Classification Systems.

Sensors, loops and related components at all sites shall be operational at the final inspection of the project.

907-687.03.19.1.1--Consecutive Polling. All Traffic Recorder Classification Permanent Systems shall have polled without any problems for at least 10 consecutive days and data for each day must pass quality control and quality assurance checks prior to the site inspection.

907-687.03.19.1.2--Data Collection. The Contractor shall provide 48 hours of data (1MG files) to the Planning Division for all Traffic Recorder Classification Short Term Permanent prior to site inspection.

907-687.03.19.2--Guarantee. At each location, the Contractor shall warrant and guarantee all sensors, loops and related components for a period of 12 months, beginning at the date of release from maintenance, or partial release from maintenance, of the project.

907-687.03.19.3--Responsibility. It is the intent of the preceding paragraph to provide for equipment that performs as intended by the manufacturer. It is the further intent to obtain from the Contractor a level of workmanship that will assure the Department of an operation system devoid of Contractor laxities. Failure to perform as indicated shall require the Contractor to replace in kind or repair, at the Contractor's option, the equipment or workmanship in question. All material and labor cost resulting from the replacement or repair of equipment or correction of poor workmanship shall be at no additional costs to the Department.

907-687.03.19.4--Repairs. The Department shall report any failures and outages to the Contractor. The Contractor will be required to make the necessary repairs within 10 business days of the report. The Contractor shall not be responsible for outages occurring during the 12-month warranty period due to vandalism, traffic accidents, or any problems not related to materials or workmanship. The Contractor will be required to make the necessary repairs for such outages and a reasonable cost for such repair(s) will be borne by the Department.

907-687.03.19.5--Manufacturer's Guarantees. All manufacturer's standard warranties or guarantees for all electrical and mechanical equipment which are provided as customary trade practice shall be made out to the Department and shall begin simultaneously with the commencement of the 12-month warranty period.

907-687.03.19.6--Guarantee of Repairs. This warrantee and guarantee on the fixed or replaced items shall be identical in scope to the warrantee and guarantee in Subsections 907-687.03.18.1 through 907-687.03.18.5.

907-687.04--Method of Measurement. Traffic Recorder Classification System of the type specified, complete in place and accepted, will be measured per each location.

907-687.05--Basis of Payment. Traffic Recorder Classification system, measured as prescribed above, will be paid for at the contract unit price per each, which price shall be full compensation for furnishing, installing, testing and guaranteeing all equipment, and for all materials, labor, equipment, operation, and other incidentals necessary to complete the work.

Payment will be made under:

- 907-687-A: Traffic Recorder Classification Permanent System, * - per each
- 907-687-B: Traffic Recorder Classification Short Term Permanent System, * - per each

* Site No. or Location may be specified

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-701-2

CODE: (IS)

DATE: 01/08/2020

SUBJECT: Hydraulic Cement

Section 701, Hydraulic Cement, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-701.01--General. In the first sentence of the second paragraph of Subsection 701.01 on page 718, change “mills” to “plants.”

In the second sentence of the sixth paragraph of Subsection 701.01 on pages 718 and 719, change “shall” to “will.”

907-701.02--Portland Cement.

907-701.02.1-General.

907-701.02.1.2--Alkali Content. Delete the sentence in Subsection 701.02.1.2 on page 719, and substitute the following.

The Equivalent alkali content for all cement types in this Subsection shall not exceed 0.60%.

907-701.02.2--Replacement by Other Cementitious Materials. Delete the paragraph in Subsection 701.02.2 on page 719, and substitute the following.

The maximum replacement of cement by weight is 25% for fly ash or 50% for ground granulated blast furnace slag (GGBFS). Replacement contents below 20% for fly ash or 45% for GGBFS may be used, but will not be given any special considerations, such as the maximum acceptance temperature for portland cement concrete containing pozzolans in Subsection 804.02.13.1.5. Special considerations shall only apply for replacement of cement by fly ash or GGBFS.

Delete Subsection 701.02.2.1 on pages 719 and 720, and substitute the following.

907-701.02.2.1--Portland Cement Concrete Exposed to Soluble Sulfate Conditions or Seawater.

When portland cement concrete is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash or GGBFS shall be as follows in Table 1. Class C fly ash shall not be used as a replacement for cement in any of the sulfate exposure conditions listed in Table 1.

Table 1- Cementitious Materials for Soluble Sulfate Conditions or Seawater

Sulfate Exposure	Water-soluble sulfate (SO ₄) in soil, % by mass	Sulfate (SO ₄) in water, ppm	Cementitious material required
Moderate and Seawater	0.10 - 0.20	150 - 1,500	Type I cement with one of the following replacements of cement by weight: 24.5 - 25.0% Class F fly ash, or 49.5 - 50.0% GGBFS or Type II ^{*,**} cement
Severe	0.20 - 2.00	1,500 - 10,000	Type I cement with a replacement by weight of 49.5 - 50.0% GGBFS, or Type II [*] cement with one of the following replacements of cement by weight: 24.5 - 25.0% Class F fly ash, or 49.5 - 50.0% GGBFS

* Type III cement conforming to AASHTO M85 with a maximum 8% tricalcium aluminate (C₃A) may be used in lieu of Type II cement as allowed in Subsection 701.02.1; this cement is given the designation “Type III(MS).”

** Class F fly ash or GGBFS may be added as a replacement for cement as allowed in Subsection 907-701.02.2.

Delete Subsection 701.02.2.2 on page 720, and substitute the following.

907-701.02.2.2--Portland Cement for Soil Stabilization Exposed to Soluble Sulfate Conditions or Seawater. When portland cement for use in soil stabilization is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash or GGBFS shall meet the requirements of Subsection 701.02.2.1.

907-701.04--Blended Hydraulic Cement.

907-701.04.1--General. Delete Subsection 701.04.1.1 on page 720, and substitute the following.

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

- Type IL – Portland-limestone cement
- Type IP – Portland-pozzolan cement
- Type IS – Portland blast-furnace slag cement

Blended cement Types IL, IP, and IS meeting the “MS” sulfate resistance requirement listed in AASHTO M 240, Table 3 shall have the “(MS)” suffix added to the type designation.

907-701.04.1.2--Alkali Content. Delete the sentence in Subsection 701.04.1.2 on page 720, and substitute the following.

All blended cement types shall be made with clinker that would result in cement meeting the requirements of Subsection 701.02.1.2 when used in the production of AASHTO M 85, Type I or Type II cement.

907-701.04.2--Replacement by Other Cementitious Materials. Delete the paragraph in Subsection 701.04.2 on page 720, and substitute the following.

The maximum replacement of blended cement Type IL by weight is 35% for fly ash or 50% for GGBFS. Replacement contents below 20% for fly ash or 45% for GGBFS may be used, but will not be given any special considerations, such as the maximum acceptance temperature for blended cement concrete containing pozzolans in Subsection 804.02.13.1.5. Special considerations shall only apply for replacement of blended cement by fly ash or GGBFS.

No additional cementitious materials, such as portland cement, blended cement, fly ash, GGBFS, or others, shall be added to or as a replacement for blended cement Types IP and IS.

Delete Subsection 701.04.2.1 on pages 720 and 721, and substitute the following.

907-701.04.2.1--Blended Cement Concrete Exposed to Soluble Sulfate Conditions or Seawater. When blended cement concrete is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash or GGBFS shall be as follows in Table 2. Class C fly ash shall not be used as a replacement for cement in any of the sulfate exposure conditions listed in Table 2.

Table 2- Cementitious Materials for Soluble Sulfate Conditions or Seawater

Sulfate Exposure	Water-soluble sulfate (SO ₄) in soil, % by mass	Sulfate (SO ₄) in water, ppm	Cementitious material required
Moderate and Seawater	0.10 - 0.20	150 - 1,500	Type IL (MS)* cement, Type IL cement with one of the following replacements of cement by weight: 24.5 - 35.0% Class F fly ash, or 49.5 - 50.0% GGBFS, Type IP (MS) cement, or Type IS (MS) cement
Severe	0.20 - 2.00	1,500 - 10,000	Type IL cement with a replacement of cement by weight of 49.5 - 50.0% GGBFS, or Type IL (MS) cement with one of following replacements of cement by weight: 24.5 - 35.0% Class F fly ash, or 49.5 - 50.0% GGBFS

- * Class F fly ash or GGBFS may be added as a replacement for cement as allowed in Subsection 907-701.04.2.

Delete Subsection 701.04.2.2 on page 721, and substitute the following.

907-701.04.2.2--Blended Cement for Soil Stabilization Exposed to Soluble Sulfate Conditions or Seawater. When blended cement for use in soil stabilization is exposed to moderate or severe soluble sulfate conditions, or to seawater, cement types and replacement of cement by Class F fly ash or GGBFS shall meet the requirements of Subsection 701.04.2.1.

Delete Subsection 701.04.3 on page 721.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-702-4

CODE: (IS)

DATE: 09/11/2018

SUBJECT: Bituminous Materials

Section 702, Bituminous Materials, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-702.04--Sampling. Delete the sentence in Subsection 702.04 on page 722, and substitute the following.

Sampling of bituminous materials shall be as set out in AASHTO R 66.

907-702.07--Emulsified Asphalt. Delete the last sentence in Subsection 702.07 on page 724, and substitute the following.

Asphalt for fog seal shall conform to the requirements of Subsection 907-702.12, Table V.

907-702.12--Tables. Delete Table V in Subsection 702.12 on page 729, and substitute the following.

**TABLE V
SPECIFICATION FOR FOG SEAL**

Test Requirements	LD-7		CHPF-1		Test Method
	Min.	Max.	Min.	Max.	
Viscosity, Saybolt Furol, @ 25°C, Sec.	10	100	-	100	AASHTO T 72
Storage Stability Test, 24 hr, %	-	1	-	1	AASHTO T 59
Settlement, 5 day, %	-	5	-	-	AASHTO T 59
Oil Distillate, %	-	1	-	-	AASHTO T 59
Sieve Test, % *	-	0.3	-	0.1	AASHTO T 59
Residue by Distillation, %	40	-	40	-	AASHTO T 59
Test on Residue from Distillation					
Penetration @ 25°C, 100g, 5 sec	-	20	40	90	AASHTO T 49
Softening Point, °C	65	-	-	-	ASTM D 36
Solubility in trichloroethylene, %	97.5	-	-	-	AASHTO T 44
Elastic Recovery @ 25°C, %	-	-	40	-	AASHTO T 301
Original DSR @ 82° (G*/Sinδ, 10 rad/sec)	1	-	-	-	AASHTO T 111

* The Sieve Test result is tested for reporting purposes only and may be waived if no application problems are present in the field.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-703-1

CODE: (IS)

DATE: 06/13/2018

SUBJECT: Gradation

Section 703, Aggregates, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-703.03--Course Aggregates for Hydraulic Cement Concrete.

907-703.03.2--Detail Requirements.

907-703.03.2.4--Gradation. In the table in Subsection 703.03.2.4 on page 734, add 100 for the percent passing by weight on the 1½-inch sieve for Size No. 67 aggregates.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-705-1

CODE: (IS)

DATE: 06/13/2018

SUBJECT: Stone Riprap

Section 705, Stone Blanket Protection and Filter Blanket Materials, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-705.04--Stone Riprap. Delete the last sentence of the first paragraph of Subsection 705.04 on page 750, and substitute the following.

Quality requirements for rock to be furnished under these specifications will come from a pre-approved source and be visually approved prior to use.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-707-2

CODE: (IS)

DATE: 06/05/2019

SUBJECT: Joint Materials

Section 707, Joint Materials, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-707.02.3--Wood. Delete paragraph (b) of Subsection 707.02.3 on page 755, and substitute the following:

- (b) Dimensions shall be as shown on the plans. Dimensions shown on the plans are “dressed” sizes in accordance with Table 3 of the American Softwood Lumber Standard, SP-20. At the discretion of the Engineer, a 3/4-inch dressed board may be used in lieu of a 1-inch dressed board. A tolerance of plus or minus 1/16 inch thickness and plus or minus 1/8 inch width will be permitted. For slip-form paving a tolerance of minus 1/4 inch on each end in length will be permitted.

907-707.06--Flexible Plastic Gasket for Joining Conduit. Delete the third paragraph of Subsection 707.06 on page 756, and substitute the following.

The Department may require the performance test described in ASTM C 990.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-711-2

CODE: (IS)

DATE: 09/11/2018

SUBJECT: Plain Steel Wire

Section 711, Reinforcement and Wire Rope, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-711.02--Deformed and Plain Carbon-Steel Bars for Concrete Reinforcing.

907-711.02.3--Steel Welded and Non-Welded Wire Reinforcement, Plain and Deformed, for Concrete.

907-711.02.3.1--Plain Steel Wire. Delete the sentence in Subsection 711.02.3.1 on pages 780 and 781, and substitute the following.

Plain steel wire and plain steel welded wire shall conform to the requirements of AASHTO M 336.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-720-2

CODE: (IS)

DATE: 09/11/2018

SUBJECT: Acceptance Procedure for Glass Beads

Section 720, Pavement Marking Materials, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-720.01--Glass Beads.

907-720.01.4--Acceptance Procedures. Delete the last sentence of the paragraph in Subsection 720.01.4 on page 841, and substitute the following.

Acceptance sampling and testing of glass beads will be in accordance with the Department's Materials Division Inspection, Testing, and Certification Manual, Section 2.9.2 -- Glass Beads.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-721-2

CODE: (IS)

DATE: 01/08/2020

SUBJECT: Materials for Signing

Section 721, Materials for Signing, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-721.06--Reflective Sheeting.

907-721.06.2--Performance Requirements. Delete Table 4 and Table 5 in Subsection 721.06.2 on pages 860 & 861, and substitute the following.

**MINIMUM COEFFICIENTS OF RETROREFLECTION
Candela per foot candle per square foot (cd/ft²)
Per ASTM Designation D4956**

**TABLE 4
Type IX Sheeting**

Observation Angle	Entrance Angle	White	Yellow	Green	Red	Blue	Fluorescent Yellow/Green	Fluorescent Yellow	Fluorescent Orange
0.2°	-4.0°	380	285	38	76	17	300	230	115
0.2°	+30.0°	215	162	22	43	10	170	130	65
0.5°	-4.0°	240	180	24	48	11	190	145	72
0.5°	+30.0°	135	100	14	27	6.0	110	81	41
1.0°	-4.0°	80	60	8.0	16	3.6	64	48	24
1.0°	+30.0°	45	34	4.5	9.0	2.0	36	27	14

**TABLE 5
Type XI Sheeting**

Observation Angle	Entrance Angle	White	Yellow	Green	Red	Blue	Brown	Fluorescent Yellow/Green	Fluorescent Yellow	Fluorescent Orange
0.2°	-4.0°	580	435	58	87	26	17	460	350	175
0.2°	+30.0°	220	165	22	33	10	7.0	180	130	66
0.5°	-4.0°	420	315	42	63	19	13	340	250	125
0.5°	+30.0°	150	110	15	23	7.0	5.0	120	90	45
1.0°	-4.0°	120	90	12	18	5.0	4.0	96	72	36
1.0°	+30.0°	45	34	5.0	7.0	2.0	1.0	36	27	14

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-722-1

CODE: (IS)

DATE: 11/15/2017

SUBJECT: **Materials for Traffic Signal Installation**

Section 722, Materials for Traffic Signal Installation, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follow.

907-722.02.3--Design Strength Requirements. Delete Subsection 722.02.3 on pages 864 thru 866, and substitute the following.

Unless specified otherwise in the plans, poles shall meet the requirements of the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, as specified in the plans with all interim supplements. All components of the assemblies shall be designed to the following:

- Importance Factor: 1.0; 50 year mean recurrence interval
- Basic Wind Speed (3 second gust): As shown on the project plans
- Minimum Gust Effect Factor: 1.14
- Fatigue Category: II
- Ice Loading: As shown on the project plans
- Natural Wind Gust Pressure Loads: Included
- Truck Induced Gust Pressure Loads: Not included
- Galloping: Not included

907-722.02.5--Mast Arms for Traffic Signal and Equipment Poles. Delete the first four sentences of the third paragraph of Subsection 722.02.5 on page 867, and substitute the following.

Anchor base plates must meet the minimum requirements of ASTM A36 or ASTM A709 Grade 36 or ASTM A572 Grade 50 and must be welded to the shaft by either telescoped with two continuous arc welds or by back up ring using full penetration welds.. Flange plate shall telescope the large end of the arm and be welded by either two (2) continuous arc welds, one (1) being on the outside of the plate, adjacent to the shaft, and the other one (1) on the inside at the end of the tubular cross section or by back up ring using full penetration welds. The thru-bolt flange plate or tapped flange plate supporting the mast arm shall be welded to the pole near the top and supported side plate tangent to the pole and gusset plates both top and bottom. The thru-bolt or tapped flange plate must be sufficient to develop the full capacity of the connecting bolts.

907-722.03--Electric Cable. Delete the paragraphs for Loop Detector Wire and Loop Detector Lead-in Cable in Subsection 722.03 on page 869.

Delete the first sentence of “Communication Cable” in Subsection 722.03 on page 870, and substitute the following.

Communication cables shall be as per the manufacturer's recommendation.

907-722.05.4--Type III or Type IV Rigid Non-Metallic Conduit. After the last sentence of Subsection 722.05.4 on page 871, add the following.

Schedule 40 conduit shall be used unless otherwise noted in the plans.

Delete the title of Subsection 722.13.3 on page 876, and substitute the following.

907-722.13.3--Power Service Pedestal.

Delete the first paragraph of Subsection 722.13.3 on page 876, and substitute the following.

The pedestal shall be of NEMA Type 3R rainproof construction and shall be UL Listed as "Enclosed Industrial Control Equipment" (UL 508A). External construction shall comply with UL50 requirements and shall be unpainted aluminum.

Nominal size of the pedestal shall be 48"H x 16"W x 16"D.

Pedestal shall have a voltage rating or 120v/240v single phase with an Amperage rating of 800A.

After the first sentence of the seventh paragraph of Subsection 722.13.3 on page 876, add the following.

An outdoor rated heavy duty combination lock shall be provided to lock the customer compartment door.

907-722.14.1.3--Optical System. Delete the sixteenth paragraph of Subsection 722.14.1.3 on page 879, and substitute the following.

The signal module on-board circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.6, NEMA Standard TS 2, 1992.

Delete the last sentence of the seventeenth paragraph of Subsection 722.14.1.3 on page 879, and substitute the following.

Load switches shall be compatible with NEMA TS 1 or later, or Model 170-1989 or later.

Delete Subsection 722.14.5 on page 882, and substitute the following.

907-722.14.5--Blank.

Delete Subsections 722.14.7 and 722.14.8 on page 882.

SECTION 905 - PROPOSAL

Date _____

Mississippi Transportation Commission
Jackson, Mississippi

Sirs: The following proposal is made on behalf of _____
_____ of _____

for constructing the following designated project(s) within the time(s) hereinafter specified.

The plans are composed of drawings and blue prints on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

The Specifications are the current Standard Specifications of the Mississippi Department of Transportation approved by the Federal Highway Administration, except where superseded or amended by the plans, Special Provisions and Notice(s) to Bidders attached hereto and made a part thereof.

I (We) certify that I (we) possess a copy of said Standard and any Supplemental Specifications.

Evidence of my (our) authority to submit the Proposal is hereby furnished. The proposal is made without collusion on the part of any person, firm or corporation. I (We) certify that I (we) have carefully examined the Plans, the Specifications, including the Special Provisions and Notice(s) to Bidders, herein, and have personally examined the site of the work. On the basis of the Specifications, Special Provisions, Notice(s) to Bidders, and Plans, I (we) propose to furnish all necessary machinery, tools, apparatus and other means of construction and do all the work and furnish all the materials in the manner specified. I (We) understand that the quantities mentioned herein are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid, in accordance with the above.

I (We) acknowledge that this proposal will be found irregular and/or non-responsive unless a certified check, cashier's check, or Proposal Guaranty Bond in the amount as required in the Advertisement (or, by law) is submitted electronically with the proposal or is delivered to the Contract Administration Engineer prior to the bid opening time specified in the advertisement.

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.

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) shall submit electronically with our proposal or deliver prior to the bid opening time 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.

SECTION 905 -- PROPOSAL (CONTINUED)

I (We) hereby certify by digital signature and electronic submission via Bid Express of the Section 905 proposal below, that all certifications, disclosures and affidavits incorporated herein are deemed to be duly executed in the aggregate, fully enforceable and binding upon delivery of the bid proposal. I (We) further acknowledge that this certification shall not extend to the bid bond or alternate security which must be separately executed for the benefit of the Commission. This signature does not cure deficiencies in any required certifications, disclosures and/or affidavits. I (We) also acknowledge the right of the Commission to require full and final execution on any certification, disclosure or affidavit contained in the proposal at the Commission's election upon award. Failure to so execute at the Commission's request within the time allowed in the Standard Specifications for execution of all contract documents will result in forfeiture of the bid bond or alternate security.

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.

Overlay approximately 1.4 miles on US 90 from the Biloxi Bay Bridge to Vermont Avenue, known as Federal Aid Project No. NH-0003-01(202) / 108234301 in Jackson County.

Line no.	Item Code	Adj Code	Quantity	Units	Description[Fixed Unit Price]
Roadway Items					
0010	202-B114		400	Linear Feet	Removal of Debris and Sand From Pipe, All Sizes
0020	202-B240		48,275	Linear Feet	Removal of Traffic Stripe
0030	403-A013	(BA1)	5,944	Ton	9.5-mm, HT, Asphalt Pavement
0040	403-A014	(BA1)	4,008	Ton	9.5-mm, MT, Asphalt Pavement
0050	406-D001		93,805	Square Yard	Fine Milling of Bituminous Pavement, All Depths
0060	407-A001	(A2)	5,159	Gallon	Asphalt for Tack Coat
0070	618-A001		1	Lump Sum	Maintenance of Traffic
0080	618-B001		1	Square Feet	Additional Construction Signs (\$10.00)
0090	619-A1001		8	Mile	Temporary Traffic Stripe, Continuous White
0100	619-A2001		7	Mile	Temporary Traffic Stripe, Continuous Yellow
0110	619-A3001		12	Mile	Temporary Traffic Stripe, Skip White
0120	619-A5001		12,526	Linear Feet	Temporary Traffic Stripe, Detail
0130	619-A6001		2,024	Square Feet	Temporary Traffic Stripe, Legend
0140	619-A6002		7,576	Linear Feet	Temporary Traffic Stripe, Legend
0150	620-A001		1	Lump Sum	Mobilization
0160	626-A001		6	Mile	6" Thermoplastic Double Drop Traffic Stripe, Skip White
0170	626-B002		5	Mile	6" Thermoplastic Double Drop Traffic Stripe, Continuous White
0180	626-E001		5	Mile	6" Thermoplastic Double Drop Traffic Stripe, Continuous Yellow
0190	626-G002		14,753	Linear Feet	Thermoplastic Detail Stripe, White
0200	626-G003		4,659	Linear Feet	Thermoplastic Detail Stripe, Yellow
0210	626-H004		2,023	Square Feet	Thermoplastic Legend, White
0220	626-H005		4,268	Linear Feet	Thermoplastic Legend, White
0230	627-K001		2,298	Each	Red-Clear Reflective High Performance Raised Markers
0240	627-L001		198	Each	Two-Way Yellow Reflective High Performance Raised Markers
0250	907-603-D011	(S)	150	Linear Feet	36" Cured-In-Place Pipe
0260	907-603-V001		400	Linear Feet	Video Pipe Inspection, All Sizes
0270	907-632-B007		2	Each	Remove and Replace Existing Traffic Signal Cabinet Assembly, Type III Cabinet, Type 1 Controller
0280	907-632-J001		2	Each	Power Service Pedestal
0290	907-634-B001		3	Each	Traffic Signal Equipment Pole Shaft Extension, 10'
0300	907-634-G001		4	Each	Traffic Signal Equipment Pole Mast Arm Extension
0310	907-636-B003		499	Linear Feet	Electric Cable, Underground in Conduit, IMSA 20-1, AWG 10, 2 Conductor
0320	907-643-A004		4	Each	Video Vehicle Detection Sensor, Type 1A
0330	907-643-B001		552	Linear Feet	Video Vehicle Detection Cable
0340	907-643-E001		4	Each	Multi-Sensor Vehicle Detection Sensor

Line no.	Item Code	Adj Code	Quantity	Units	Description[Fixed Unit Price]
0350	907-643-F001		600	Linear Feet	Multi-Sensor Vehicle Detection Cable
0360	907-687-A001		1	Each	Traffic Recorder Classification Permanent System
ALTERNATE GROUP AA NUMBER 1					
0370	304-D001	(GT)	462	Ton	Granular Material, Crushed Concrete
ALTERNATE GROUP AA NUMBER 2					
0380	304-F002	(GT)	462	Ton	Size 610 Crushed Stone Base
ALTERNATE GROUP AA NUMBER 3					
0390	304-F003	(GT)	462	Ton	Size 825B Crushed Stone Base
ALTERNATE GROUP BB NUMBER 1					
0400	628-G001		19,310	Linear Feet	6" High Performance Cold Plastic Traffic Stripe, Skip White
0410	628-H001		19,310	Linear Feet	6" High Performance Cold Plastic Traffic Stripe, Continuous White
0420	628-J001		19,310	Linear Feet	6" High Performance Cold Plastic Traffic Stripe, Continuous Yellow
ALTERNATE GROUP BB NUMBER 2					
0430	907-624-A002		19,310	Linear Feet	6" Inverted Profile Thermoplastic Traffic Stripe, Skip White
0440	907-624-B002		19,310	Linear Feet	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous White
0450	907-624-D002		19,310	Linear Feet	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous Yellow

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

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.

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) agree to complete each contract on or before its specified completion date.

COMBINATION BID PROPOSAL

This proposal is tendered as one part of a Combination Bid Proposal utilizing option ___* of Subsection 102.11 on the following contracts:

* Option to be shown as either (a), (b), or (c).

	<u>Project No.</u>	<u>County</u>	<u>Project No.</u>	<u>County</u>
1.	_____	_____	6.	_____
2.	_____	_____	7.	_____
3.	_____	_____	8.	_____
4.	_____	_____	9.	_____
5.	_____	_____	10.	_____

(a) If Combination A has been selected, your Combination Bid is complete.

(b) If Combination B has been selected, then complete the following page.

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

For Informational Purposes Only

SECTION 905 - COMBINATION BID PROPOSAL (Continued)

Project Number	Pay Item Number	Unit	Unit Price Reduction	Total Item Reduction	Total Contract Reduction
9.					
10.					

(c) If Combination C has been selected, then initial and complete ONE of the following.

_____ 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.



**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 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)

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

I, _____,
(Name of person signing bid)

individually, and in my capacity as _____ of
(Title of person signing bid)

_____ 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. **NH-0003-01(202)/ 108234301000**

in **Jackson** 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.

Do exceptions exist and are made a part thereof? Yes / No

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 is true and correct.

Executed on _____

Signature

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SAM.GOV Registration and DUNS Number

Bidders are advised that the Prime Contractor must maintain current registration in the **System for Award Management** (<http://www.sam.gov>) at all times during the project. A Dun and Bradstreet Data Universal Numbering System (DUNS) Number (<http://www.dnb.com>) is one of the requirements for registration in the System for Award Management.

Bidders are advised that prior to the award of this contract, they **MUST** be registered in the System for Award Management.

I (We) acknowledge that this contract cannot be awarded if I (We) are not registered in the System for Award Management prior to the award of this contract. _____ (Yes / No)

I (We) have a DUNS Number . _____ (Yes / No)

DUNS Number: _____

Company Name: _____

Company e-mail address: _____

(6/2015F)

For Informational Purposes Only

SECTION 902

CONTRACT FOR NH-0003-01(202)/ 108234301000

LOCATED IN THE COUNTY(IES) OF Jackson

STATE OF MISSISSIPPI,
COUNTY OF HINDS

This contract entered into by and between the Mississippi Transportation Commission on one hand, and the undersigned contractor, on the other witnesseth;

That, in consideration of the payment by the Mississippi Transportation Commission of the prices set out in the proposal hereto attached, to the undersigned contractor, such payment to be made in the manner and at the time of times specified in the specifications and the special provisions, if any, the undersigned contractor hereby agrees to accept the prices stated in the proposal in full compensation for the furnishing of all materials and equipment and the executing of all the work contemplated in this contract.

It is understood and agreed that the advertising according to law, the Advertisement, the instructions to bidders, the proposal for the contract, the specifications, the revisions of the specifications, the special provisions, and also the plans for the work herein contemplated, said plans showing more particularly the details of the work to be done, shall be held to be, and are hereby made a part of this contract by specific reference thereto and with like effect as if each and all of said instruments had been set out fully herein in words and figures.

It is further agreed that for the same consideration the undersigned contractor shall be responsible for all loss or damage arising out of the nature of the work aforesaid; or from the action of the elements and unforeseen obstructions or difficulties which may be encountered in the prosecution of the same and for all risks of every description connected with the work, exceptions being those specifically set out in the contract; and for faithfully completing the whole work in good and workmanlike manner according to the approved Plans, Specifications, Special Provisions, Notice(s) to Bidders and requirements of the Mississippi Department of Transportation.

It is further agreed that the work shall be done under the direct supervision and to the complete satisfaction of the Executive Director of the Mississippi Department of Transportation, or his authorized representatives, and when Federal Funds are involved subject to inspection at all times and approval by the Federal Highway Administration, or its agents as the case may be, or the agents of any other Agency whose funds are involved in accordance with those Acts of the Legislature of the State of Mississippi approved by the Governor and such rules and regulations issued pursuant thereto by the Mississippi Transportation Commission and the authorized Federal Agencies.

The Contractor agrees that all labor as outlined in the Special Provisions may be secured from list furnished by

It is agreed and understood that each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and this contract shall be read and enforced as though it were included herein, and, if through mere mistake or otherwise any such provision is not inserted, then upon the application of either party hereto, the contract shall forthwith be physically amended to make such insertion.

The Contractor agrees that he has read each and every clause of this Contract, and fully understands the meaning of same and that he will comply with all the terms, covenants and agreements therein set forth.

Witness our signatures this the ___ day of _____, _____.

Contractor(s)

By _____

MISSISSIPPI TRANSPORTATION COMMISSION

Title _____

By _____

Signed and sealed in the presence of:
(names and addresses of witnesses)

Executive Director

Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the ___ day of _____, _____, Minute Book No. _____, Page No. _____.

Revised 8/06/2003

SECTION 903
PERFORMANCE AND PAYMENT BOND

CONTRACT BOND FOR: NH-0003-01(202)/108234301000

LOCATED IN THE COUNTY(IES) OF: Jackson

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, effective as of the contract date shown below, 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.

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.

_____	_____
(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 **Overlay approximately 1.4 miles on US 90 from the Biloxi Bay Bridge to Vermont Avenue, known as Federal Aid Project No. NH-0003-01(202) / 108234301 in Jackson County.**

NOW THEREFORE, the condition of this obligation is such that if the aforesaid Principal shall be awarded the contract, the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former, but in no event shall liability hereunder exceed the penal sum hereof.

Signed and sealed this _____ day of _____, 20__

(Principal) (Seal)

(Witness) (Name) By: _____ (Title)

(Surety) (Seal)

(Witness) (Attorney-in-Fact) By: _____

(MS Agent)

Mississippi Insurance ID Number

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
OFFICE OF CIVIL RIGHTS
JACKSON, MISSISSIPPI

LIST OF FIRMS SUBMITTING QUOTES

I/we received quotes from the following firms on:

Letting Date: **May 25, 2021**

Project No: NH-0003-01(202)/ 108234301000

County: Jackson

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

