MDOT Use Only
Checked _____
Loaded _____
Keyed _____

10 -

SM No. CSP0019010221

PROPOSAL AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

10
Mill & Overlay approximately 1.3 miles of SR 7 from US 82 to Grenada Boulevard Extended, known as State Project No. SP-0019-01(022) / 109744301 in Leflore County.

Project Completion: 54 Working Days

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

03/27/2025 01:57 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, April 22, 2025, from the Bid Express Service and shortly thereafter publicly read on the Sixth Floor for:

Mill & Overlay approximately 1.3 miles of SR 7 from US 82 to Grenada Boulevard Extended, known as State Project No. SP-0019-01(022) / 109744301 in Leflore County.

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

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

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

Contractors may request permission to bid online at http://shop.mdot.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://shop.mdot.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.

BRAD WHITE
EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO NOTICE TO BIDDERS NO. 1

DATE: **06/08/2021**

SUBJECT: **Governing Specifications**

Change the web address at the end of the first paragraph to the following.

https://shop.mdot.ms.gov/default.aspx?StoreIndex=1

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. 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.

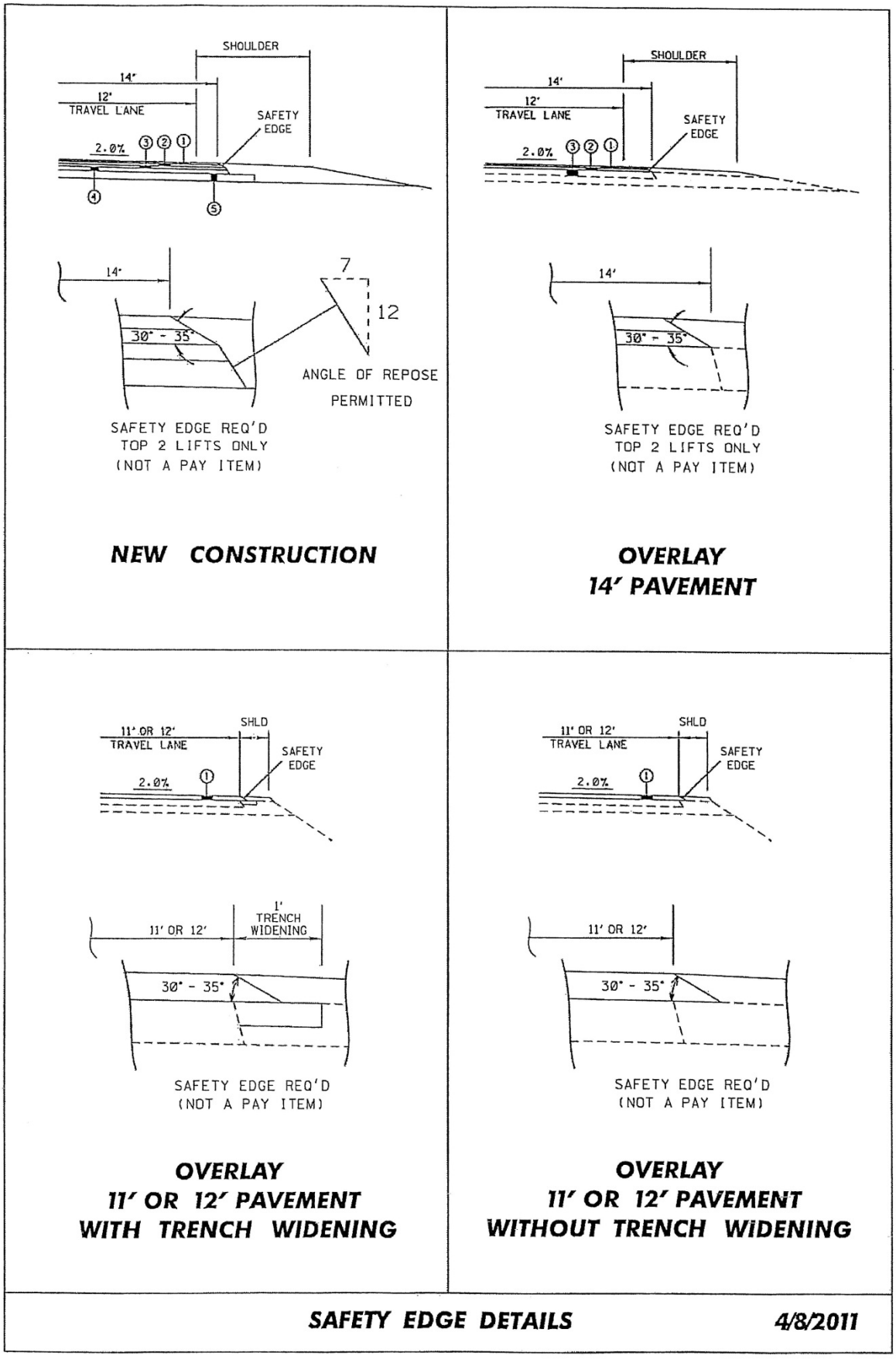
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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').


SHOULDER
14'
12'
TRAVEL LANE
SAFETY EDGE
2.0%
③ ② ①
④
⑤
14'
7
12
30° - 35°
ANGLE OF REPOSE PERMITTED
SAFETY EDGE REQ'D TOP 2 LIFTS ONLY (NOT A PAY ITEM)
NEW CONSTRUCTION
SHOULDER
14'
12'
TRAVEL LANE
SAFETY EDGE
2.0%
③ ② ①
14'
30° - 35°
SAFETY EDGE REQ'D TOP 2 LIFTS ONLY (NOT A PAY ITEM)
OVERLAY 14' PAVEMENT
11' OR 12'
TRAVEL LANE
SHLD
SAFETY EDGE
2.0%
①
1' TRENCH WIDENING
11' OR 12'
30° - 35°
SAFETY EDGE REQ'D (NOT A PAY ITEM)
OVERLAY 11' OR 12' PAVEMENT WITH TRENCH WIDENING
11' OR 12'
TRAVEL LANE
SHLD
SAFETY EDGE
2.0%
①
11' OR 12'
30° - 35°
SAFETY EDGE REQ'D (NOT A PAY ITEM)
OVERLAY 11' OR 12' PAVEMENT WITHOUT TRENCH WIDENING
SAFETY EDGE DETAILS
4/8/2011

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO NOTICE TO BIDDERS NO. 14

DATE: 02/24/2025

PROJECT: SP-0019-01(022) / 109744301 –Leflore County

After the second paragraph on page 1, add the following:

Name Insured:	Columbus & Greenville Railway (Genesee and Wyoming)
Description and Designation:	SR 7 between US 82 and Grenada Boulevard Extended
Crossing #:	302258C

After the fourth paragraph on page 1, add the following:

Columbus & Greenville Railway Company
201 19th Street North
Columbus, MS 39701
Telephone: (800)800-3490

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 14 **CODE: (SP)**

DATE: 01/17/2017

SUBJECT: Railway-Highway Provisions

Prior to bidding, the Contractor shall contact the Railroad concerning insurance coverage required for this project. In case the railroad requires coverage over and above that required by the Standard Specifications, the railroad requirements shall be met.

The name insured, description of the work and designation of the job site to be shown on the Policy are as follows:

Notice of starting to work, completion of any required forms, and correspondence pertaining to railroad liability insurance shall be directed to the person below.

The Contractor shall not commence, or carry on, any work for installation, maintenance, repair, changing or renewal of any FACILITY, under, over or on RAILROAD property at any location without giving at least ten (10) working days prior notice to the RAILROAD authorized representative at the RAILROAD's office(s) below.

If in the opinion of the RAILROAD, the presence of an authorized representative of the RAILROAD is required to supervise the same, the RAILROAD shall render bills to the Contractor for all expenses incurred by it for such supervision. This includes all labor costs for flagmen or cable locate supplied by the RAILROAD to protect RAILROAD operation, and for the full cost of furnishing, installation and later removal of any temporary supports for said tracks, as the RAILROAD's Chief Engineer's Office may deem necessary.

It will be the Contractor's responsibility to pay all bills associated with railroad flagging and cable locating. Generally, the flagging rate is $700.00 per day (1 to 8 hours) plus overtime at $125.00 per hour, however, the Contractor shall contact the RAILROAD to verify all rates.

A flagman is required anytime a Contractor does any work on or near RAILROAD property within twenty-five (25) feet horizontally of the centerline or any work over any railroad track. The RAILROAD, however, also reserves the right to require a flagman for work on RAILROAD property, which is more than twenty-five (25) feet from the centerline of a railroad track when there are other conditions or considerations that would dictate the need for a flagman to safeguard the RAILROAD's operations, property and safety of working personnel.

A cable locate of RAILROAD owned facilities may be required to identify and protect Signal & Communication cables that have been installed to provide power, signal control, wayside communications. These cables are vital to a safe and reliable railway operation. The cable locate will be performed by a qualified RAILROAD employee.

Outside Contractors are prohibited from driving on, along, or across any track that does not have a RAILROAD installed crossing. They may utilize an existing public crossing. The practice of allowing rubber tired equipment to operate over track with no crossing has been banned.

Exceptions to this rule will require the express approval from the RAILROAD Engineers.

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. 446 **CODE: (SP)**

DATE: 10/18/2017

SUBJECT: Traffic on Milled Surface in Urban Areas

Bidders are hereby advised that when the main lanes of a roadway are fine milled, traffic will be allowed to run on a milled surfaces for up to five (5) calendar days. The Contractor will be assessed a penalty of **$5,000 per calendar day** afterwards until the milled surfaces are covered with the next lift of asphalt. It shall be the Contractor's responsibility to ensure that the milling operations do not commence until such time as forecasted weather conditions are suitable enough to allow the placement of the asphalt pavement after the milling operations.

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

Page	Subsection	Change
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. 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. 1963 **CODE: (SP)**

DATE: 9/23/2019

SUBJECT: Guardrail Pads

Bidders are hereby advised that prior to construction of the guardrail pads, the Contractor shall coordinate with the guardrail Subcontractor to determine the guardrail pad dimensions necessary to meet MASH compliance.

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.

DEPARTMENT OF REVENUE
STATE OF MISSISSIPPI

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.

Revised March 2017

Petroleum Tax Bureau
P. O. Box 1033
Jackson, MS 39215-1033
Phone: (601) 923-7150

DEPARTMENT OF REVENUE
STATE OF MISSISSIPPI

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.

Petroleum Tax Bureau
P. O. Box 1033
Jackson, MS 39215-1033
Phone: (601) 923-7150

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2812 **CODE; (SP)**

DATE: 09/01/2020

SUBJECT: Traffic Signal and ITS Components

Bidders are hereby advised that all products selected for use on this project shall be in compliance with 2 CFR 200.216. No telecommunication and video surveillance equipment or services shall be manufactured by the following companies: Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, Dahua Technology Company, and any subsidiary or affiliate of these entities.

The Contractor shall provide a Certification Statement that the referenced product(s) is not manufactured by any of the following: Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, Dahua Technology Company, and any subsidiary or affiliate of these entities. (as per 2 CFR 200.216)

.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 2954 **CODE: (IS)**

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. 3318 **CODE: (SP)**

DATE: **04/29/2021**

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 Pages 4 & 5 of Notice to Bidders No. 2654 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.

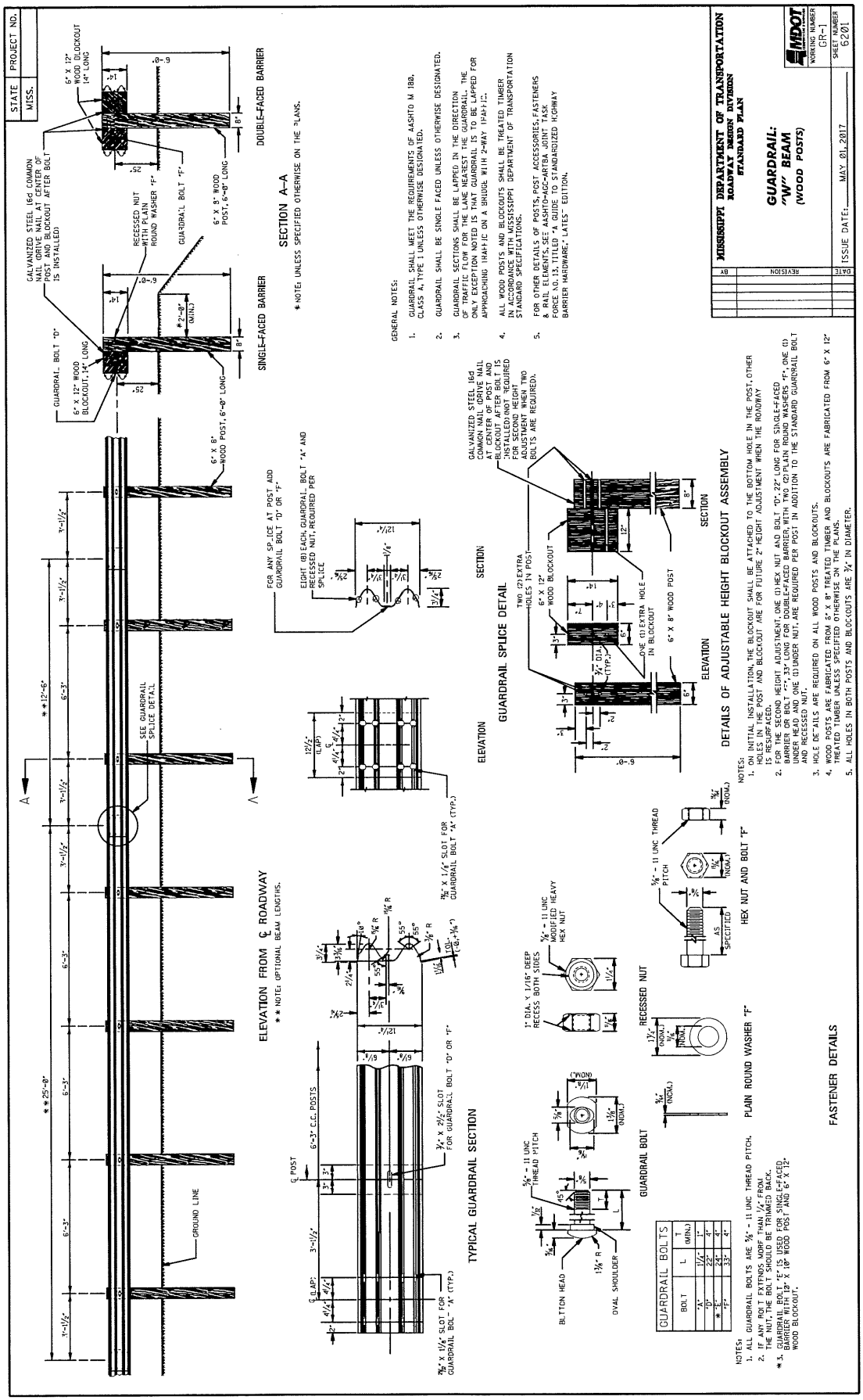
1-888-227-7517
Conference Code: 404496

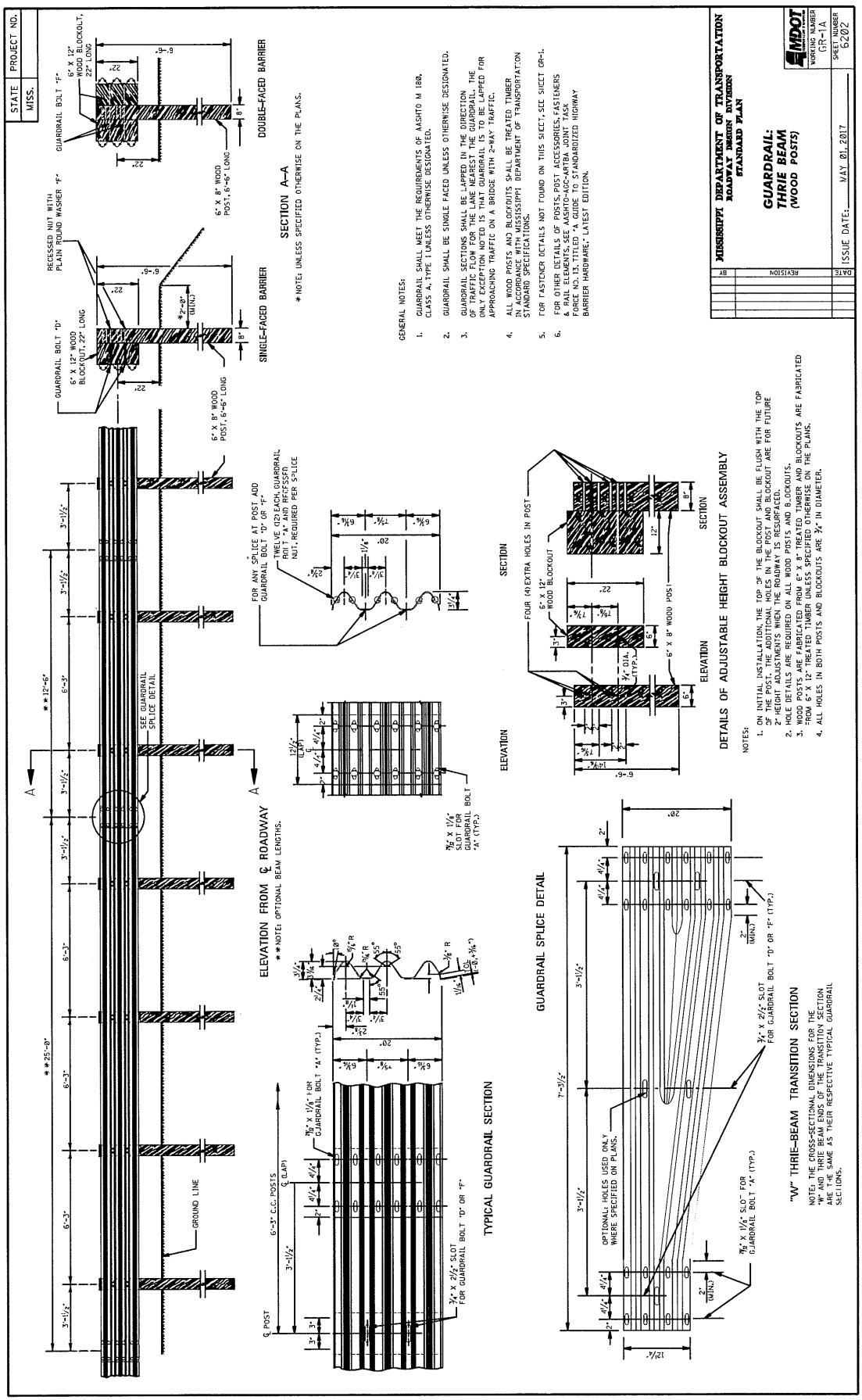
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

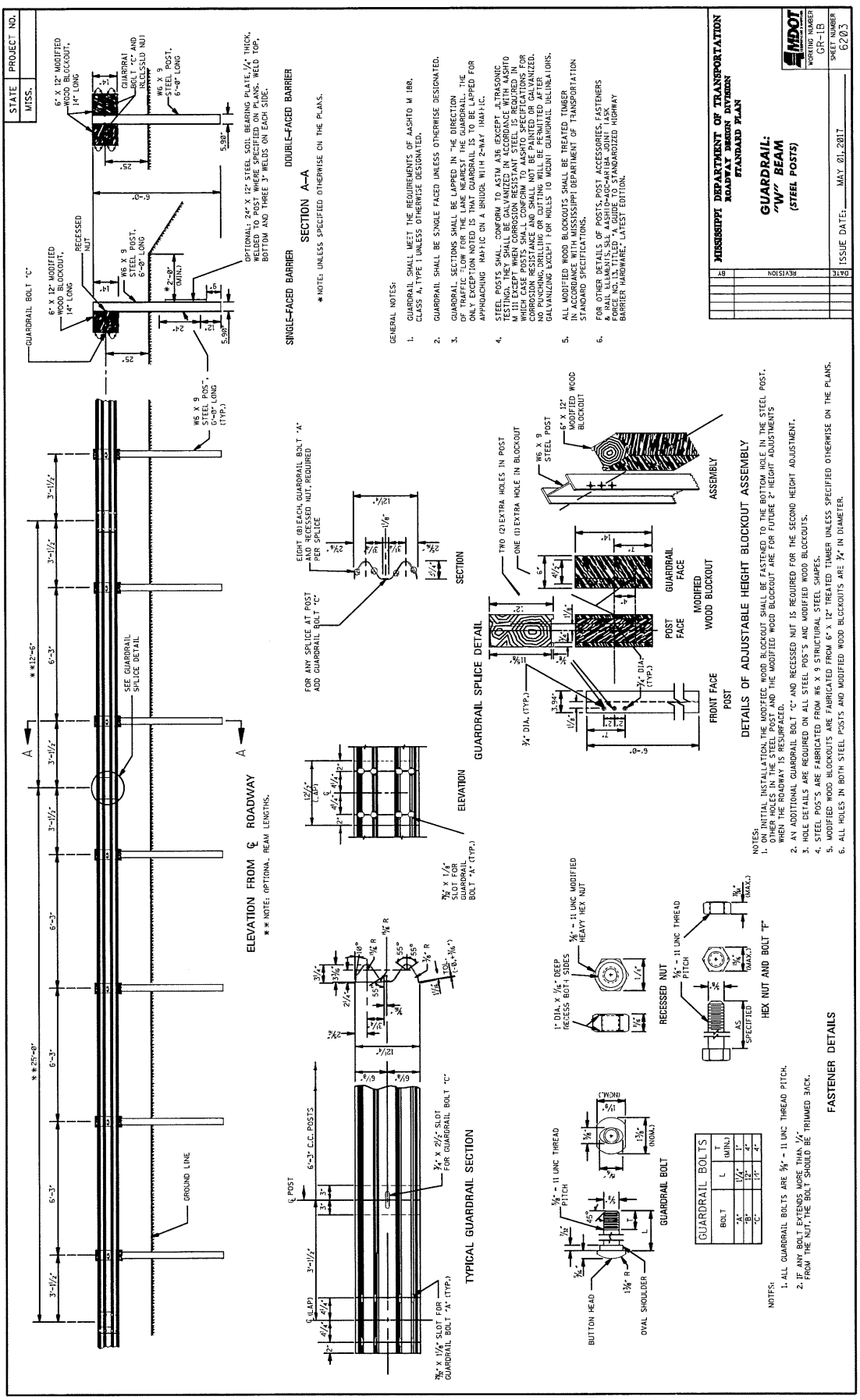
SUPPLEMENT TO NOTICE TO BIDDERS NO. 3599

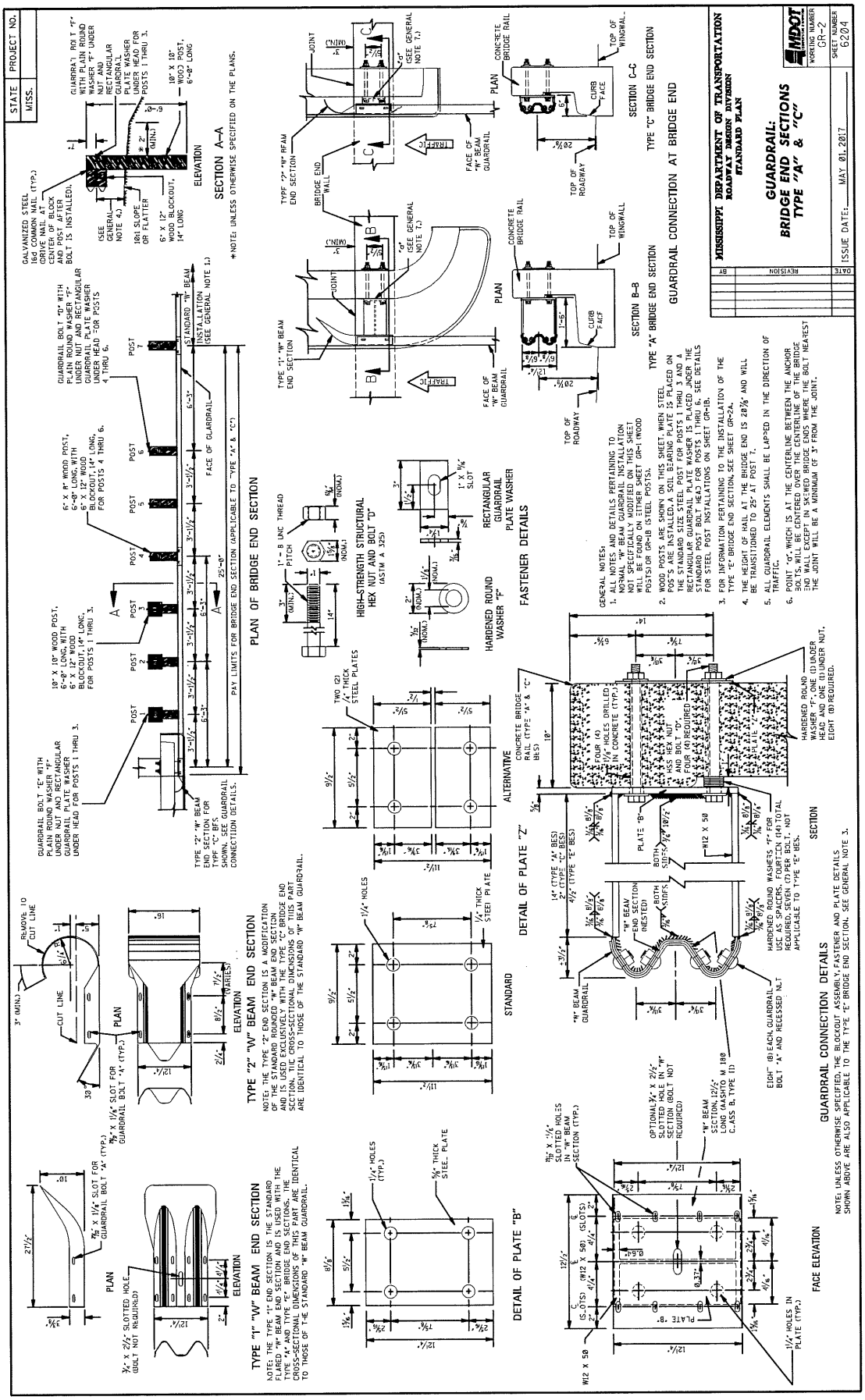
DATE: 08/11/2021

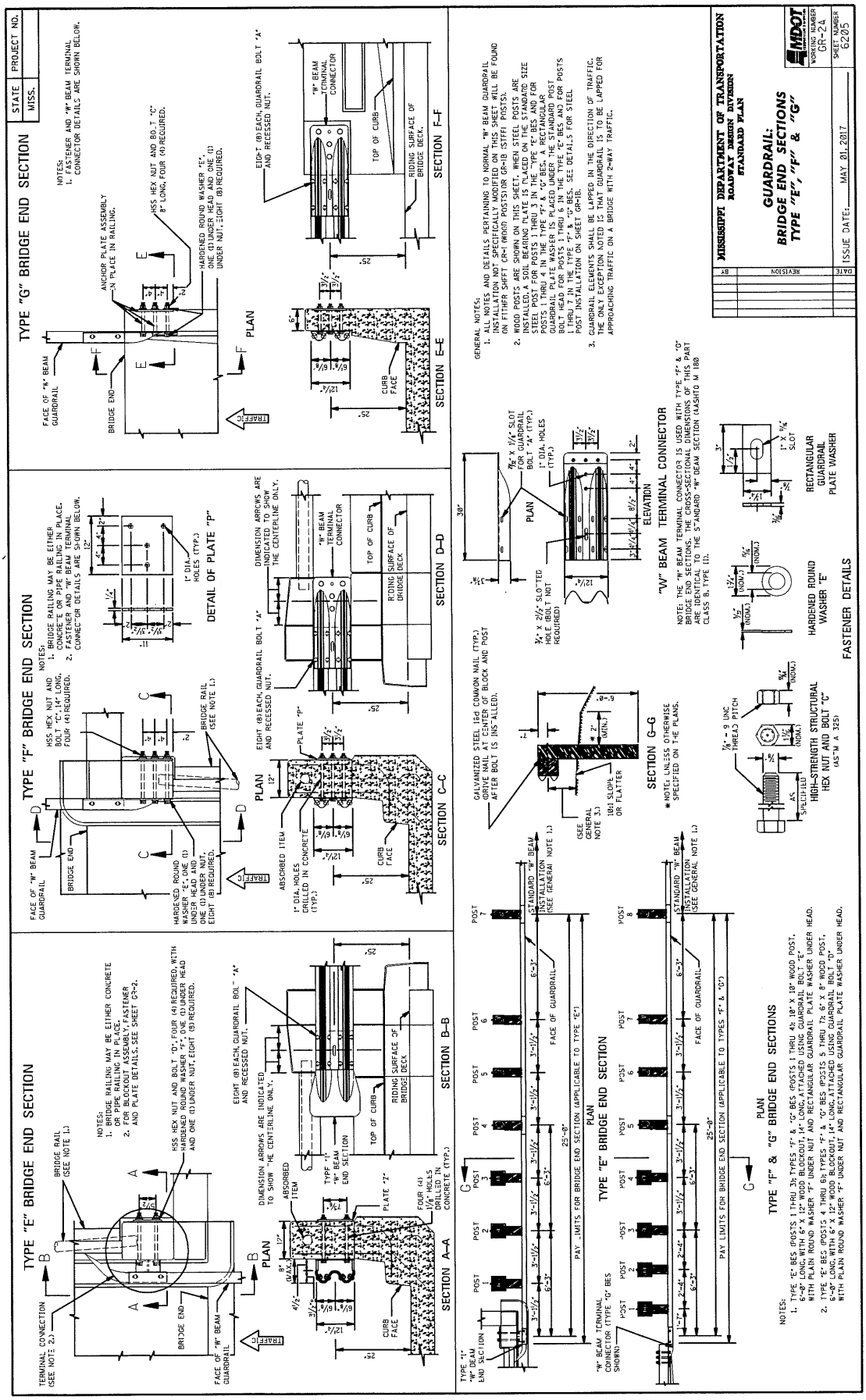
After the last drawing on page 33, add the following.

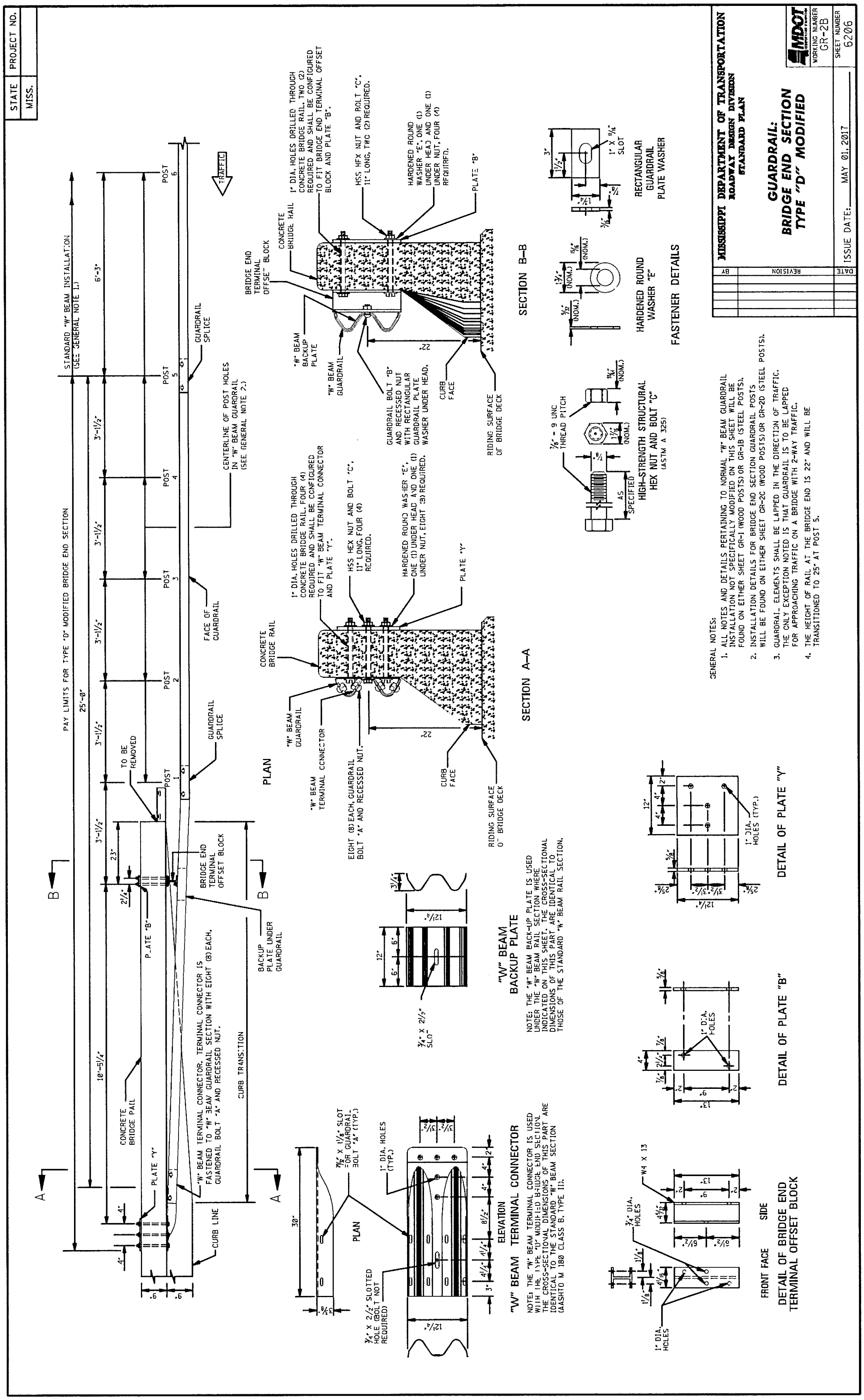

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL: "W" BEAM (WOOD POSTS)
MDOT
WORKING NUMBER CRT-1
SHEET NUMBER 6201
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
GENERAL NOTES:
1. GUARDRAIL SHALL MEET THE REQUIREMENTS OF AASHTO M 180, CLASS A, TYPE 1 UNLESS OTHERWISE DESIGNATED.
2. GUARDRAIL SHALL BE SINGLE FACED UNLESS OTHERWISE DESIGNATED.
3. GUARDRAIL SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW FOR THE LANE NEAREST THE GUARDRAIL. THE ONLY EXCEPTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.
4. ALL WOOD POSTS AND BLOCKOUTS SHALL BE TREATED TIMBER IN ACCORDANCE WITH MISSISSIPPI DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
5. FOR OTHER DETAILS OF POSTS, POST ACCESSORIES, FASTENERS & RAIL ELEMENTS, SEE AASHTO-AGC-ARTBA JOINT TASK FORCE NO. 13, TITLED "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE," LATEST EDITION.
SINGLE-FACED BARRIER
DOUBLE-FACED BARRIER
SECTION A-A
* NOTE: UNLESS SPECIFIED OTHERWISE ON THE PLANS.
ELEVATION FROM ℄ ROADWAY
** NOTE: OPTIONAL BEAM LENGTHS.
TYPICAL GUARDRAIL SECTION
GUARDRAIL SPLICE DETAIL
ELEVATION
SECTION
DETAILS OF ADJUSTABLE HEIGHT BLOCKOUT ASSEMBLY
NOTES:
1. ON INITIAL INSTALLATION, THE BLOCKOUT SHALL BE ATTACHED TO THE BOTTOM HOLE IN THE POST. OTHER HOLES IN THE POST AND BLOCKOUT ARE FOR FUTURE 2" HEIGHT ADJUSTMENT WHEN THE ROADWAY IS RESURFACED.
2. FOR THE SECOND HEIGHT ADJUSTMENT, ONE (1) HEX NUT AND BOLT "D", 22" LONG FOR SINGLE-FACED BARRIER OR BOLT "E", 34" LONG FOR DOUBLE-FACED BARRIER, WITH TWO (2) PLAIN ROUND WASHERS "F", ONE (1) UNDER HEAD AND ONE (1) UNDER NUT, ARE REQUIRED PER POST IN ADDITION TO THE STANDARD GUARDRAIL BOLT AND RECESSED NUT.
3. HOLE DETAILS ARE REQUIRED ON ALL WOOD POSTS AND BLOCKOUTS.
4. WOOD POSTS ARE FABRICATED FROM 6" X 8" TREATED TIMBER AND BLOCKOUTS ARE FABRICATED FROM 6" X 12" TREATED TIMBER UNLESS SPECIFIED OTHERWISE ON THE PLANS.
5. ALL HOLES IN BOTH POSTS AND BLOCKOUTS ARE ¾" IN DIAMETER.
FASTENER DETAILS
GUARDRAIL BOLTS
NOTES:
1. ALL GUARDRAIL BOLTS ARE ⅝" - 11 UNC THREAD PITCH.
2. IF ANY BOLT EXTENDS MORE THAN ½" FROM THE NUT, THE BOLT SHOULD BE TRIMMED BACK.
*3. GUARDRAIL BOLT "E" IS USED FOR SINGLE-FACED BARRIER WITH 8" X 8" WOOD POST AND 6" X 12" WOOD BLOCKOUT.

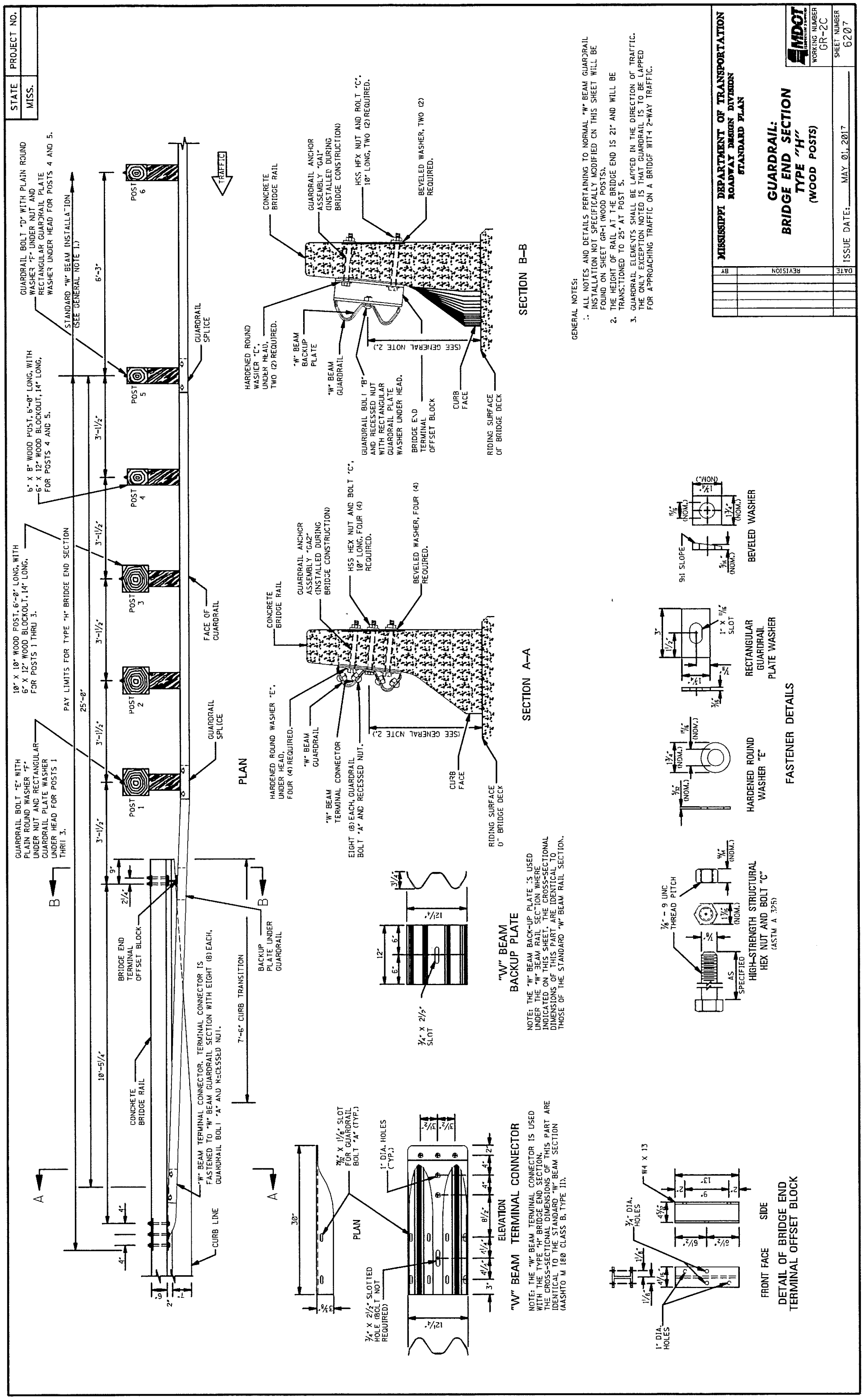

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
THRIE BEAM
(WOOD POSTS)
MDOT
WORKING NUMBER
GR-1A
SHEET NUMBER
6202
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
GENERAL NOTES:
1. GUARDRAIL SHALL MEET THE REQUIREMENTS OF AASHTO M 180, CLASS A, TYPE I UNLESS OTHERWISE DESIGNATED.
2. GUARDRAIL SHALL BE SINGLE FACED UNLESS OTHERWISE DESIGNATED.
3. GUARDRAIL SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW FOR THE LANE NEAREST THE GUARDRAIL. THE ONLY EXCEPTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.
4. ALL WOOD POSTS AND BLOCKOUTS SHALL BE TREATED TIMBER IN ACCORDANCE WITH MISSISSIPPI DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
5. FOR FASTENER DETAILS NOT FOUND ON THIS SHEET, SEE SHEET GR-1.
6. FOR OTHER DETAILS OF POSTS, POST ACCESSORIES, FASTENERS & RAIL ELEMENTS, SEE AASHTO-AGC-ARTBA JOINT TASK FORCE NO. 13, TITLED "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE," LATEST EDITION.
DOUBLE-FACED BARRIER
SECTION A-A
* NOTE: UNLESS SPECIFIED OTHERWISE ON THE PLANS.
SINGLE-FACED BARRIER
ELEVATION FROM ℄ ROADWAY
** NOTE: OPTIONAL BEAM LENGTHS.
SEE GUARDRAIL SPLICE DETAIL
GROUND LINE
TYPICAL GUARDRAIL SECTION
GUARDRAIL SPLICE DETAIL
"W" THRIE-BEAM TRANSITION SECTION
NOTE: THE CROSS-SECTIONAL DIMENSIONS FOR THE "W" AND THRIE BEAM ENDS OF THE TRANSITION SECTION ARE THE SAME AS THEIR RESPECTIVE TYPICAL GUARDRAIL SECTIONS.
DETAILS OF ADJUSTABLE HEIGHT BLOCKOUT ASSEMBLY
NOTES:
1. ON INITIAL INSTALLATION, THE TOP OF THE BLOCKOUT SHALL BE FLUSH WITH THE TOP OF THE POST. THE ADDITIONAL HOLES IN THE POST AND BLOCKOUT ARE FOR FUTURE 2" HEIGHT ADJUSTMENTS WHEN THE ROADWAY IS RESURFACED.
2. HOLE DETAILS ARE REQUIRED ON ALL WOOD POSTS AND BLOCKOUTS.
3. WOOD POSTS ARE FABRICATED FROM 6" X 8" TREATED TIMBER AND BLOCKOUTS ARE FABRICATED FROM 6" X 12" TREATED TIMBER UNLESS SPECIFIED OTHERWISE ON THE PLANS.
4. ALL HOLES IN BOTH POSTS AND BLOCKOUTS ARE ¾" IN DIAMETER.

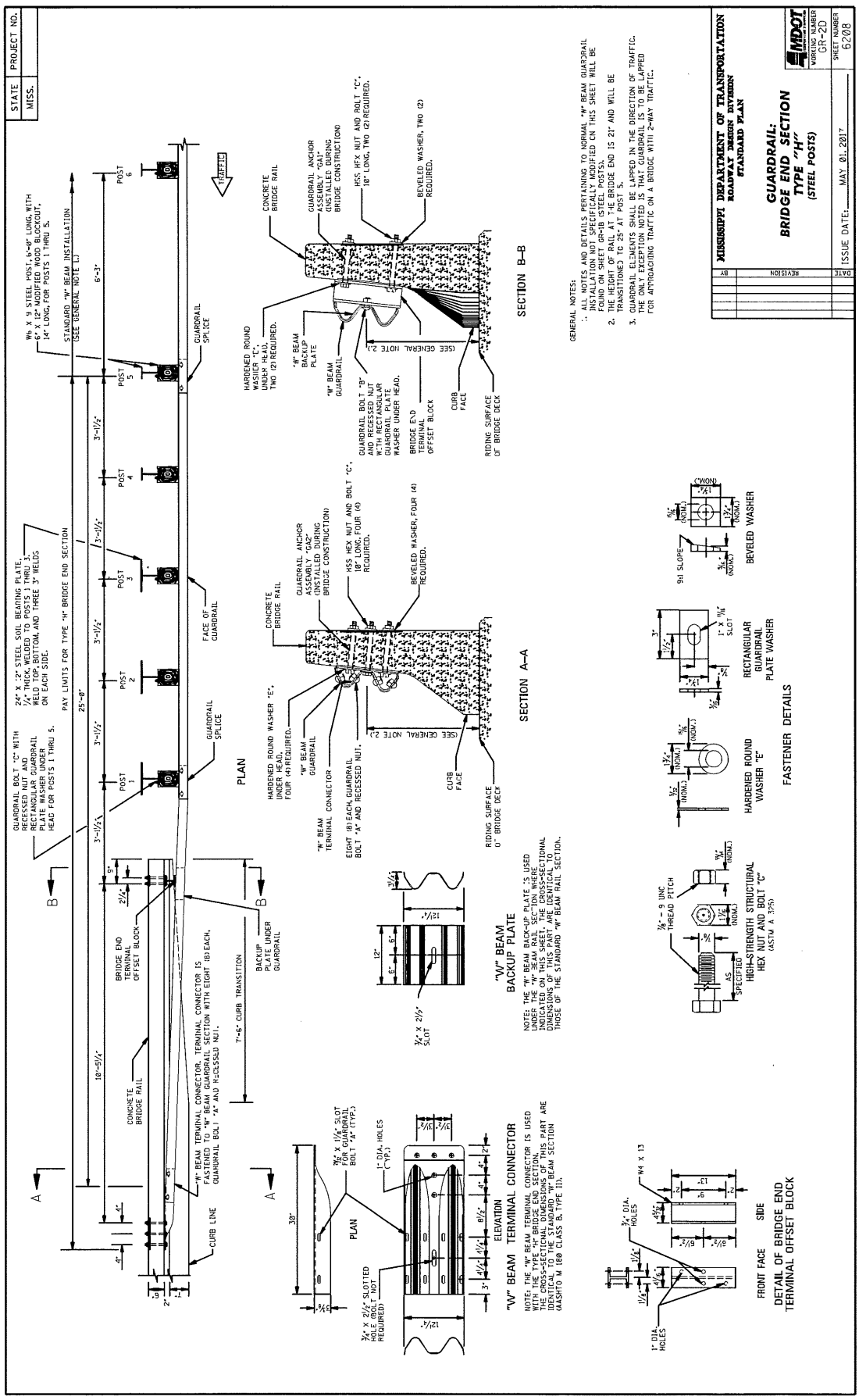

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
"W" BEAM
(STEEL POSTS)
MDOT
WORKING NUMBER GR-1B
SHEET NUMBER 6203
REVISION
BY
DATE
ISSUE DATE: MAY 01, 2017
SINGLE-FACED BARRIER
DOUBLE-FACED BARRIER
SECTION A-A
* NOTE: UNLESS SPECIFIED OTHERWISE ON THE PLANS.
GENERAL NOTES:
1. GUARDRAIL SHALL MEET THE REQUIREMENTS OF AASHTO M 180, CLASS A, TYPE 1 UNLESS OTHERWISE DESIGNATED.
2. GUARDRAIL SHALL BE SINGLE FACED UNLESS OTHERWISE DESIGNATED.
3. GUARDRAIL SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW FOR THE LANE NEAREST THE GUARDRAIL. THE ONLY EXCEPTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.
4. STEEL POSTS SHALL CONFORM TO ASTM A36 (EXCEPT ULTRASONIC TESTING). THEY SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 111 EXCEPT WHEN CORROSION RESISTANT STEEL IS REQUIRED IN WHICH CASE POSTS SHALL CONFORM TO AASHTO SPECIFICATIONS FOR WEATHERING STEEL. STEEL POSTS SHALL NOT BE PAINTED OR GALVANIZED. NO PUNCHING, DRILLING OR CUTTING WILL BE PERMITTED AFTER GALVANIZING EXCEPT FOR HOLES TO MOUNT GUARDRAIL DELINEATIONS.
5. ALL MODIFIED WOOD BLOCKOUTS SHALL BE TREATED TIMBER IN ACCORDANCE WITH MISSISSIPPI DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
6. FOR OTHER DETAILS OF POSTS, POST ACCESSORIES, FASTENERS & RAIL ELEMENTS, SEE AASHTO-AGC-ARTBA JOINT TASK FORCE NO. 13, TITLED "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE," LATEST EDITION.
ELEVATION FROM ℄ ROADWAY
** NOTE: OPTIONAL BEAM LENGTHS.
SEE GUARDRAIL SPLICE DETAIL
GROUND LINE
W6 X 9 STEEL POST, 6'-0" LONG (TYP.)
6" X 12" MODIFIED WOOD BLOCKOUT, 14" LONG
GUARDRAIL BOLT "C"
RECESSED NUT
W6 X 9 STEEL POST, 6'-0" LONG
*2'-0" (MIN.)
OPTIONAL: 24" X 12" STEEL SOIL BEARING PLATE, 1/4" THICK, WELDED TO POST WHERE SPECIFIED ON PLANS. WELD TOP, BOTTOM AND THREE 3" WELDS ON EACH SIDE.
TYPICAL GUARDRAIL SECTION
℄ POST
6'-3" C.C. POSTS
3/4" X 2 1/2" SLOT FOR GUARDRAIL BOLT "C"
3/4" X 1 1/4" SLOT FOR GUARDRAIL BOLT "A" (TYP.)
GUARDRAIL BOLTS
BOLT | L | T (MIN.)
"A" | 1 1/2" | 1"
"B" | 1 2/2" | 4"
"C" | 1 4" | 4"
BUTTON HEAD
OVAL SHOULDER
GUARDRAIL BOLT
FASTENER DETAILS
NOTES:
1. ALL GUARDRAIL BOLTS ARE 3/4" - 11 UNC THREAD PITCH.
2. IF ANY BOLT EXTENDS MORE THAN 1/4" FROM THE NUT, THE BOLT SHOULD BE TRIMMED BACK.
ELEVATION
SECTION
GUARDRAIL SPLICE DETAIL
EIGHT (8) EACH GUARDRAIL BOLT "A" AND RECESSED NUT, REQUIRED PER SPLICE
FOR ANY SPLICE AT POST ADD GUARDRAIL BOLT "C"
TWO (2) EXTRA HOLES IN POST
ONE (1) EXTRA HOLE IN BLOCKOUT
W6 X 9 STEEL POST
6" X 12" MODIFIED WOOD BLOCKOUT
ASSEMBLY
GUARDRAIL FACE
POST FACE
MODIFIED WOOD BLOCKOUT
FRONT FACE POST
DETAILS OF ADJUSTABLE HEIGHT BLOCKOUT ASSEMBLY
NOTES:
1. ON INITIAL INSTALLATION, THE MODIFIED WOOD BLOCKOUT SHALL BE FASTENED TO THE BOTTOM HOLE IN THE STEEL POST. OTHER HOLES IN THE STEEL POST AND THE MODIFIED WOOD BLOCKOUT ARE FOR FUTURE 2" HEIGHT ADJUSTMENTS WHEN THE ROADWAY IS RESURFACED.
2. ANY ADDITIONAL GUARDRAIL BOLT "C" AND RECESSED NUT IS REQUIRED FOR THE SECOND HEIGHT ADJUSTMENT.
3. HOLE DETAILS ARE REQUIRED ON ALL STEEL POST'S AND MODIFIED WOOD BLOCKOUTS.
4. STEEL POST'S ARE FABRICATED FROM W6 X 9 STRUCTURAL STEEL SHAPES.
5. MODIFIED WOOD BLOCKOUTS ARE FABRICATED FROM 6" X 12" TREATED TIMBER UNLESS SPECIFIED OTHERWISE ON THE PLANS.
6. ALL HOLES IN BOTH STEEL POSTS AND MODIFIED WOOD BLOCKOUTS ARE 3/4" IN DIAMETER.
1" DIA. X 1/8" DEEP RECESS BOTH SIDES
3/4" - 11 UNC MODIFIED HEAVY HEX NUT
RECESSED NUT
3/4" - 11 UNC THREAD PITCH
HEX NUT AND BOLT "F"

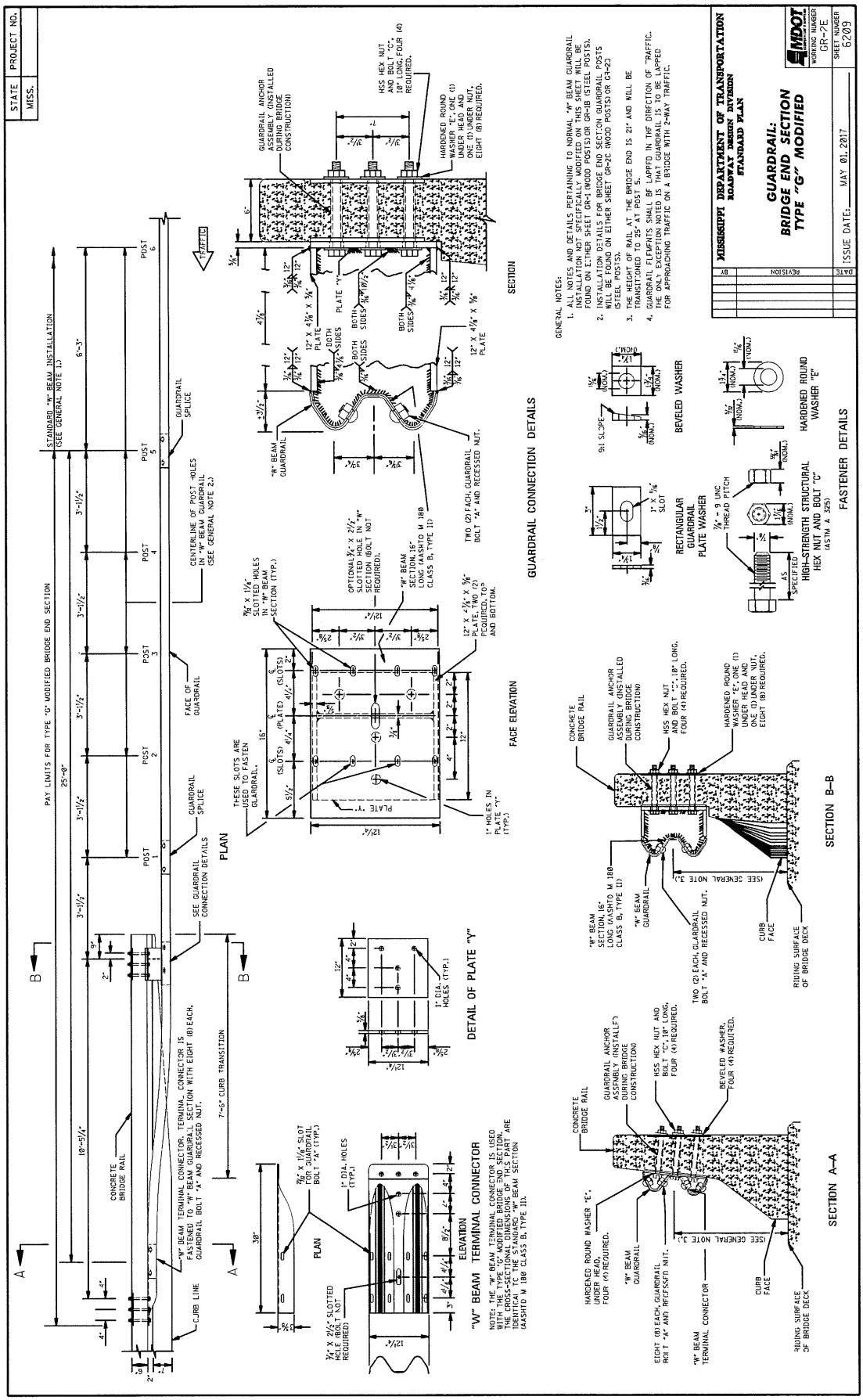

STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END SECTIONS
TYPE "A" & "C"
MDOT
WORKING NUMBER
GR-2
SHEET NUMBER
6204
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
PLAN OF BRIDGE END SECTION
SECTION A-A
ELEVATION
*NOTE: UNLESS OTHERWISE SPECIFIED ON THE PLANS.
TYPE "1" "W" BEAM END SECTION
TYPE "2" "W" BEAM END SECTION
DETAIL OF PLATE "B"
DETAIL OF PLATE "Z"
FASTENER DETAILS
GUARDRAIL CONNECTION DETAILS
SECTION B-B
SECTION C-C
TYPE "A" BRIDGE END SECTION
TYPE "C" BRIDGE END SECTION
GUARDRAIL CONNECTION AT BRIDGE END
GENERAL NOTES:
1. ALL NOTES AND DETAILS PERTAINING TO GUARDRAIL INSTALLATION NOT SPECIFICALLY MODIFIED ON THIS SHEET WILL BE FOUND ON EITHER SHEET GR-1 (WOOD POSTS) OR GR-1B (STEEL POSTS).
2. WOOD POSTS ARE SHOWN ON THIS SHEET. WHEN STEEL POSTS ARE INSTALLED, A SOIL BEARING PLATE IS PLACED ON THE STANDARD SIZE STEEL POST FOR POSTS 1 THRU 3 AND A RECTANGULAR GUARDRAIL PLATE WASHER IS PLACED UNDER THE GUARDRAIL FOR POSTS 4 THRU 6. SEE DETAILS FOR STEEL POST INSTALLATIONS ON SHEET GR-1B.
3. FOR INFORMATION PERTAINING TO THE INSTALLATION OF THE TYPE "E" BRIDGE END SECTION, SEE SHEET GR-2A.
4. THE HEIGHT OF RAIL AT THE BRIDGE END IS 28⅜" AND WILL BE TRANSITIONED TO 25" AT POST 1.
5. ALL GUARDRAIL ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
6. POINT "G", WHICH IS AT THE CENTERLINE BETWEEN THE ANCHOR BOLTS, WILL BE CENTERED OVER THE CENTERLINE OF THE BRIDGE JOINT. EXCEPT FOR SKEWED BRIDGE ENDS WHERE THE BOLT NEAREST THE JOINT WILL BE A MINIMUM OF 3" FROM THE JOINT.

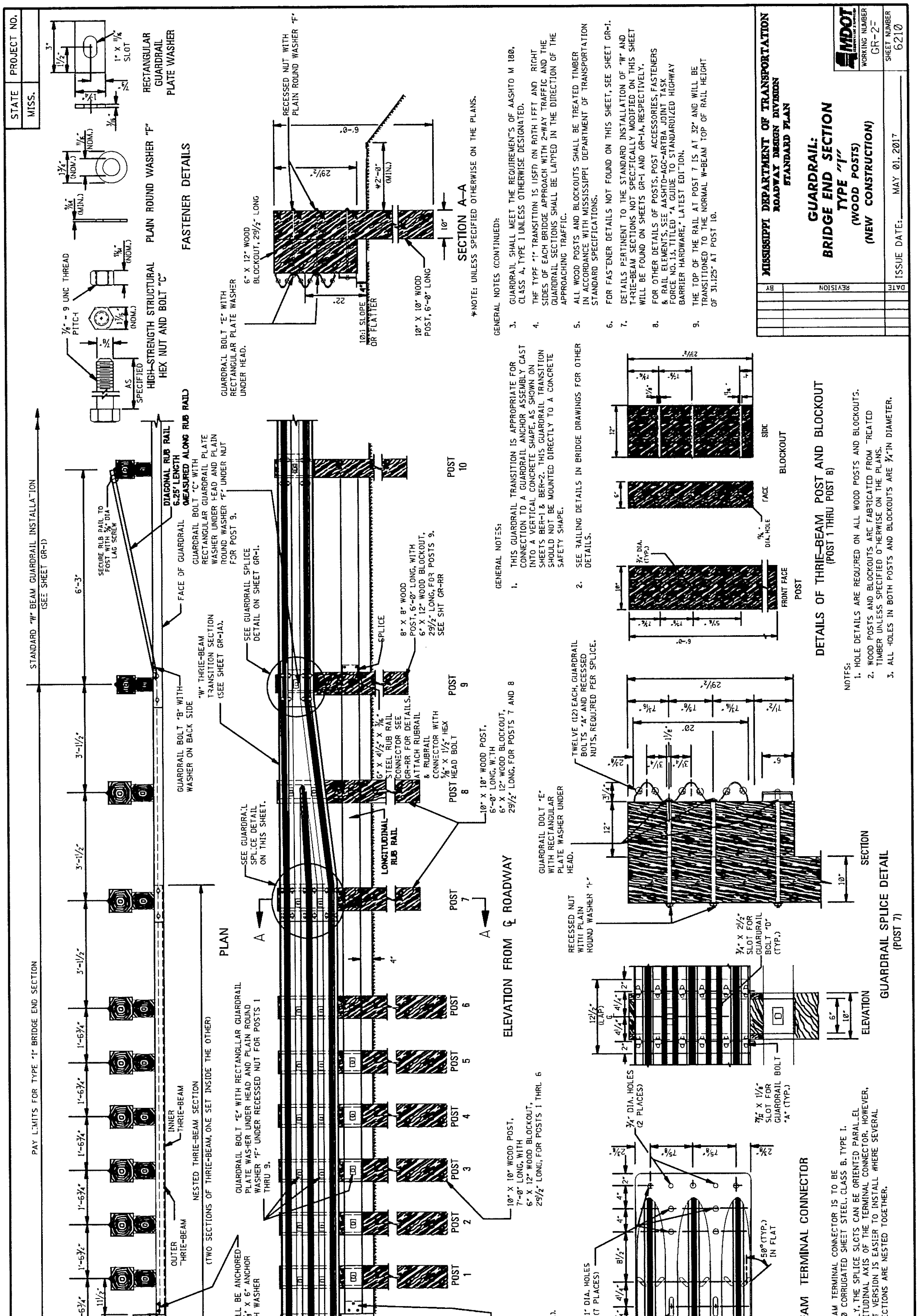

TYPE "E" BRIDGE END SECTION
TYPE "F" BRIDGE END SECTION
TYPE "G" BRIDGE END SECTION
STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END SECTIONS
TYPE "E", "F" & "G"
WORKING NUMBER BR-24
SHEET NUMBER 6205
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
GENERAL NOTES:
1. ALL NOTES AND DETAILS PERTAINING TO NORMAL "W" BEAM GUARDRAIL INSTALLATION NOT SPECIFICALLY MODIFIED IN THESE SHEETS WILL BE FOUND ON STANDARD SHEET GR-1A FOR WOOD POSTS OR GR-1B FOR STIFF POSTS.
2. WOOD POSTS ARE SHOWN ON THIS SHEET. WHEN STEEL POSTS ARE INSTALLED, A SOIL BEARING PLATE IS PLACED ON THE STANDARD SIZE STEEL POST FOR POSTS 1 THRU 3 IN THE "TYPE "E" BES AND FOR POSTS 1 THRU 4 IN THE TYPE "F" & "G" BES. A RECTANGULAR GUARDRAIL PLATE WASHER IS PLACED UNDER THE STANDARD POST BOLT HEAD FOR POSTS 1 THRU 6 IN THE TYPE "E" BES AND FOR POSTS 1 THRU 5 IN THE TYPE "F" & "G" BES. SEE DETAILS FOR STEEL POST INSTALLATION ON SHEET GR-1B.
3. GUARDRAIL ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC. THE ONLY EXCEPTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.
"W" BEAM TERMINAL CONNECTOR
HARDENED ROUND WASHER "E"
HIGH-STRENGTH STRUCTURAL HEX NUT AND BOLT "G"
RECTANGULAR GUARDRAIL PLATE WASHER
FASTENER DETAILS
TYPE "F" & "G" BRIDGE END SECTIONS
TYPE "E" BRIDGE END SECTION
PLAN
SECTION A–A
SECTION B–B
SECTION C–C
SECTION D–D
SECTION E–E
SECTION F–F
SECTION G–G
DETAIL OF PLATE "P"

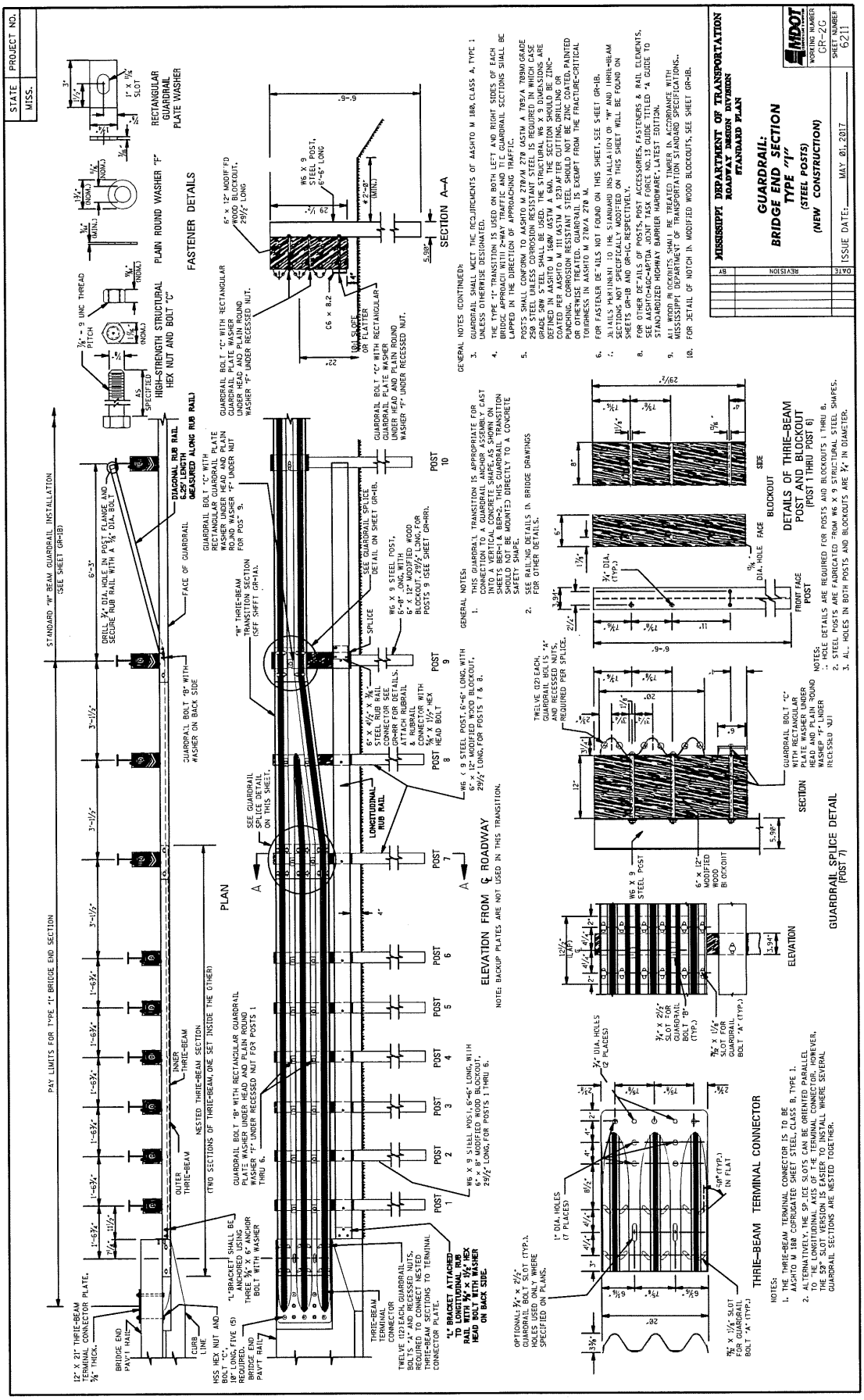

STATE MISS.
PROJECT NO.
PAY LIMITS FOR TYPE "D" MODIFIED BRIDGE END SECTION
STANDARD "W" BEAM INSTALLATION (SEE GENERAL NOTE 1.)
PLAN
SECTION A-A
SECTION B-B
ELEVATION
"W" BEAM TERMINAL CONNECTOR
NOTE: THE "W" BEAM TERMINAL CONNECTOR IS USED WITH THE TYPE "D" MODIFIED BRIDGE END SECTION. THE CROSS-SECTIONAL DIMENSIONS OF THIS PART ARE IDENTICAL TO THE STANDARD "W" BEAM SECTION (AASHTO M 180 CLASS B, TYPE II).
"W" BEAM BACKUP PLATE
NOTE: THE "W" BEAM BACK-UP PLATE IS USED UNDER THE "W" BEAM RAIL SECTION WHERE INDICATED ON THIS SHEET. THE CROSS-SECTIONAL DIMENSIONS OF THIS PART ARE IDENTICAL TO THOSE OF THE STANDARD "W" BEAM RAIL SECTION.
HIGH-STRENGTH STRUCTURAL HEX NUT AND BOLT "C" (ASTM A 325)
HARDENED ROUND WASHER "E"
RECTANGULAR GUARDRAIL PLATE WASHER
FASTENER DETAILS
DETAIL OF BRIDGE END TERMINAL OFFSET BLOCK
DETAIL OF PLATE "B"
DETAIL OF PLATE "Y"
GENERAL NOTES:
1. ALL NOTES AND DETAILS PERTAINING TO NORMAL "W" BEAM GUARDRAIL INSTALLATION NOT SPECIFICALLY MODIFIED ON THIS SHEET WILL BE FOUND ON EITHER SHEET GR-1 (WOOD POSTS) OR GR-1B (STEEL POSTS).
2. INSTALLATION DETAILS FOR BRIDGE END SECTION GUARDRAIL POSTS WILL BE FOUND ON EITHER SHEET GR-2C (WOOD POSTS) OR GR-2D (STEEL POSTS).
3. GUARDRAIL ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC. THE ONLY EXCEPTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.
4. THE HEIGHT OF RAIL AT THE BRIDGE END IS 22" AND WILL BE TRANSITIONED TO 25" AT POST 5.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END SECTION
TYPE "D" MODIFIED
MDOT
WORKING NUMBER GR-2B
SHEET NUMBER 6206
ISSUE DATE: MAY 01, 2017

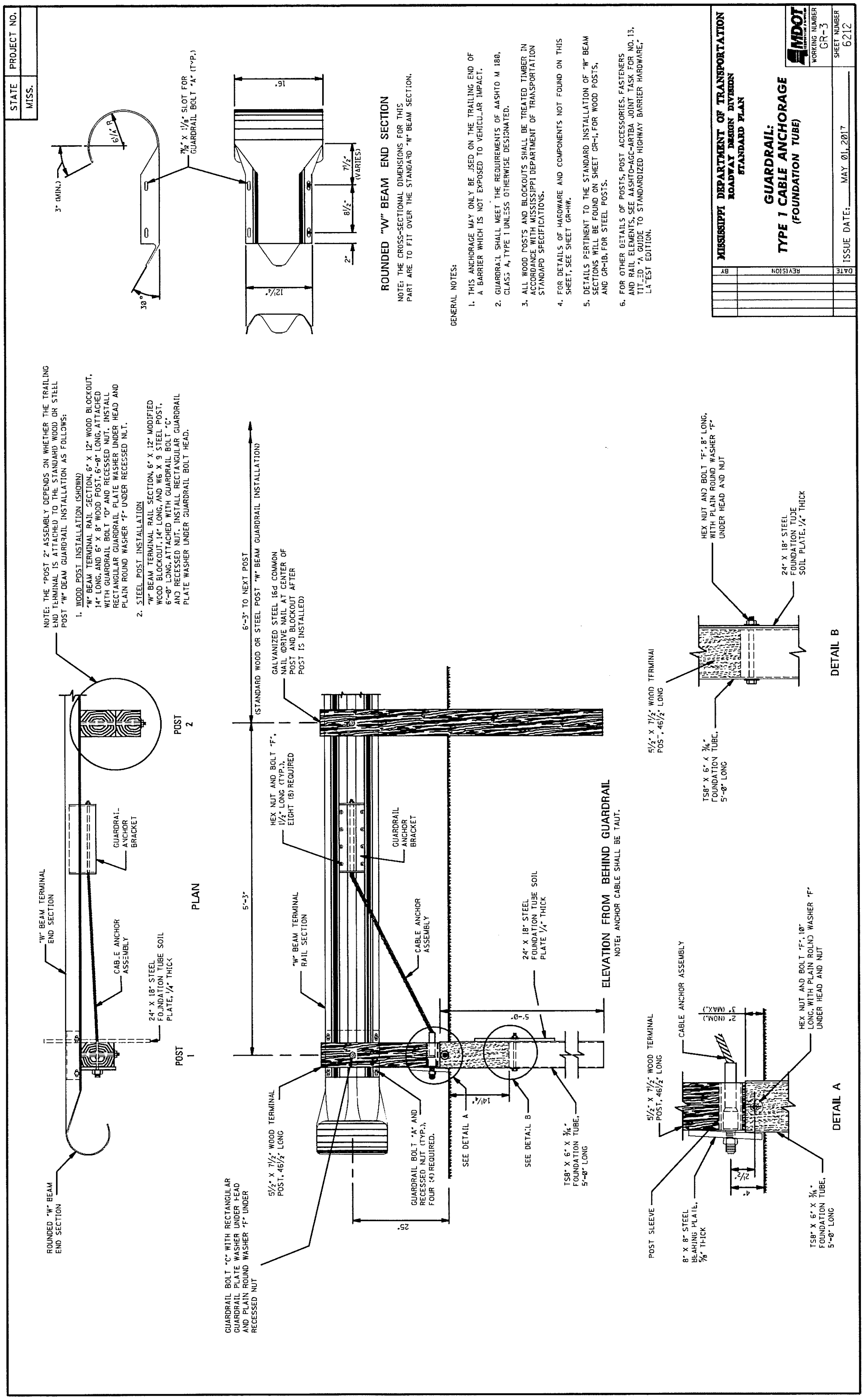

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END SECTION
TYPE "H"
(WOOD POSTS)
ISSUE DATE: MAY 01, 2017
WORKING NUMBER GR-2C
SHEET NUMBER 6207
GENERAL NOTES:
1. ALL NOTES AND DETAILS PERTAINING TO NORMAL "W" BEAM GUARDRAIL INSTALLATION NOT SPECIFICALLY MODIFIED ON THIS SHEET WILL BE FOUND ON SHEET GR-1 (WOOD POSTS).
2. THE HEIGHT OF RAIL AT THE BRIDGE END IS 21" AND WILL BE TRANSITIONED TO 25" AT POST 5.
3. GUARDRAIL ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC. THE ONLY EXCEPTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.
PLAN
SECTION A-A
SECTION B-B
"W" BEAM TERMINAL CONNECTOR
"W" BEAM BACKUP PLATE
FASTENER DETAILS
DETAIL OF BRIDGE END TERMINAL OFFSET BLOCK
HARDENED ROUND WASHER "E"
RECTANGULAR GUARDRAIL PLATE WASHER
BEVELED WASHER
HIGH-STRENGTH STRUCTURAL HEX NUT AND BOLT "C"
PAY LIMITS FOR TYPE "H" BRIDGE END SECTION
7'-6" CURB TRANSITION
TRAFFIC

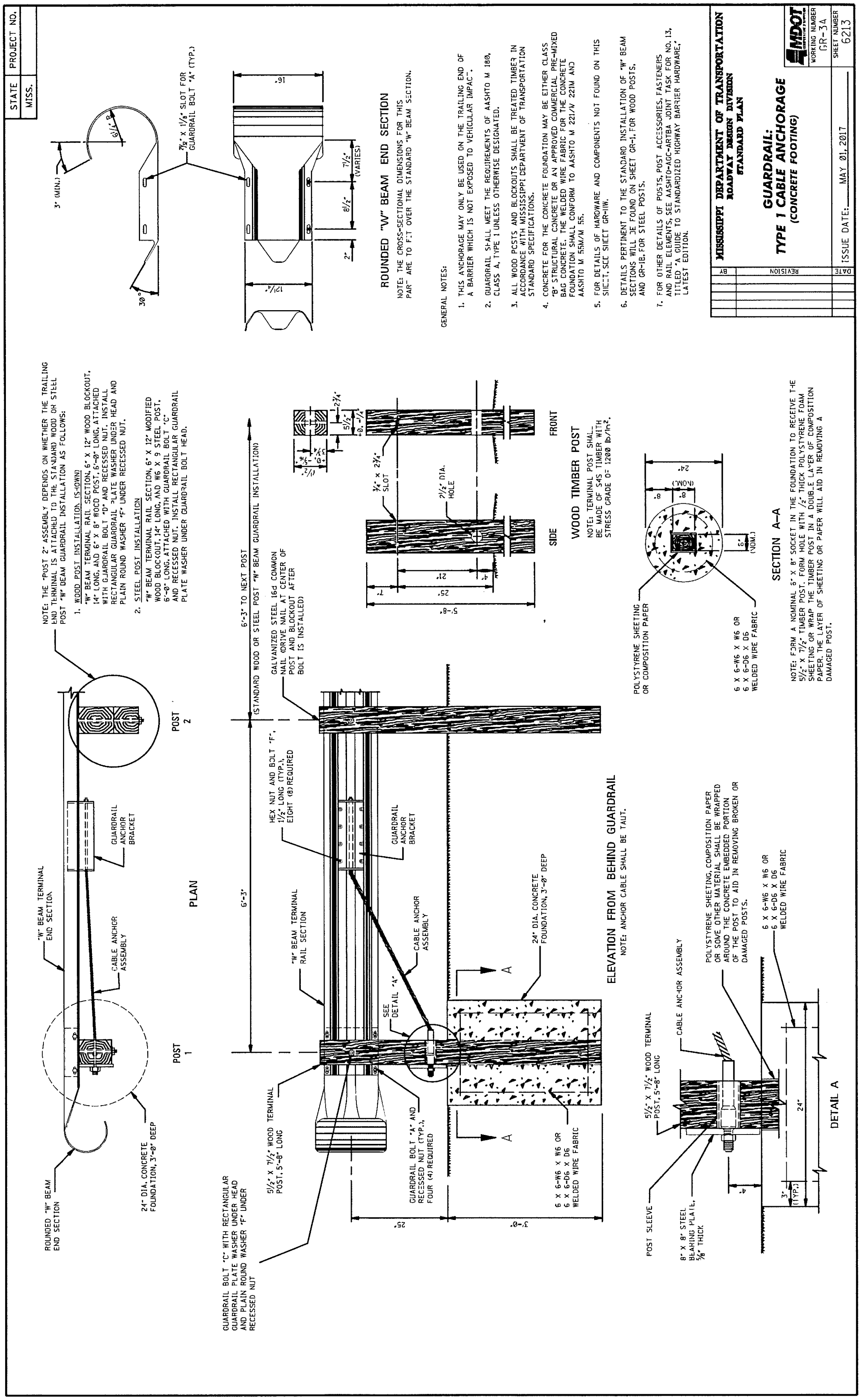

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END SECTION
TYPE "H"
(STEEL POSTS)
MDOT
WORKING NUMBER
GR-20
SHEET NUMBER
6208
ISSUE DATE: MAY 01, 2017
REVISION
BY
DATE
PLAN
SECTION A-A
SECTION B-B
ELEVATION
SIDE
FRONT FACE
DETAIL OF BRIDGE END TERMINAL OFFSET BLOCK
"W" BEAM TERMINAL CONNECTOR
"W" BEAM BACKUP PLATE
FASTENER DETAILS
HARDENED ROUND WASHER "E"
RECTANGULAR GUARDRAIL PLATE WASHER
BEVELED WASHER
HIGH-STRENGTH STRUCTURAL HEX NUT AND BOLT "C"
GENERAL NOTES:
1. ALL NOTES AND DETAILS PERTAINING TO NORMAL "W" BEAM GUARDRAIL INSTALLATION NOT SPECIFICALLY MODIFIED ON THIS SHEET WILL BE FOUND ON SHEET GR-1B (STEEL POSTS).
2. THE HEIGHT OF RAIL AT THE BRIDGE END IS 21" AND WILL BE TRANSITIONED TO 25" AT POST 5.
3. GUARDRAIL ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC. THE TYPICAL SECTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.

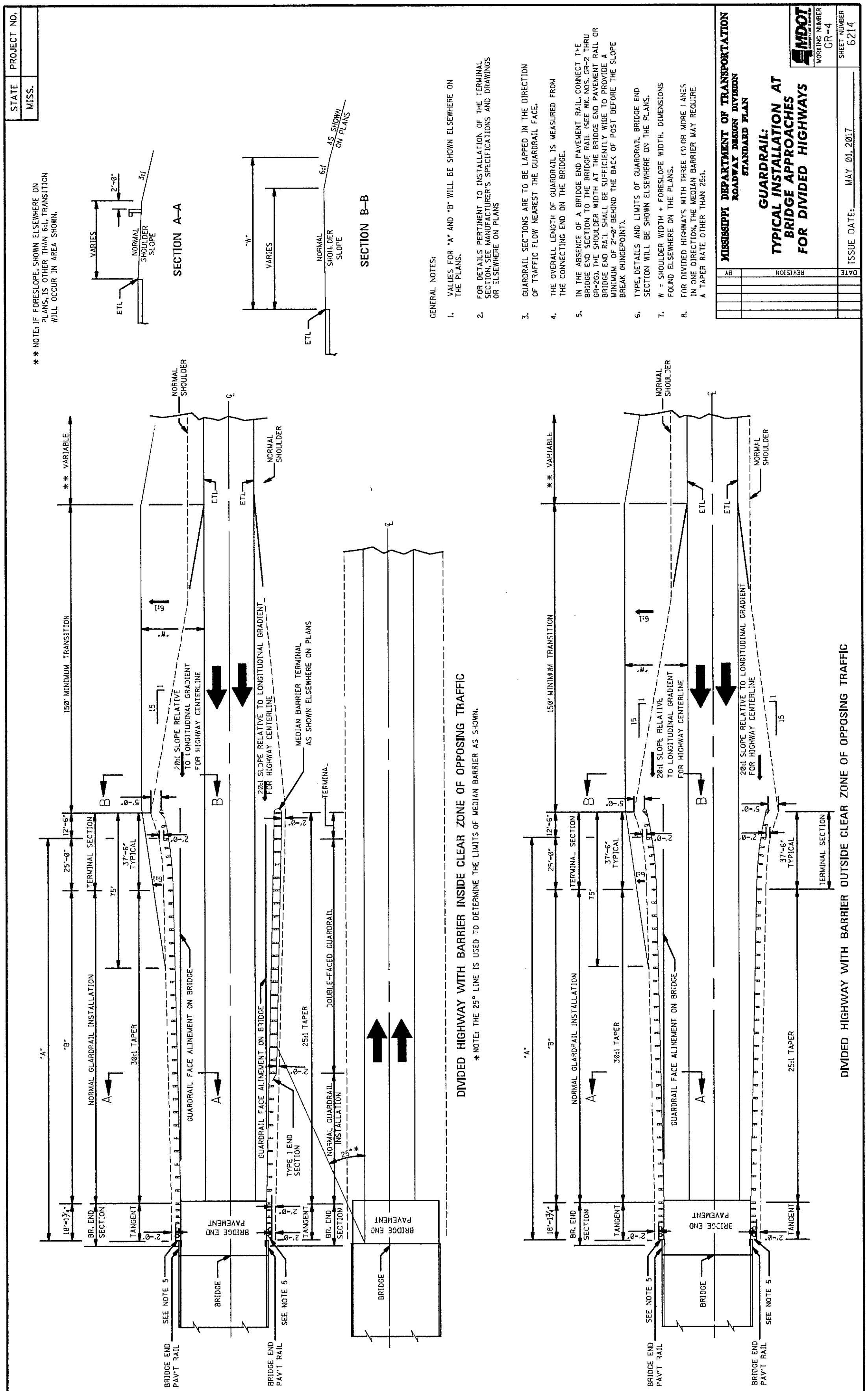

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END SECTION
TYPE "G" MODIFIED
WORKING NUMBER GR-2E
SHEET NUMBER 6209
ISSUE DATE: MAY 01, 2017
REVISION
BY
DATE
PAY LIMITS FOR TYPE "G" MODIFIED BRIDGE END SECTION
STANDARD "W" BEAM INSTALLATION (SEE GENERAL NOTE 1.)
CENTERLINE OF POST HOLES IN "W" BEAM GUARDRAIL (SEE GENERAL NOTE 2.)
FACE OF GUARDRAIL
GUARDRAIL SPLICE
CONCRETE BRIDGE RAIL
CURB LINE
"W" BEAM TERMINAL CONNECTOR. TERMINAL CONNECTOR IS FASTENED TO "W" BEAM GUARDRAIL SECTION WITH EIGHT (8) EACH, GUARDRAIL BOLT "A" AND RECESSED NUT.
SEE GUARDRAIL CONNECTION DETAILS
7'-6" CURB TRANSITION
PLAN
ELEVATION
"W" BEAM TERMINAL CONNECTOR
NOTE: THE "W" BEAM TERMINAL CONNECTOR IS USED WITH THE TYPE "G" MODIFIED BRIDGE END SECTION. THE CROSS-SECTIONAL DIMENSIONS OF THIS PART ARE IDENTICAL TO THE STANDARD "W" BEAM SECTION (AASHTO M 180 CLASS B, TYPE II).
SECTION A–A
SECTION B–B
SECTION
FACE ELEVATION
DETAIL OF PLATE "Y"
GUARDRAIL CONNECTION DETAILS
GENERAL NOTES:
1. ALL NOTES AND DETAILS PERTAINING TO NORMAL "W" BEAM GUARDRAIL INSTALLATION NOT SPECIFICALLY MODIFIED ON THIS SHEET WILL BE FOUND ON EITHER SHEET GR-1 (WOOD POSTS) OR GR-1B (STEEL POSTS).
2. INSTALLATION DETAILS FOR BRIDGE END SECTION GUARDRAIL POSTS WILL BE FOUND ON EITHER SHEET GR-2C (WOOD POSTS) OR GR-2D (STEEL POSTS).
3. THE HEIGHT OF RAIL AT THE BRIDGE END IS 21" AND WILL BE TRANSITIONED TO 25" AT POST 5.
4. GUARDRAIL FLIMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC. THE ONLY EXCEPTION NOTED IS THAT GUARDRAIL IS TO BE LAPPED FOR APPROACHING TRAFFIC ON A BRIDGE WITH 2-WAY TRAFFIC.
BEVELED WASHER
RECTANGULAR GUARDRAIL PLATE WASHER
HARDENED ROUND WASHER "E"
HIGH-STRENGTH STRUCTURAL HEX NUT AND BOLT "G" (ASTM A 325)
FASTENER DETAILS

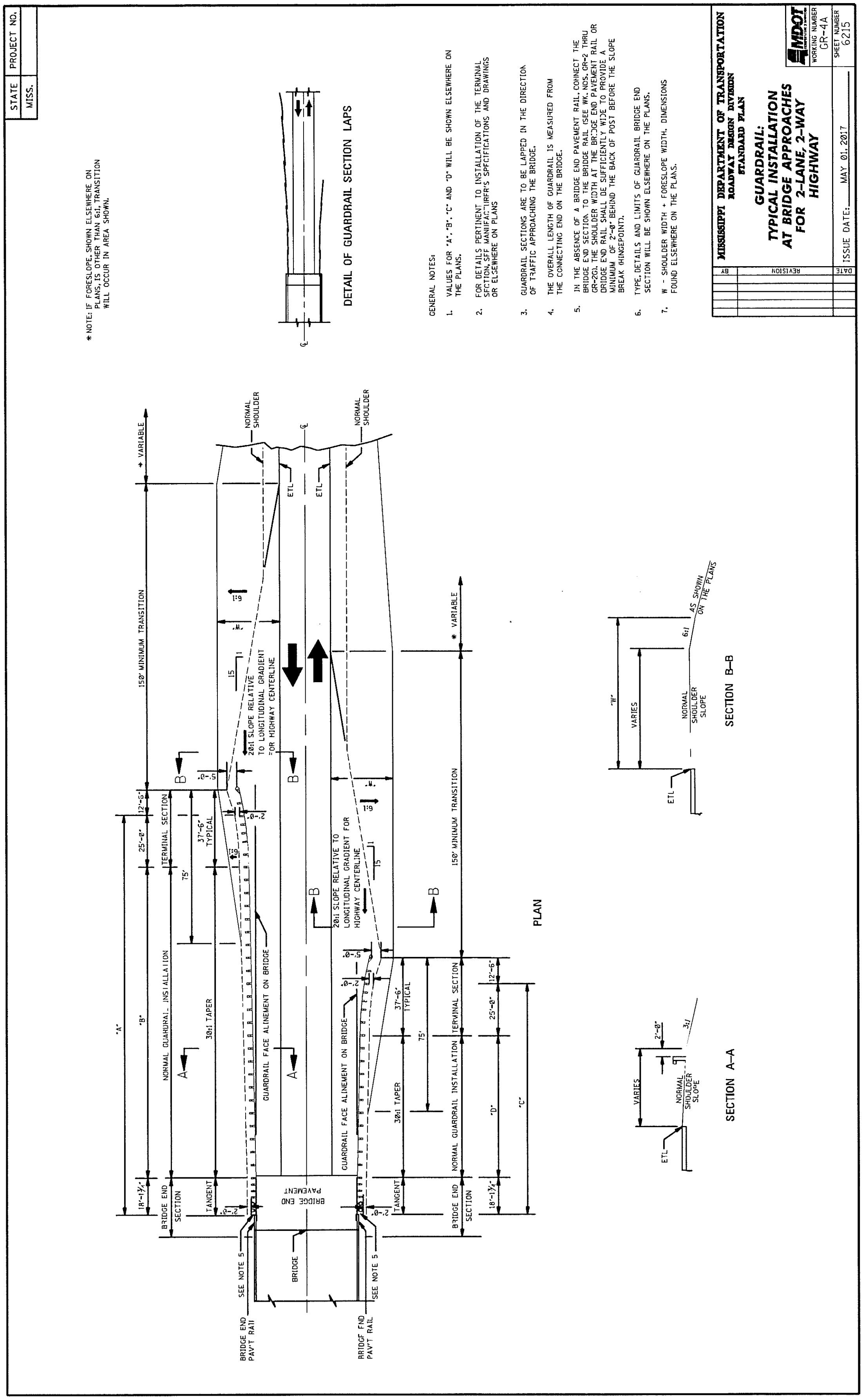

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END SECTION
TYPE "I"
(WOOD POSTS)
(NEW CONSTRUCTION)
ISSUE DATE: MAY 01, 2017
PLAN
ELEVATION FROM ℄ ROADWAY
SECTION A-A
FASTENER DETAILS
DETAILS OF THRIE-BEAM POST AND BLOCKOUT
GUARDRAIL SPLICE DETAIL
THRIE-BEAM TERMINAL CONNECTOR

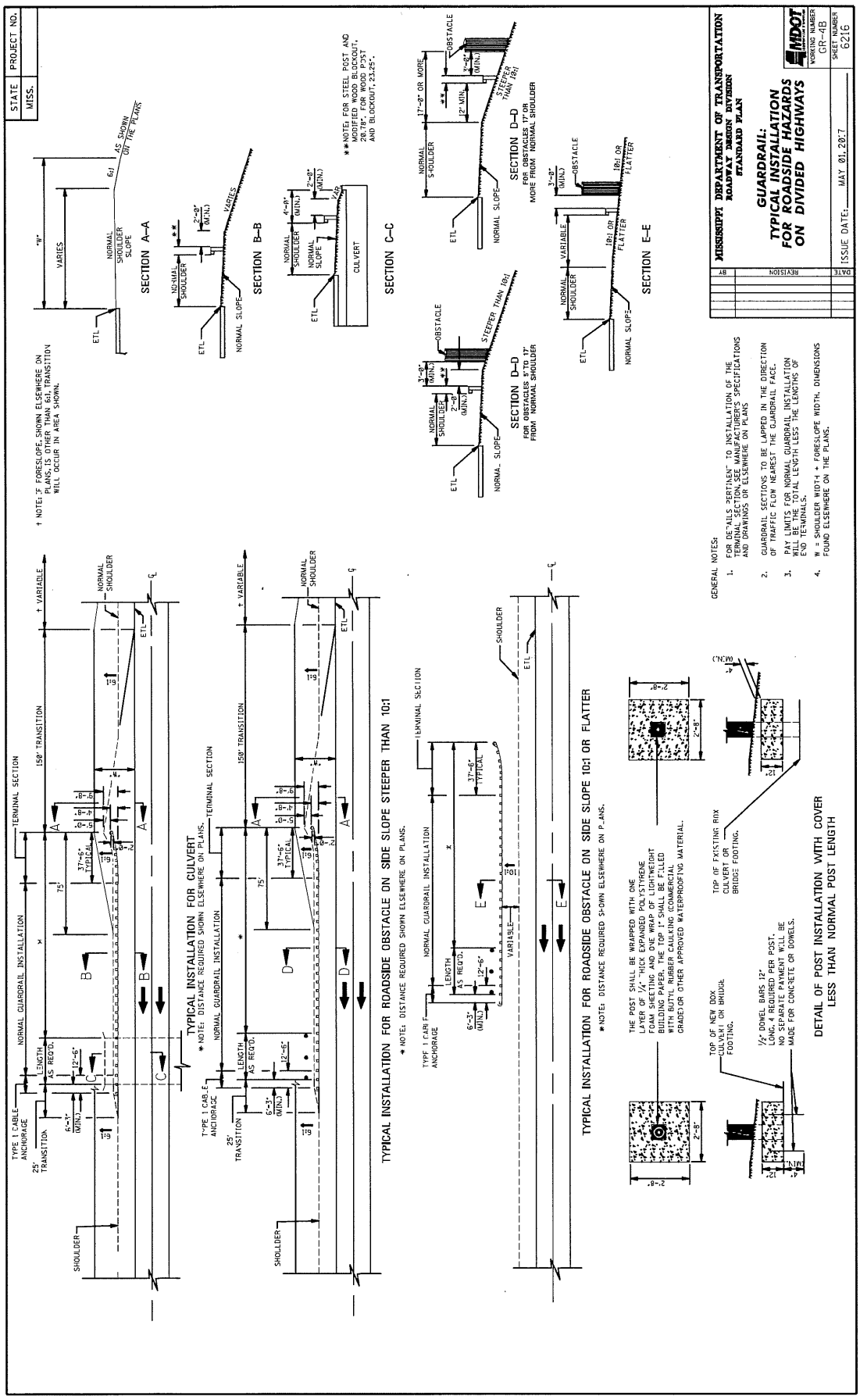

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
BRIDGE END "I"
TYPE "I"
(STEEL POSTS)
(NEW CONSTRUCTION)
MDOT
WORKING NUMBER GR-2G
SHEET NUMBER 6211
ISSUE DATE: MAY 01, 2017
DATE BY REVISION
STANDARD "W" BEAM GUARDRAIL INSTALLATION (SEE SHEET GR-1B)
PAY LIMITS FOR TYPE "I" BRIDGE END SECTION
PLAN
ELEVATION FROM ℄ ROADWAY
SECTION A–A
FASTENER DETAILS
GENERAL NOTES:
GENERAL NOTES (CONTINUED):
NOTE: BACKUP PLATES ARE NOT USED IN THIS TRANSITION.
THRIE–BEAM TERMINAL CONNECTOR
GUARDRAIL SPLICE DETAIL (POST 7)
DETAILS OF THRIE–BEAM POST AND BLOCKOUT (POST 1 THRU POST 6)
NOTES:

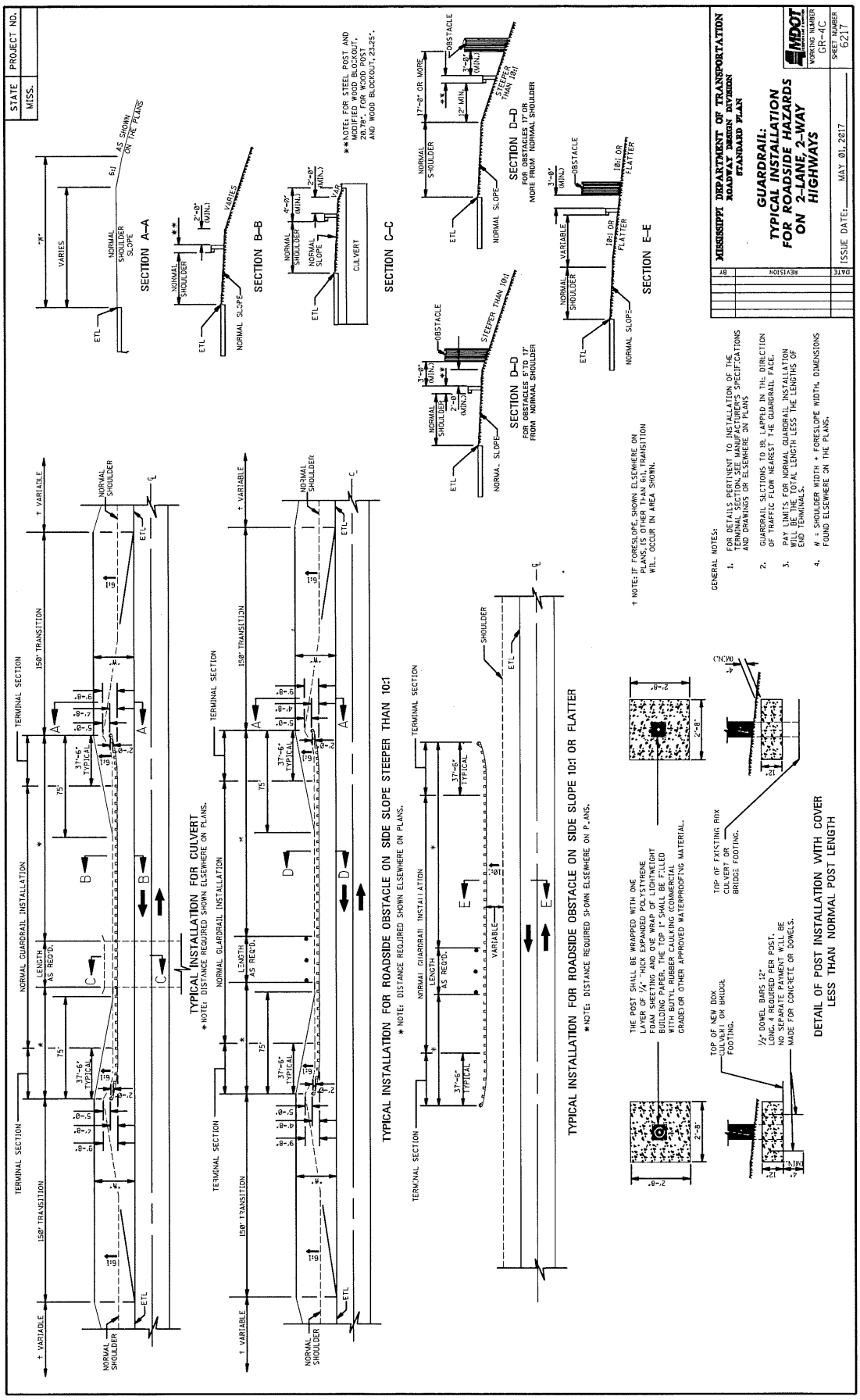

STATE
PROJECT NO.
MISS.
3" (MIN.)
6¼" R
30°
7⁄32" X 1⅛" SLOT FOR GUARDRAIL BOLT "A" (TYP.)
16"
7½" (VARIES)
8½"
2"
12¼"
ROUNDED "W" BEAM END SECTION
NOTE: THE CROSS-SECTIONAL DIMENSIONS FOR THIS PART ARE TO FIT OVER THE STANDARD "W" BEAM SECTION.
GENERAL NOTES:
1. THIS ANCHORAGE MAY ONLY BE USED ON THE TRAILING END OF A BARRIER WHICH IS NOT EXPOSED TO VEHICULAR IMPACT.
2. GUARDRAIL SHALL MEET THE REQUIREMENTS OF AASHTO M 180, CLASS A, TYPE 1 UNLESS OTHERWISE DESIGNATED.
3. ALL WOOD POSTS AND BLOCKOUTS SHALL BE TREATED TIMBER IN ACCORDANCE WITH MISSISSIPPI DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
4. FOR DETAILS OF HARDWARE AND COMPONENTS NOT FOUND ON THIS SHEET, SEE SHEET GR-HW.
5. DETAILS PERTINENT TO THE STANDARD INSTALLATION OF "W" BEAM SECTIONS WILL BE FOUND ON SHEET GR-1, FOR WOOD POSTS, AND GR-1B, FOR STEEL POSTS.
6. FOR OTHER DETAILS OF POSTS, POST ACCESSORIES, FASTENERS AND RAIL ELEMENTS, SEE AASHTO-AGC-ARTBA JOINT TASK FOR NO. 13, TITLED "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE," LATEST EDITION.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
TYPE 1 CABLE ANCHORAGE
(FOUNDATION TUBE)
MDOT
WORKING NUMBER
GR-3
SHEET NUMBER
6212
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
NOTE: THE "POST 2" ASSEMBLY DEPENDS ON WHETHER THE TRAILING END TERMINAL IS ATTACHED TO THE STANDARD WOOD OR STEEL POST "W" BEAM GUARDRAIL INSTALLATION AS FOLLOWS:
1. WOOD POST INSTALLATION (SHOWN)
"W" BEAM TERMINAL RAIL SECTION, 6" X 12" WOOD BLOCKOUT, 14" LONG, AND 6" X 8" WOOD POST, 6'-0" LONG, ATTACHED WITH GUARDRAIL BOLT "D" AND RECESSED NUT. INSTALL RECTANGULAR GUARDRAIL PLATE WASHER UNDER HEAD AND PLAIN ROUND WASHER "F" UNDER RECESSED NUT.
2. STEEL POST INSTALLATION
"W" BEAM TERMINAL RAIL SECTION, 6" X 12" MODIFIED WOOD BLOCKOUT, 14" LONG, AND W6 X 9 STEEL POST, 6'-0" LONG, ATTACHED WITH GUARDRAIL BOLT "C" AND RECESSED NUT. INSTALL RECTANGULAR GUARDRAIL PLATE WASHER UNDER GUARDRAIL BOLT HEAD.
"W" BEAM TERMINAL END SECTION
CABLE ANCHOR ASSEMBLY
GUARDRAIL ANCHOR BRACKET
24" X 18" STEEL FOUNDATION TUBE SOIL PLATE, ¼" THICK
POST 1
POST 2
PLAN
ROUNDED "W" BEAM END SECTION
6'-3" TO NEXT POST (STANDARD WOOD OR STEEL POST "W" BEAM GUARDRAIL INSTALLATION)
5'-3"
GALVANIZED STEEL 16d COMMON NAIL (DRIVE NAIL AT CENTER OF POST AND BLOCKOUT AFTER POST IS INSTALLED)
HEX NUT AND BOLT "F", 1½" LONG (TYP.), EIGHT (8) REQUIRED
GUARDRAIL ANCHOR BRACKET
"W" BEAM TERMINAL RAIL SECTION
CABLE ANCHOR ASSEMBLY
24" X 18" STEEL FOUNDATION TUBE SOIL PLATE ¼" THICK
5'-0"
14¼"
25"
5½" X 7½" WOOD TERMINAL POST, 46½" LONG
GUARDRAIL BOLT "A" AND RECESSED NUT (TYP.), FOUR (4) REQUIRED.
SEE DETAIL A
SEE DETAIL B
TS8" X 6" X 3⁄16" FOUNDATION TUBE, 5'-0" LONG
GUARDRAIL BOLT "C" WITH RECTANGULAR GUARDRAIL PLATE WASHER UNDER HEAD AND PLAIN ROUND WASHER "F" UNDER RECESSED NUT
ELEVATION FROM BEHIND GUARDRAIL
NOTE: ANCHOR CABLE SHALL BE TAUT.
HEX NUT AND BOLT "F", 8" LONG, WITH PLAIN ROUND WASHER "F" UNDER HEAD AND NUT
24" X 18" STEEL FOUNDATION TUBE SOIL PLATE, ¼" THICK
5½" X 7½" WOOD TERMINAL POST, 46½" LONG
TS8" X 6" X 3⁄16" FOUNDATION TUBE, 5'-0" LONG
DETAIL B
CABLE ANCHOR ASSEMBLY
3" (MAX.)
2" (NOM.)
5½" X 7½" WOOD TERMINAL POST, 46½" LONG
HEX NUT AND BOLT "F", 10" LONG, WITH PLAIN ROUND WASHER "F" UNDER HEAD AND NUT
POST SLEEVE
8" X 8" STEEL BEARING PLATE, ⅝" THICK
2½"
4"
TS8" X 6" X 3⁄16" FOUNDATION TUBE, 5'-0" LONG
DETAIL A

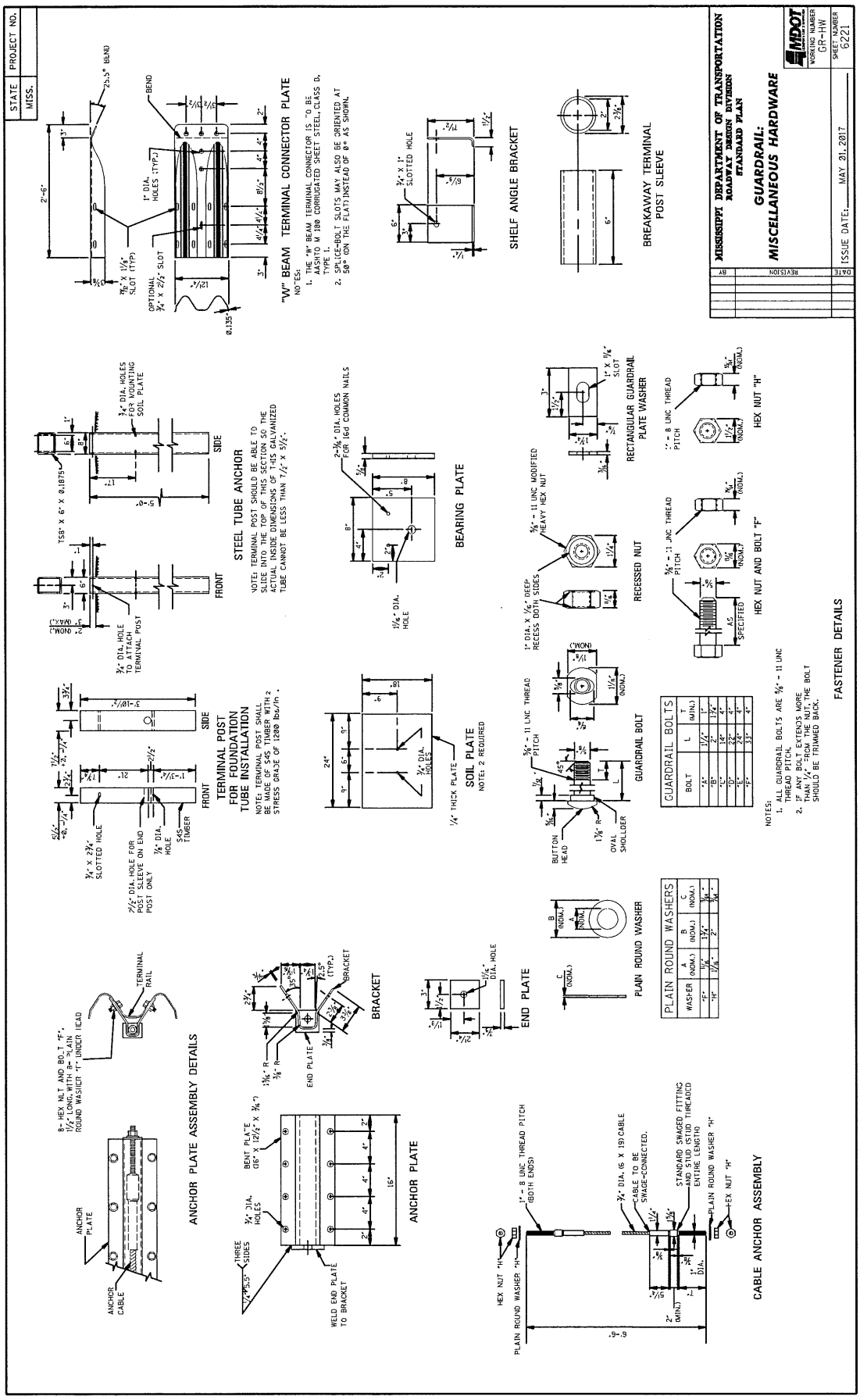

STATE MISS. PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
TYPE 1 CABLE ANCHORAGE
(CONCRETE FOOTING)
ISSUE DATE: MAY 01, 2017
WORKING NUMBER GR-3A
SHEET NUMBER 6213
ROUNDED "W" BEAM END SECTION
GENERAL NOTES:
PLAN
ELEVATION FROM BEHIND GUARDRAIL
NOTE: ANCHOR CABLE SHALL BE TAUT.
WOOD TIMBER POST
SECTION A-A
DETAIL A

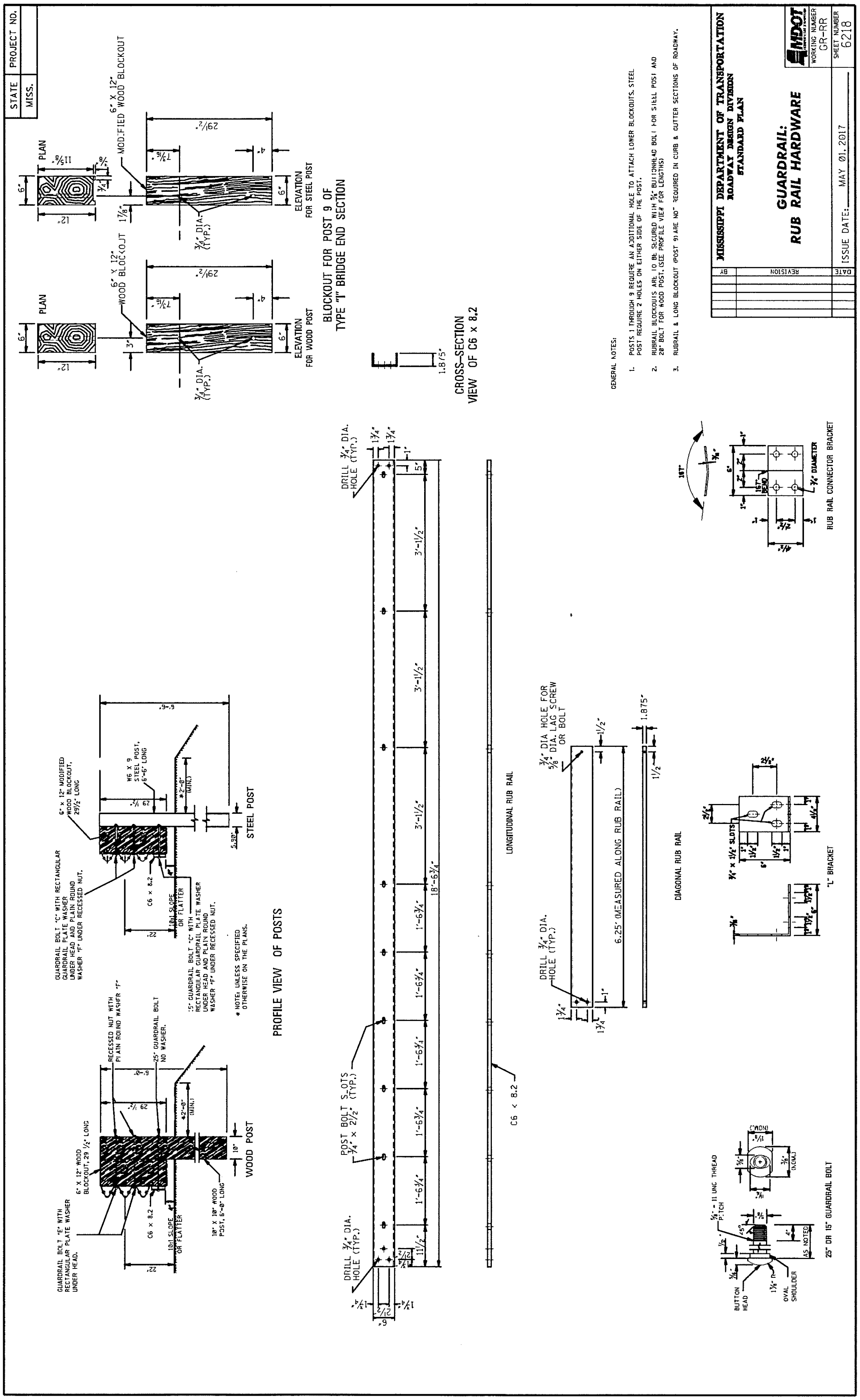

STATE
MISS.
PROJECT NO.
** NOTE: IF FORESLOPE, SHOWN ELSEWHERE ON PLANS, IS OTHER THAN 6:1, TRANSITION WILL OCCUR IN AREA SHOWN.
ETL
VARIES
2'-0"
3:1
NORMAL SHOULDER SLOPE
SECTION A-A
"W"
VARIES
6:1
AS SHOWN ON PLANS
SECTION B-B
GENERAL NOTES:
1. VALUES FOR "A" AND "B" WILL BE SHOWN ELSEWHERE ON THE PLANS.
2. FOR DETAILS PERTINENT TO INSTALLATION OF THE TERMINAL SECTION, SEE MANUFACTURER'S SPECIFICATIONS AND DRAWINGS OR ELSEWHERE ON PLANS
3. GUARDRAIL SECTIONS ARE TO BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW NEAREST THE GUARDRAIL FACE.
4. THE OVERALL LENGTH OF GUARDRAIL IS MEASURED FROM THE CONNECTING END ON THE BRIDGE.
5. IN THE ABSENCE OF A BRIDGE END PAVEMENT RAIL, CONNECT THE BRIDGE END SECTION TO THE BRIDGE RAIL (SEE WK. NOS. GR-2 THRU GR-2G). THE SHOULDER WIDTH AT THE BRIDGE END PAVEMENT RAIL OR BRIDGE END RAIL SHALL BE SUFFICIENTLY WIDE TO PROVIDE A MINIMUM OF 2'-0" BEHIND THE BACK OF POST BEFORE THE SLOPE BREAK (HINGEPOINT).
6. TYPE, DETAILS AND LIMITS OF GUARDRAIL BRIDGE END SECTION WILL BE SHOWN ELSEWHERE ON THE PLANS.
7. W = SHOULDER WIDTH + FORESLOPE WIDTH. DIMENSIONS FOUND ELSEWHERE ON THE PLANS.
8. FOR DIVIDED HIGHWAYS WITH THREE (3) OR MORE LANES IN ONE DIRECTION, THE MEDIAN BARRIER MAY REQUIRE A TAPER RATE OTHER THAN 25:1.
DATE
REVISION
BY
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
TYPICAL INSTALLATION AT BRIDGE APPROACHES FOR DIVIDED HIGHWAYS
ISSUE DATE: MAY 01, 2017
MDOT
WORKING NUMBER
GR-4
SHEET NUMBER
6214
NORMAL SHOULDER
** VARIABLE
ETL
150' MINIMUM TRANSITION
6:1
"W"
15
1
20:1 SLOPE RELATIVE TO LONGITUDINAL GRADIENT FOR HIGHWAY CENTERLINE
MEDIAN BARRIER TERMINAL AS SHOWN ELSEWHERE ON PLANS
TERMINAL
5'-0"
2'-0"
12'-6"
25'-0"
TERMINAL SECTION
37'-6" TYPICAL
75'
"A"
"B"
NORMAL GUARDRAIL INSTALLATION
30:1 TAPER
25:1 TAPER
GUARDRAIL FACE ALINEMENT ON BRIDGE
DOUBLE-FACED GUARDRAIL
TYPE 1 END SECTION
NORMAL GUARDRAIL INSTALLATION
25°*
18'-1¾"
BR. END SECTION
TANGENT
BRIDGE END PAVEMENT
BRIDGE
SEE NOTE 5
BRIDGE END PAV'T RAIL
DIVIDED HIGHWAY WITH BARRIER INSIDE CLEAR ZONE OF OPPOSING TRAFFIC
* NOTE: THE 25° LINE IS USED TO DETERMINE THE LIMITS OF MEDIAN BARRIER AS SHOWN.
DIVIDED HIGHWAY WITH BARRIER OUTSIDE CLEAR ZONE OF OPPOSING TRAFFIC

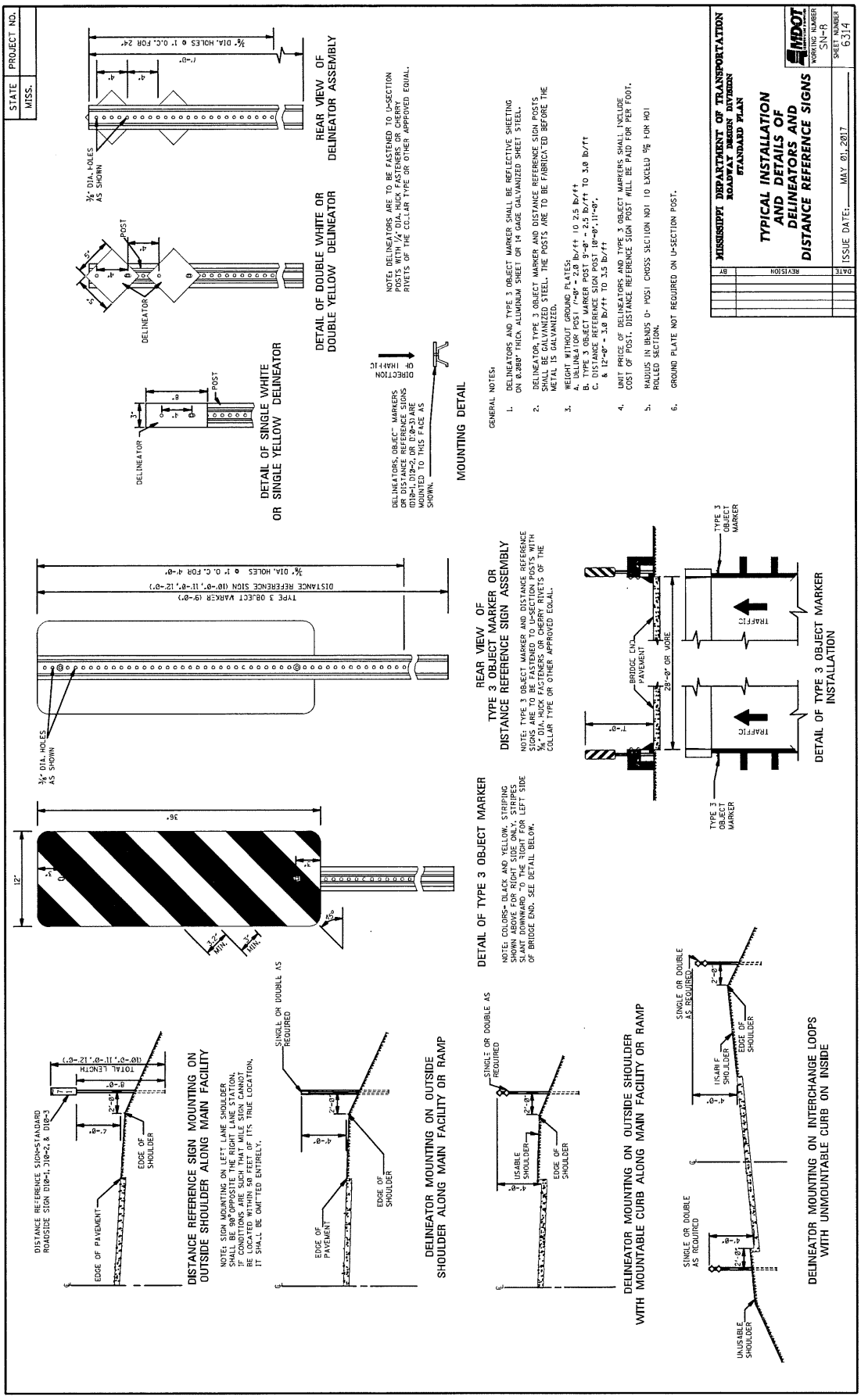

STATE
MISS.
PROJECT NO.
* NOTE: IF FORESLOPE, SHOWN ELSEWHERE ON PLANS, IS OTHER THAN 6:1, TRANSITION WILL OCCUR IN AREA SHOWN.
DETAIL OF GUARDRAIL SECTION LAPS
GENERAL NOTES:
1. VALUES FOR "A", "B", "C" AND "D" WILL BE SHOWN ELSEWHERE ON THE PLANS.
2. FOR DETAILS PERTINENT TO INSTALLATION OF THE TERMINAL SECTION, SEE MANUFACTURER'S SPECIFICATIONS AND DRAWINGS OR ELSEWHERE ON PLANS
3. GUARDRAIL SECTIONS ARE TO BE LAPPED IN THE DIRECTION OF TRAFFIC APPROACHING THE BRIDGE.
4. THE OVERALL LENGTH OF GUARDRAIL IS MEASURED FROM THE CONNECTING END ON THE BRIDGE.
5. IN THE ABSENCE OF A BRIDGE END PAVEMENT RAIL, CONNECT THE BRIDGE END SECTION TO THE BRIDGE RAIL (SEE WK. NOS. GR-2 THRU GR-2G). THE SHOULDER WIDTH AT THE BRIDGE END PAVEMENT RAIL OR BRIDGE END RAIL SHALL BE SUFFICIENTLY WIDE TO PROVIDE A MINIMUM OF 2'-0" BEHIND THE BACK OF POST BEFORE THE SLOPE BREAK (HINGEPOINT).
6. TYPE, DETAILS AND LIMITS OF GUARDRAIL BRIDGE END SECTION WILL BE SHOWN ELSEWHERE ON THE PLANS.
7. W - SHOULDER WIDTH + FORESLOPE WIDTH. DIMENSIONS FOUND ELSEWHERE ON THE PLANS.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
TYPICAL INSTALLATION
AT BRIDGE APPROACHES
FOR 2-LANE, 2-WAY
HIGHWAY
MDOT
WORKING NUMBER
GR-4A
SHEET NUMBER
6215
ISSUE DATE: MAY 01, 2017
BY
REVISION
DATE
NORMAL SHOULDER
ETL
* VARIABLE
150' MINIMUM TRANSITION
6:1
"W"
15
1
20:1 SLOPE RELATIVE TO LONGITUDINAL GRADIENT FOR HIGHWAY CENTERLINE
B
5'-0"
2'-0"
12'-6"
25'-0"
TERMINAL SECTION
37'-6" TYPICAL
75'
"A"
"B"
"C"
"D"
NORMAL GUARDRAIL INSTALLATION
30:1 TAPER
A
GUARDRAIL FACE ALINEMENT ON BRIDGE
18'-1 3/4"
BRIDGE END SECTION
TANGENT
BRIDGE END PAVEMENT
BRIDGE
SEE NOTE 5
BRIDGE END PAV'T RAIL
PLAN
VARIES
NORMAL SHOULDER SLOPE
AS SHOWN ON THE PLANS
SECTION B-B
3:1
SECTION A-A

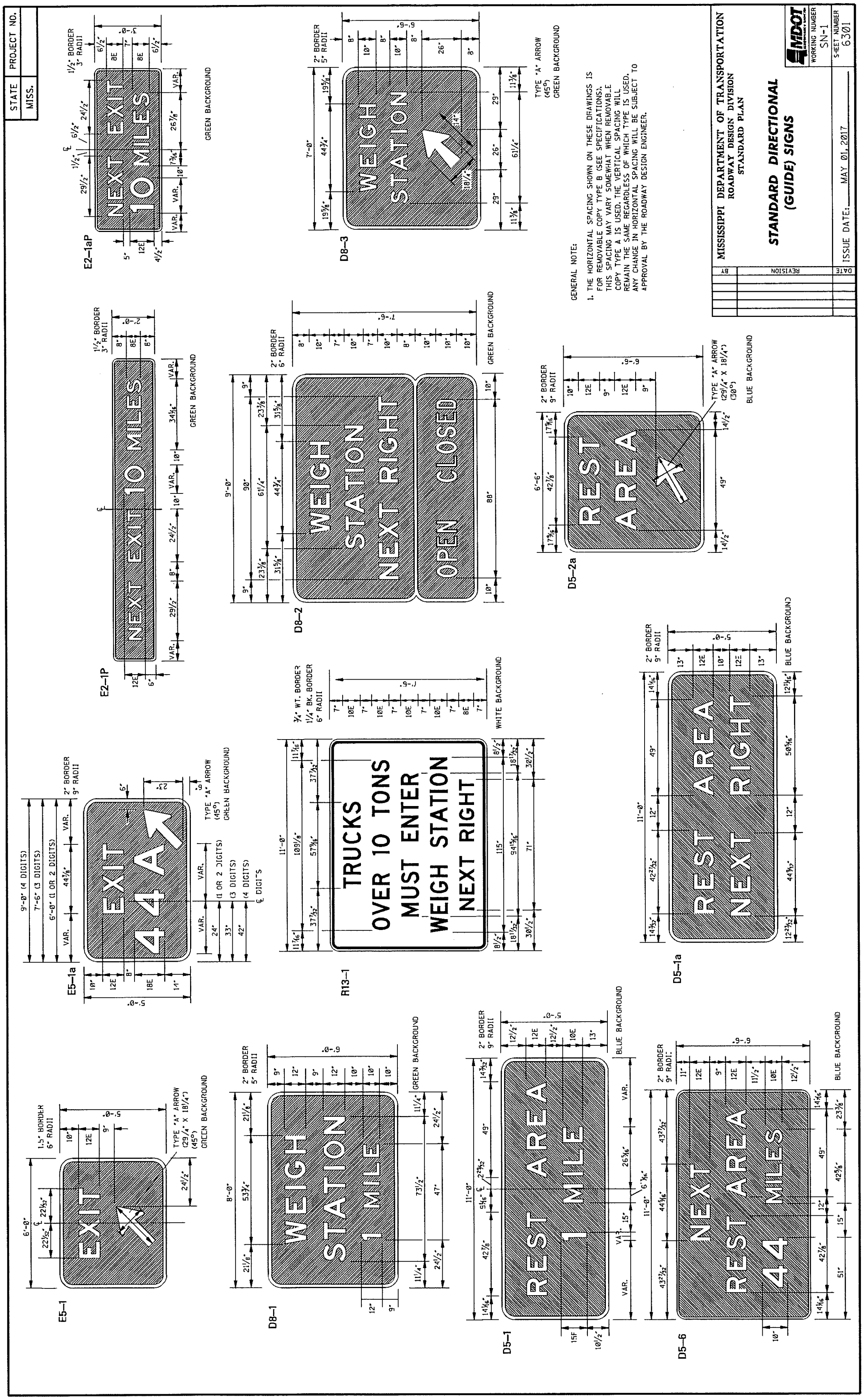

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
TYPICAL INSTALLATION
FOR ROADSIDE HAZARDS
ON DIVIDED HIGHWAYS
WORKING NUMBER GR-4B
SHEET NUMBER 6216
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
† NOTE: IF FORESLOPE SHOWN ELSEWHERE ON PLANS, IS OTHER THAN 6:1, TRANSITION WILL OCCUR IN AREA SHOWN.
SECTION A–A
SECTION B–B
SECTION C–C
SECTION D–D
FOR OBSTACLES 9" TO 17" FROM NORMAL SHOULDER
SECTION D–D
FOR OBSTACLES 17" OR MORE FROM NORMAL SHOULDER
SECTION E–E
** NOTE: FOR STEEL POST AND MODIFIED WOOD BLOCKOUT, 20.78". FOR WOOD POST AND BLOCKOUT, 23.25".
TYPICAL INSTALLATION FOR CULVERT
* NOTE: DISTANCE REQUIRED SHOWN ELSEWHERE ON PLANS.
TYPICAL INSTALLATION FOR ROADSIDE OBSTACLE ON SIDE SLOPE STEEPER THAN 10:1
* NOTE: DISTANCE REQUIRED SHOWN ELSEWHERE ON PLANS.
TYPICAL INSTALLATION FOR ROADSIDE OBSTACLE ON SIDE SLOPE 10:1 OR FLATTER
* NOTE: DISTANCE REQUIRED SHOWN ELSEWHERE ON PLANS.
DETAIL OF POST INSTALLATION WITH COVER
LESS THAN NORMAL POST LENGTH
GENERAL NOTES:
1. FOR DETAILS PERTINENT TO INSTALLATION OF THE TERMINAL SECTION, SEE MANUFACTURER'S SPECIFICATIONS AND DRAWINGS OR ELSEWHERE ON PLANS
2. GUARDRAIL SECTIONS TO BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW NEAREST THE GUARDRAIL FACE.
3. PAY LIMITS FOR NORMAL GUARDRAIL INSTALLATION WILL BE THE TOTAL LENGTH LESS THE LENGTH OF END TERMINALS.
4. W = SHOULDER WIDTH + FORESLOPE WIDTH, DIMENSIONS FOUND ELSEWHERE ON THE PLANS.

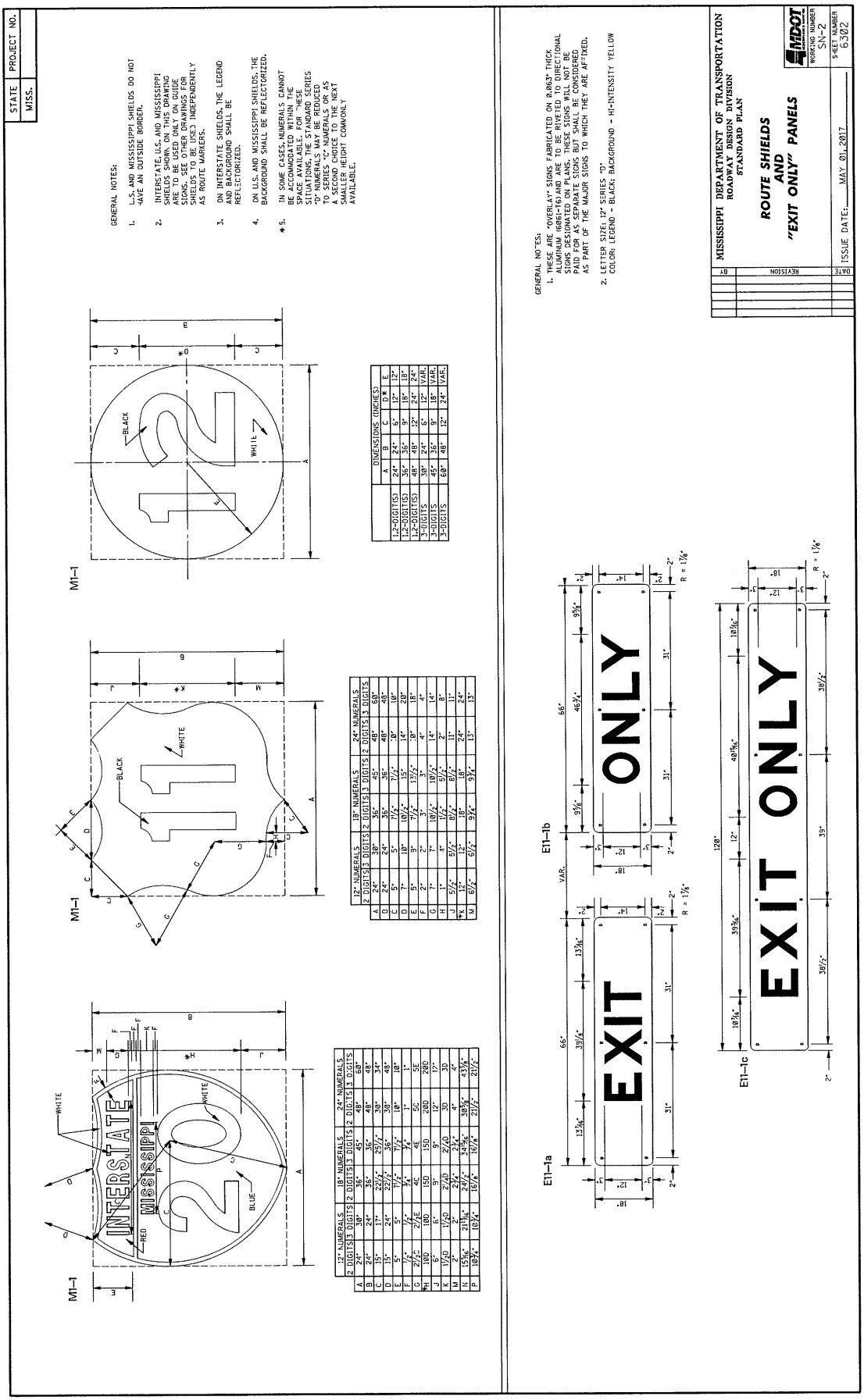

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
TYPICAL INSTALLATION
FOR ROADSIDE HAZARDS
ON 2-LANE, 2-WAY
HIGHWAYS
WORKING NUMBER GR-4C
SHEET NUMBER 6217
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
FOR OBSTACLES TO BE
MORE FROM NORMAL SHOULDER
SECTION E-E
**NOTE: FOR STEEL POST AND MODIFIED WOOD BLOCKOUT, 20.78". FOR WOOD POST AND WOOD BLOCKOUT, 23.25".
TYPICAL INSTALLATION FOR CULVERT
*NOTE: DISTANCE REQUIRED SHOWN ELSEWHERE ON PLANS.
TYPICAL INSTALLATION FOR ROADSIDE OBSTACLE ON SIDE SLOPE STEEPER THAN 10:1
* NOTE: DISTANCE REQUIRED SHOWN ELSEWHERE ON PLANS.
TYPICAL INSTALLATION FOR ROADSIDE OBSTACLE ON SIDE SLOPE 10:1 OR FLATTER
*NOTE: DISTANCE REQUIRED SHOWN ELSEWHERE ON PLANS.
+ NOTE: IF FORESLOPE SHOWN ELSEWHERE ON PLANS IS OTHER THAN 6:1 TRANSITION WILL OCCUR IN AREA SHOWN.
GENERAL NOTES:
1. FOR DETAILS PERTINENT TO INSTALLATION OF THE TERMINAL SECTION, SEE MANUFACTURER'S SPECIFICATIONS AND DRAWINGS OR ELSEWHERE ON PLANS
2. GUARDRAIL SECTIONS TO BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW NEAREST THE GUARDRAIL FACE.
3. PAY LIMITS FOR NORMAL GUARDRAIL INSTALLATION WILL BE THE TOTAL LENGTH LESS THE LENGTHS OF END TERMINALS.
4. W = SHOULDER WIDTH + FORESLOPE WIDTH, DIMENSIONS FOUND ELSEWHERE ON THE PLANS.
DETAIL OF POST INSTALLATION WITH COVER
LESS THAN NORMAL POST LENGTH
THE POST SHALL BE WRAPPED WITH ONE LAYER OF 1/4" THICK EXPANDED POLYSTYRENE FOAM SHEETING AND ONE WRAP OF LIGHTWEIGHT BUILDING PAPER. THE TOP 1" SHALL BE FILLED WITH BUTYL RUBBER CAULKING (COMMERCIAL GRADE) OR OTHER APPROVED WATERPROOFING MATERIAL.
TOP OF NEW BOX CULVERT OR BRIDGE FOOTING.
TOP OF EXISTING RCB CULVERT OR BRIDGE FOOTING.
1/2" DOWEL BARS 12" LONG, 4 REQUIRED PER POST. NO SEPARATE PAYMENT WILL BE MADE FOR CONCRETE OR DOWELS.


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL: MISCELLANEOUS HARDWARE
MDOT
WORKING NUMBER GR-HW
SHEET NUMBER 6221
ISSUE DATE: MAY 31, 2017
DATE REVISION BY
"W" BEAM TERMINAL CONNECTOR PLATE
NOTES:
1. THE "W" BEAM TERMINAL CONNECTOR IS TO BE AASHTO M 180 CORRUGATED SHEET STEEL, CLASS D, TYPE I.
2. SPECIFIED BOLT SLOTS MAY ALSO BE ORIENTED AT 90° (ON THE FLAT) INSTEAD OF 0° AS SHOWN.
SHELF ANGLE BRACKET
BREAKAWAY TERMINAL POST SLEEVE
STEEL TUBE ANCHOR
NOTE: TERMINAL POST SHOULD BE ABLE TO SLIDE INTO THE TOP OF THIS SECTION SO THE ACTUAL INSIDE DIMENSIONS OF T-HSS GALVANIZED TUBE CANNOT BE LESS THAN 1 1/2" X 3 1/2".
BEARING PLATE
TERMINAL POST FOR FOUNDATION TUBE INSTALLATION
NOTE: TERMINAL POST SHALL BE MADE OF S4S TIMBER WITH A STRESS GRADE OF 1200 lbs/in.
SOIL PLATE
NOTE: 2 REQUIRED
RECTANGULAR GUARDRAIL PLATE WASHER
RECESSED NUT
HEX NUT AND BOLT "F"
HEX NUT "H"
GUARDRAIL BOLT
GUARDRAIL BOLTS
PLAIN ROUND WASHERS
FASTENER DETAILS
NOTES:
1. ALL GUARDRAIL BOLTS ARE 5/8" - 11 UNC THREAD PITCH.
2. IF ANY BOLT EXTENDS MORE THAN 1/2" FROM THE NUT, THE BOLT SHOULD BE TRIMMED BACK.
ANCHOR PLATE ASSEMBLY DETAILS
ANCHOR PLATE
BRACKET
END PLATE
CABLE ANCHOR ASSEMBLY


STATE
MISS.
PROJECT NO.
PLAN
6" X 12" WOOD BLOCKOUT
6" X 12" MODIFIED WOOD BLOCKOUT
ELEVATION FOR WOOD POST
ELEVATION FOR STEEL POST
¾" DIA. (TYP.)
BLOCKOUT FOR POST 9 OF TYPE "I" BRIDGE END SECTION
CROSS-SECTION VIEW OF C6 x 8.2
GENERAL NOTES:
1. POSTS 1 THROUGH 9 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS. STEEL POST REQUIRE 2 HOLES ON EITHER SIDE OF THE POST.
2. RUBRAIL BLOCKOUTS ARE TO BE SECURED WITH ⅝" BUTTONHEAD BOLT FOR STEEL POST AND 20" BOLT FOR WOOD POST. (SEE PROFILE VIEW FOR LENGTHS)
3. RUBRAIL & LONG BLOCKOUT (POST 9) ARE NOT REQUIRED IN CURB & GUTTER SECTIONS OF ROADWAY.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
GUARDRAIL:
RUB RAIL HARDWARE
ISSUE DATE: MAY 01, 2017
WORKING NUMBER GR-RR
SHEET NUMBER 6218
DATE
REVISION
BY
GUARDRAIL BOLT "C" WITH RECTANGULAR GUARDRAIL PLATE WASHER UNDER HEAD AND PLAIN ROUND WASHER "F" UNDER RECESSED NUT.
6" x 12" MODIFIED WOOD BLOCKOUT, 29½" LONG
W6 X 9 STEEL POST, 6'-6" LONG
15" GUARDRAIL BOLT "C" WITH RECTANGULAR GUARDRAIL PLATE WASHER UNDER HEAD AND PLAIN ROUND WASHER "F" UNDER RECESSED NUT.
* NOTE: UNLESS SPECIFIED OTHERWISE ON THE PLANS.
STEEL POST
GUARDRAIL BOLT "E" WITH RECTANGULAR PLATE WASHER UNDER HEAD.
6" X 12" WOOD BLOCKOUT, 29 ½" LONG
RECESSED NUT WITH PLAIN ROUND WASHER "F"
25" GUARDRAIL BOLT NO WASHER.
10" X 10" WOOD POST, 6'-0" LONG
10:1 SLOPE OR FLATTER
C6 x 8.2
WOOD POST
PROFILE VIEW OF POSTS
DRILL ¾" DIA. HOLE (TYP.)
POST BOLT SLOTS ¾" x 2½" (TYP.)
18'-6¾"
LONGITUDINAL RUB RAIL
¾" DIA HOLE FOR ⅝" DIA. LAG SCREW OR BOLT
6.25' (MEASURED ALONG RUB RAIL)
DIAGONAL RUB RAIL
RUB RAIL CONNECTOR BRACKET
¾" DIAMETER
¾" x 1½" SLOTS
"L" BRACKET
⅝" - 11 UNC THREAD PITCH
BUTTON HEAD
OVAL SHOULDER
AS NOTED
25" OR 15" GUARDRAIL BOLT


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TYPICAL INSTALLATION AND DETAILS OF DELINEATORS AND DISTANCE REFERENCE SIGNS
WORKING NUMBER SN-8
SHEET NUMBER 6314
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
DETAIL OF DOUBLE WHITE OR DOUBLE YELLOW DELINEATOR
REAR VIEW OF DELINEATOR ASSEMBLY
DETAIL OF SINGLE WHITE OR SINGLE YELLOW DELINEATOR
MOUNTING DETAIL
GENERAL NOTES:
1. DELINEATORS AND TYPE 3 OBJECT MARKER SHALL BE REFLECTIVE SHEETING ON 0.080" THICK ALUMINUM SHEET OR 14 GAGE GALVANIZED SHEET STEEL.
2. DELINEATOR, TYPE 3 OBJECT MARKER AND DISTANCE REFERENCE SIGN POSTS SHALL BE GALVANIZED STEEL. THE POSTS ARE TO BE FABRICATED BEFORE THE METAL IS GALVANIZED.
3. WEIGHT WITHOUT GROUND PLATES:
A. SINGLE LEG POSTS - 2.0 lb/ft TO 2.5 lb/ft
B. TYPE 3 OBJECT MARKER POST 9'-0" - 2.5 lb/ft TO 3.0 lb/ft
C. DISTANCE REFERENCE SIGN POST 10'-0",11'-0", & 12'-0" - 3.0 lb/ft TO 3.5 lb/ft
4. UNIT PRICE OF DELINEATORS AND TYPE 3 OBJECT MARKERS SHALL INCLUDE COST OF POST. DISTANCE REFERENCE SIGN POST WILL BE PAID FOR PER FOOT.
5. RADIUS IN BENDS O- POST CROSS SECTION NOT TO EXCEED 5/8 FOR NOT ROLLED SECTION.
6. GROUND PLATE NOT REQUIRED ON U-SECTION POST.
DETAIL OF TYPE 3 OBJECT MARKER
REAR VIEW OF TYPE 3 OBJECT MARKER OR DISTANCE REFERENCE SIGN ASSEMBLY
DETAIL OF TYPE 3 OBJECT MARKER INSTALLATION
DISTANCE REFERENCE SIGN MOUNTING ON OUTSIDE SHOULDER ALONG MAIN FACILITY
DELINEATOR MOUNTING ON OUTSIDE SHOULDER ALONG MAIN FACILITY OR RAMP
DELINEATOR MOUNTING ON OUTSIDE SHOULDER WITH MOUNTABLE CURB ALONG MAIN FACILITY OR RAMP
DELINEATOR MOUNTING ON INTERCHANGE LOOPS WITH UNMOUNTABLE CURB ON INSIDE


STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
STANDARD DIRECTIONAL (GUIDE) SIGNS
WORKING NUMBER SN-1
SHEET NUMBER 6301
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
GENERAL NOTE:
1. THE HORIZONTAL SPACING SHOWN ON THESE DRAWINGS IS FOR REMOVABLE COPY TYPE B (SEE SPECIFICATIONS). THIS SPACING MAY VARY SOMEWHAT WHEN REMOVABLE COPY TYPE A IS USED. THE VERTICAL SPACING WILL REMAIN THE SAME REGARDLESS OF WHICH TYPE IS USED. ANY CHANGE IN HORIZONTAL SPACING WILL BE SUBJECT TO APPROVAL BY THE ROADWAY DESIGN ENGINEER.
E2-1aP
NEXT EXIT
10 MILES
1½" BORDER
3" RADII
GREEN BACKGROUND
D8-3
WEIGH
STATION
2" BORDER
5" RADII
TYPE "A" ARROW
(45°)
GREEN BACKGROUND
E2-1P
NEXT EXIT 10 MILES
1½" BORDER
3" RADII
GREEN BACKGROUND
D8-2
WEIGH
STATION
NEXT RIGHT
OPEN CLOSED
2" BORDER
6" RADII
GREEN BACKGROUND
D5-2a
REST
AREA
2" BORDER
9" RADII
TYPE "A" ARROW
(29¼" X 18¼")
(30°)
BLUE BACKGROUND
E5-1a
EXIT
44A
9'-0" (4 DIGITS)
7'-6" (3 DIGITS)
6'-0" (1 OR 2 DIGITS)
2" BORDER
9" RADII
TYPE "A" ARROW
(45°)
GREEN BACKGROUND
R13-1
TRUCKS
OVER 10 TONS
MUST ENTER
WEIGH STATION
NEXT RIGHT
¾" WT. BORDER
1¼" BK. BORDER
6" RADII
WHITE BACKGROUND
D5-1a
REST AREA
NEXT RIGHT
2" BORDER
9" RADII
BLUE BACKGROUND
E5-1
EXIT
1.5" BORDER
6" RADII
TYPE "A" ARROW
(29¼" X 18¼")
(45°)
GREEN BACKGROUND
D8-1
WEIGH
STATION
1 MILE
2" BORDER
5" RADII
GREEN BACKGROUND
D5-1
REST AREA
1 MILE
2" BORDER
9" RADII
BLUE BACKGROUND
D5-6
NEXT
REST AREA
44 MILES
2" BORDER
9" RADII
BLUE BACKGROUND


STATE MISS.
PROJECT NO.
GENERAL NOTES:
1. U.S. AND MISSISSIPPI SHIELDS DO NOT HAVE AN OUTSIDE BORDER.
2. INTERSTATE, U.S. AND MISSISSIPPI SHIELDS SHOWN ON THIS DRAWING ARE TO BE USED ONLY ON GUIDE SIGNS. SEE OTHER DRAWINGS FOR SHIELDS TO BE USED INDEPENDENTLY AS ROUTE MARKERS.
3. ON INTERSTATE SHIELDS, THE LEGEND AND BACKGROUND SHALL BE REFLECTORIZED.
4. ON U.S. AND MISSISSIPPI SHIELDS, THE BACKGROUND SHALL BE REFLECTORIZED.
5. IN SOME CASES, NUMERALS CANNOT BE ACCOMMODATED WITHIN THE SPACE AVAILABLE. FOR THESE SITUATIONS, THE STANDARD SERIES "D" NUMERALS MAY BE REDUCED TO SERIES "C" NUMERALS OR AS A SECOND CHOICE TO THE NEXT SMALLER HEIGHT COMMONLY AVAILABLE.
M1-1
INTERSTATE
MISSISSIPPI
20
WHITE
RED
BLUE
BLACK
11
12
DIMENSIONS (INCHES)
1,2-DIGIT(S) A 24" B 24" C 6" D* 12" E 12"
1,2-DIGIT(S) A 36" B 36" C 9" D* 18" E 18"
1,2-DIGIT(S) A 48" B 48" C 12" D* 24" E 24"
3-DIGITS A 45" B 36" C 9" D* 18" E VAR.
3-DIGITS A 60" B 48" C 12" D* 24" E VAR.
12" NUMERALS
18" NUMERALS
24" NUMERALS
GENERAL NOTES:
1. THESE ARE "OVERLAY" SIGNS FABRICATED ON 0.063" THICK ALUMINUM (6061-T6) AND ARE TO BE RIVETED TO DIRECTIONAL SIGNS WITH ALUMINUM RIVETS. THESE SIGNS WILL NOT BE PAID FOR AS SEPARATE SIGNS BUT SHALL BE CONSIDERED AS PART OF THE MAJOR SIGNS TO WHICH THEY ARE AFFIXED.
2. LETTER SIZE: 12" SERIES "D"
COLOR: LEGEND - BLACK; BACKGROUND - HI-INTENSITY YELLOW
E11-1a
E11-1b
E11-1c
EXIT
ONLY
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
ROUTE SHIELDS AND "EXIT ONLY" PANELS
BY REVISION DATE
WORKING NUMBER SN-2
SHEET NUMBER 6302
ISSUE DATE: MAY 01, 2017

STATE	PROJECT NO.
MISS.	

SIGN NUMBER	D9-2		D10-1	D10-2	D10-3	D10-1a	D10-2a	D10-3a	D10-4	D10-5	M1-1	M1-1	M1-4	M1-6
ALUMINUM (6061-T6) SIGN BLANK THICKNESS	0.080"		0.080"	0.080"	0.100"	0.080"	0.100"	0.122"	0.100"	0.100"	0.080"	0.100"	0.080"	0.080"
LEGEND	 R = 1½" R = 1⅞"		 R = 1½"	 R = 1½"	 R = 1½"	 R = 1½"	 R = 1½"	 R = 1½"	 R = 1½"	 R = 1½"			 R = 1½"	 e = 11" (24" X 24") e = VAR. (30" X 24") R = 1½"
LETTER & NUMERAL SERIES	20" SERIES "E MOD."	30" SERIES "E MOD."	4" SERIES "B" 10" SERIES "D"	4" SERIES "B" 10" SERIES "D"	4" SERIES "B" 10" SERIES "D"	4" SERIES "B" 10" SERIES "D"	4" SERIES "B" 10" SERIES "D"	4" SERIES "B" 10" SERIES "D"	6", 6" SERIES "B" 6" SERIES "B" 8"	6", 6" SERIES "B" 6" SERIES "B" 8" 8" SERIES "B"	(SEE NOTES 1 & 2 BELOW)		(SEE NOTES 1 & 2 BELOW)	12" SERIES "D" (SEE NOTE BELOW)
WIDTH OF BORDER INSIDE	½" WHITE	¾" WHITE	½" WHITE	½" WHITE	½" WHITE	½" WHITE	½" WHITE	½" WHITE	½" WHITE	½" WHITE	½" WHITE	¾" WHITE	BLACK OUTSIDE BORDER	BLACK OUTSIDE BORDER
WIDTH OF BORDER OUTSIDE														
SIZE (WIDTH X HEIGHT)	24" X 24"	36" X 36"	12" X 24"	12" X 36"	12" X 48"	12" X 36"	12" X 48"	12" X 60"	18" X 54"	18" X 60"	24" X 24" (1 OR 2 DIGITS) 30" X 24" (3 DIGITS)	36" X 36" (1 OR 2 DIGITS) 45" X 36" (3 DIGITS)	24" X 24" (1 OR 2 DIGITS) 30" X 24" (3 DIGITS)	24" X 24" (1 OR 2 DIGITS) 30" X 24" (3 DIGITS)
COLORS COPY	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE, RED, BLUE	WHITE, RED, BLUE	WHITE		BLACK	BLACK
COLORS BACKGROUND	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	TOP-RED; BOTTOM-BLUE		WHITE	WHITE
REFLECTORIZATION	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL		BACKGROUND	BACKGROUND
NUMBER OF POSTS FOR MOUNTING	1	1	1	1	1	1	1	1	1	1	1		1	1
NUMBER OF HOLES TO BE PUNCHED (⅜" DIA.)	2	2	2	2	2	2	2	2	2	2	2	4	2 (VERT. PUNCHING) 2 (HORIZ. PUNCHING)	2 (VERT. PUNCHING) 2 (HORIZ. PUNCHING)
PUNCHING DISTANCE FROM EACH VERTICAL EDGE	12" (VERT. CENTER)	18" (VERT. CENTER)	6" (VERT. CENTER)	6" (VERT. CENTER)	6" (VERT. CENTER)	6" (VERT. CENTER)	6" (VERT. CENTER)	6" (VERT. CENTER)	9" (VERT. CENTER)	9" (VERT. CENTER)	VERT. CENTER	5" FROM VERT. CENTER	VERT. CENTER 12" FROM VERT. CENTER	VERT. CENTER 12" FROM VERT. CENTER
PUNCHING DISTANCE FROM TOP EDGE	3"; 21"	6"; 30"	3"; 21"	3"; 33"	6"; 42"	3"; 33"	6"; 42"	6"; 54"	6"; 48"	6"; 54"	3"; 21"	6";30"	3"; 21"	3"; 21"

SIGN NUMBER	M2-1	M2-1A	M3-3*	M3-3A*	M3-103A*	M4-5	M4-5A	M5-1L	M5-1LA	M5-1R	M5-1RA	M5-2L	M5-2LA	M5-2R	M5-2RA	M6-1L	M6-1LA	M6-1R	M6-1RA	M6-2L	M6-2LA	M6-2R	M6-2RA	M6-3	M6-3A
ALUMINUM (6061-T6) SIGN BLANK THICKNESS	0.080"		0.080"		0.080"	0.080"		0.080"		0.080"		0.080"		0.080"		0.080"		0.080"		0.080"		0.080"		0.080"	
LEGEND	 R = 1½"		 R = 1½"		 R = 1½"	 R = 1½"		 R = 1½"		 R = 1½"		 R = 1½"		 R = 1½"		 R = 1½"		 R = 1½"		 R = 1½"		 R = 1½"		 R = 1½"	
LETTER & NUMERAL SERIES	9" SERIES "C"		7" SERIES "C" 6" SERIES "C"		10" SERIES "C" 8" SERIES "C"	6" SERIES "E"																			
WIDTH OF BORDER INSIDE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE	⅜" BLACK ⅛" WHITE	½" WHITE
WIDTH OF BORDER OUTSIDE																									
SIZE (WIDTH X HEIGHT)	21" X 15"		24" X 12"		30" X 15"	24" X 12"		21" X 15"		21" X 15"		21" X 15"		21" X 15"		21" X 15"		21" X 15"		21" X 15"		21" X 15"		21" X 15"	
COLORS COPY	BLACK	WHITE	BLACK	WHITE	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE	BLACK	WHITE
COLORS BACKGROUND	WHITE	BLUE	WHITE	BLUE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE	WHITE	BLUE
REFLECTORIZATION	B'GROUND	ALL	B'GROUND	ALL	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL	B'GROUND	ALL
NUMBER OF POSTS FOR MOUNTING	1		1		1	1		1		1		1		1		1		1		1		1		1	
NUMBER OF HOLES TO BE PUNCHED (⅜" DIA.)	2		2		2	2		2		2		2		2		2		2		2		2		2	
PUNCHING DISTANCE FROM EACH VERTICAL EDGE	VERT. CENTER		12" (V. PUNCH) 7" (H.PUNCH)	12"	VERT. CENTER	12" (VERT. CENTER)		VERT. CENTER		VERT. CENTER		VERT. CENTER		VERT. CENTER		VERT. CENTER		VERT. CENTER		VERT. CENTER		VERT. CENTER		VERT. CENTER	
PUNCHING DISTANCE FROM TOP EDGE	1½"; 13½"		1½"; 10½" (V.) 6" (H.)	1½"; 12½"	1½"; 13½"	1½"; 10½"		1½"; 13½"		1½"; 13½"		1½"; 13½"		1½"; 13½"		1½"; 13½"		1½"; 13½"		1½"; 13½"		1½"; 13½"		1½"; 13½"	

GENERAL NOTES:

1. THE DIMENSIONS FOR THE INTERSTATE AND U.S. SHIELDS SHALL CONFORM WITH THOSE SHOWN IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
2. ROUTE MARKERS AND SHIELDS SHOWN ON THIS SHEET ARE FOR USE INDEPENDENTLY OF INTERSTATE DIRECTIONAL (GUIDE) SIGNS. SEE OTHER DRAWINGS FOR SHIELDS TO BE USED ON INTERSTATE DIRECTIONAL (GUIDE) SIGNS.
3. THE QUANTITIES LISTED ON THE SUMMARY OF QUANTITIES SHEET FOR THIS SIGNS SHOWN ON THIS SHEET WILL BE USED AS THE BASIS FOR FINAL PAYMENT, EXCEPT WHERE SIGNS ARE MODIFIED FROM THAT SHOWN.
4. M1-6: IN SOME CASES NUMERALS CANNOT BE ACCOMMODATED WITHIN THE SPACE AVAILABLE. FOR THESE SITUATIONS, THE STANDARD SERIES "D" NUMERAL SHALL BE REDUCED TO SERIES "C".

*

NORTH	EAST	SOUTH	WEST
M3-1	M3-2	M3-3	M3-4
M3-1A	M3-2A	M3-3A	M3-4A
M3-101A	M3-102A	M3-103A	M3-104A

BY	REVISION	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

STANDARD ROADSIDE SIGNS

MDOT

WORKING NUMBER SN-3

SHEET NUMBER 6303

ISSUE DATE: MAY 01, 2017

STATE	PROJECT NO.
MISS.	

SIGN NUMBER	R1-1		R1-2			R2-1			R2-4a	R3-1		R3-2		R3-4		R3-5	R4-3	
ALUMINUM (6061-T6) SIGN BLANK THICKNESS	0.100"	0.125"	0.080"	0.100"	0.125"	0.080"	0.100"	0.125"	0.125"	0.080"	0.100"	0.080"	0.100"	0.080"	0.100"	0.080"	0.100"	0.125"
LEGEND	STOP		YIELD			SPEED LIMIT 70			SPEED LIMIT 70 MINIMUM 40							ONLY	SLOWER TRAFFIC KEEP RIGHT	
LETTER & NUMERAL SERIES	12" SERIES "C"	16" SERIES "C"	3" SERIES "C"		5" SERIES "C"	4" SERIES "E" 4" SERIES "E" 10" SERIES "E"	6" SERIES "E" 6" SERIES "E" 14" SERIES "E"	8" SERIES "E" 8" SERIES "E" 16" SERIES "E"	8" SERIES "E" 16" SERIES "E" 8" SERIES "C" 14" SERIES "D"	6" SERIES "D"						6" SERIES "D"	6" SERIES "D"	8" SERIES "D"
WIDTH OF BORDER INSIDE / OUTSIDE	7/8" WHITE	1 1/4" WHITE	5" RED 3/4" WHITE	6" RED 1" WHITE	8" RED 1 1/2" WHITE	5/8" RI ACK 3/8" WHITE	7/8" RI ACK 5/8" WHITE	1 1/4" RI ACK 3/4" WHITE	1/2" BLACK 3/4" WHITE	5/8" RI ACK 3/8" WHITE	7/8" BLACK 5/8" WHITE	5/8" RI ACK 3/8" WHITE	7/8" BLACK 5/8" WHITE	5/8" RI ACK 3/8" WHITE	7/8" BLACK 5/8" WHITE	3/4" BLACK 1/2" WHITE	7/8" BLACK 5/8" WHITE	1 1/4" BLACK 3/4" WHITE
SIZE (WIDTH X HEIGHT)	36" OCTAGON	48" OCTAGON	36" EQUIL. TRIANGLE	48" EQUIL. TRIANGLE	60" EQUIL. TRIANGLE	24" X 30"	36" X 48"	48" X 60"	48" X 96"	24" X 24"	36" X 36"	24" X 24"	36" X 36"	24" X 24"	36" X 36"	30" X 36"	36" X 48"	48" X 60"
COLORS COPY / BACKGROUND	WHITE / RED	WHITE / RED	RED / WHITE	RED / WHITE	RED / WHITE	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE	BLACK & RED / WHITE	BLACK & RED / WHITE	BLACK & RED / WHITE	BLACK & RED / WHITE	BLACK & RED / WHITE	BLACK & RED / WHITE	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE
REFLECTORIZATION	ALL	ALL	ALL	ALL	ALL	B'GROUND	B'GROUND	B'GROUND	BACKGROUND	BACKGROUND, CIRCLE, & DIAG.	BACKGROUND, CIRCLE, & DIAG.	BACKGROUND, CIRCLE, & DIAG.	BACKGROUND, CIRCLE, & DIAG.	BACKGROUND, CIRCLE, & DIAG.	BACKGROUND, CIRCLE, & DIAG.	BACKGROUND	BACKGROUND	BACKGROUND
NUMBER OF POSTS FOR MOUNTING	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NUMBER OF HOLES TO BE PUNCHED (13/16" DIA.)	2	4	2	4	4	2	4	6	10	2	2	2	2	2	2	2	4	6
PUNCHING DISTANCE FROM EACH VERTICAL EDGE	18" (VERT. CENTER)	9"	18" (VERT. CENTER)	12" (FROM CENTER)	15" (FROM CENTER)	12" (VERT. CENTER)	3"	9"	9"	12" (VERT. CENTER)	18" (VERT. CENTER)	12" (VERT. CENTER)	18" (VERT. CENTER)	12" (VERT. CENTER)	18" (VERT. CENTER)	15" (VERT. CENTER)	3"	9"
PUNCHING DISTANCE FROM TOP EDGE	3"; 33"	9"; 39"	3"; 27"	3"; 15"	3"; 21"	3"; 27"	9"; 39"	4"; 30"; 56"	4"; 28"; 52"; 68"; 92"	3"; 21"	6"; 30"	3"; 21"	6"; 30"	3"; 21"	6"; 30"	6"; 30"	9"; 39"	4"; 30"; 56"

SIGN NUMBER	R4-7			R6-3	R5-1		R5-1a	R6-1L, R6-1R	R6-2L, R6-2R	R8-4		R11-1	
ALUMINUM (6061-T6) SIGN BLANK THICKNESS	0.080"	0.125"		0.080"	0.100"	0.125"	0.100"	0.080"	0.080"	0.080"	0.100"	0.125"	0.125"
LEGEND				DIVIDED HIGHWAY	DO NOT ENTER		WRONG WAY	ONE WAY	ONE WAY	EMERGENCY PARKING ONLY		KEEP OFF MEDIAN	
LETTER & NUMERAL SERIES					4" SERIES "D"	6" SERIES "D"	8" SERIES "D"	4" SERIES "D"	6" SERIES "D"	4" SERIES "D"	6" SERIES "D"	8" SERIES "C"	10" SERIES "C"
WIDTH OF BORDER INSIDE / OUTSIDE	5/8" BLACK 7/8" WHITE	7/8" BLACK 1 1/8" WHITE	1 1/4" RI ACK 1 3/4" WHITE	5/8" BLACK 7/8" WHITE	WHITE OUTSIDE BORDER	WHITE OUTSIDE BORDER	1" WHITE	1/2" WHITE	3/4" BLACK 1 1/4" WHITE	5/8" BLACK 1 1/8" WHITE	7/8" BLACK 1 3/8" WHITE	1 1/4" BLACK 1 3/4" WHITE	1 1/4" BLACK 1 3/4" WHITE
SIZE (WIDTH X HEIGHT)	24" X 30"	36" X 48"	48" X 60"	30" X 24"	36" X 36"	48" X 48"	42" X 30"	36" X 12"	24" X 30"	30" X 24"	48" X 36"	36" X 48"	48" X 60"
COLORS COPY / BACKGROUND	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE	WHITE / RED	WHITE / RED	WHITE / RED	BLACK (WHITE ARROW) / BLACK	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE	BLACK / WHITE
REFLECTORIZATION	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	ALL	ALL	ALL	ARROW & BORDER	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
NUMBER OF POSTS FOR MOUNTING	1	1	1	1	1	1	1	1	1	1	2	1	1
NUMBER OF HOLES TO BE PUNCHED (13/16" DIA.)	2	4	6	2	2	4	4	2	2	2	4	4	6
PUNCHING DISTANCE FROM EACH VERTICAL EDGE	12" (VERT. CENTER)	3"	9"	15" (VERT. CENTER)	18" (VERT. CENTER)	9"	9"	18" (VERT. CENTER)	12" (VERT. CENTER)	15" (VERT. CENTER)	9"	3"	9"
PUNCHING DISTANCE FROM TOP EDGE	3"; 27"	9"; 39"	4"; 30"; 56"	3"; 21"	6"; 30"	4"; 44"	3"; 27"	1 1/2"; 10 1/2"	3"; 27"	3"; 21"	3"; 33"	9"; 39"	4"; 30"; 56"

GENERAL NOTES:

1. THE QUANTITIES LISTED ON THE SUMMARY OF QUANTITIES SHEET FOR THE SIGNS SHOWN ON THIS SHEET WILL BE USED AS THE BASIS FOR FINAL PAYMENT, EXCEPT WHERE SIGNS ARE MODIFIED FROM THAT SHOWN.

2. THE SPEED LIMITS REQUIRED ON SIGNS R2-1 AND R2-4a WILL BE SHOWN ON INDIVIDUAL PLAN SHEETS.

REVISION	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

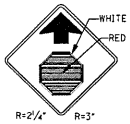
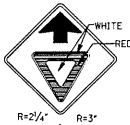
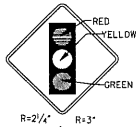
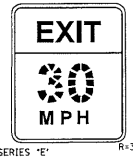
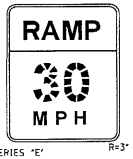
STANDARD ROADSIDE SIGNS

ISSUE DATE: MAY 01, 2017

WORKING NUMBER SN-3A

SHEET NUMBER 6304

STATE	PROJECT NO.
MISS.	

SIGN NUMBER	W1-1L W1-1R	W1-2L W1-2R	W1-3L W1-3R	W1-4L W1-4R	W1-6L W1-6R	W1-7	W3-1a	W3-2a	W3-3	W4-1L W4-1R	W4-101L W4-101R
ALUMINUM (6061-T6) SIGN BLANK THICKNESS	0.125"	0.125"	0.125"	0.125"	0.100"	0.100"	0.125"	0.125"	0.125"	0.125"	0.125"
LEGEND											
LETTER & NUMERAL SERIES											
WIDTH OF BORDER INSIDE / OUTSIDE	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	¾" BLACK ½" YELLOW	¾" BLACK ½" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW
SIZE (WIDTH X HEIGHT)	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	48" X 24"	48" X 24"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"
COLORS COPY	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK
COLORS BACKGROUND	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
REFLECTORIZATION	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND & SYMBOL	BACKGROUND & SYMBOL	BACKGROUND & SYMBOL	BACKGROUND & SYMBOL	BACKGROUND & "LIGHTS"	BACKGROUND & "LIGHTS"	BACKGROUND	BACKGROUND				
NUMBER OF POSTS FOR MOUNTING	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1
NUMBER OF HOLES TO BE PUNCHED (13/16" DIA.)	2	4	2	4	2	4	2	4	2	4	2	4	2	4	4	4	2	4	2	4	2	4	2	4
PUNCHING DISTANCE FROM EACH VERT. EDGE	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	9"	9"	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER
PUNCHING DISTANCE FROM TOP EDGE	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	3"; 21"	3"; 21"	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER
SIGN NUMBER	W4-2	W6-1	W6-2	W6-3	W13-1	W13-2	W13-3	W10-1				
ALUMINUM (6061-T6) SIGN BLANK THICKNESS	0.125"	0.125"	0.125"	0.125"	0.080"	0.125"	0.125"	0.100"				
LEGEND	NOTE: SEE PLAN SHEETS FOR IDEOGRAM REQUIRED ON INDIVIDUAL SIGNS. 											
LETTER & NUMERAL SERIES					10" SERIES "E" 4" SERIES "E"	8" SERIES "E" 16" SERIES "E" 6" SERIES "E" (SEE NOTE)	8" SERIES "E" 16" SERIES "E" 6" SERIES "E" (SEE NOTE)	8" SERIES "E"				
WIDTH OF BORDER INSIDE / OUTSIDE	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅞" BLACK 5/8" YELLOW	1¼" BLACK ¾" YELLOW	⅝" BLACK ⅜" YELLOW	1¼" BLACK ¾" YELLOW	1¼" BLACK ½" YELLOW		¾" BLACK ½" YELLOW					
SIZE (WIDTH X HEIGHT)	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	36" X 36"	48" X 48"	24" X 24"	48" X 60"	48" X 60"		36" DIAMETER					
COLORS COPY	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK	BLACK		BLACK					
COLORS BACKGROUND	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW		YELLOW					
REFLECTORIZATION	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND		BACKGROUND					
NUMBER OF POSTS FOR MOUNTING	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1					
NUMBER OF HOLES TO BE PUNCHED (13/16" DIA.)	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	6	6		2					
PUNCHING DISTANCE FROM EACH VERT. EDGE	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	VERT. CENTER	15" FROM VERT. CENTER	12" (VERT. CENTER)	9"	9"		15"					
PUNCHING DISTANCE FROM TOP EDGE	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	18" FROM HORIZ. CENTER	15" FROM HORIZ. CENTER	3"; 21"	4"; 30"; 56"	4"; 30"; 56"		15" FROM HORIZ. CENTER					

GENERAL NOTES:

1. THE QUANTITIES LISTED ON THE SUMMARY OF QUANTITIES SHEET FOR THE SIGNS SHOWN ON THIS SHEET WILL BE USED AS THE BASIS FOR FINAL PAYMENT, EXCEPT WHERE SIGNS ARE MODIFIED FROM THAT SHOWN.

2. SIGNS W13-2 AND W13-3- THE STROKE WIDTH OF THE LETTER AND NUMERALS SHALL BE WIDENED TO 20% OF THE LETTER OR NUMERAL HEIGHT.

3. THE SPEEDS REQUIRED ON SIGNS W13-1, W13-2 AND W13-3 WILL BE SHOWN ON INDIVIDUAL PLAN SHEETS.

REVISION	BY	DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

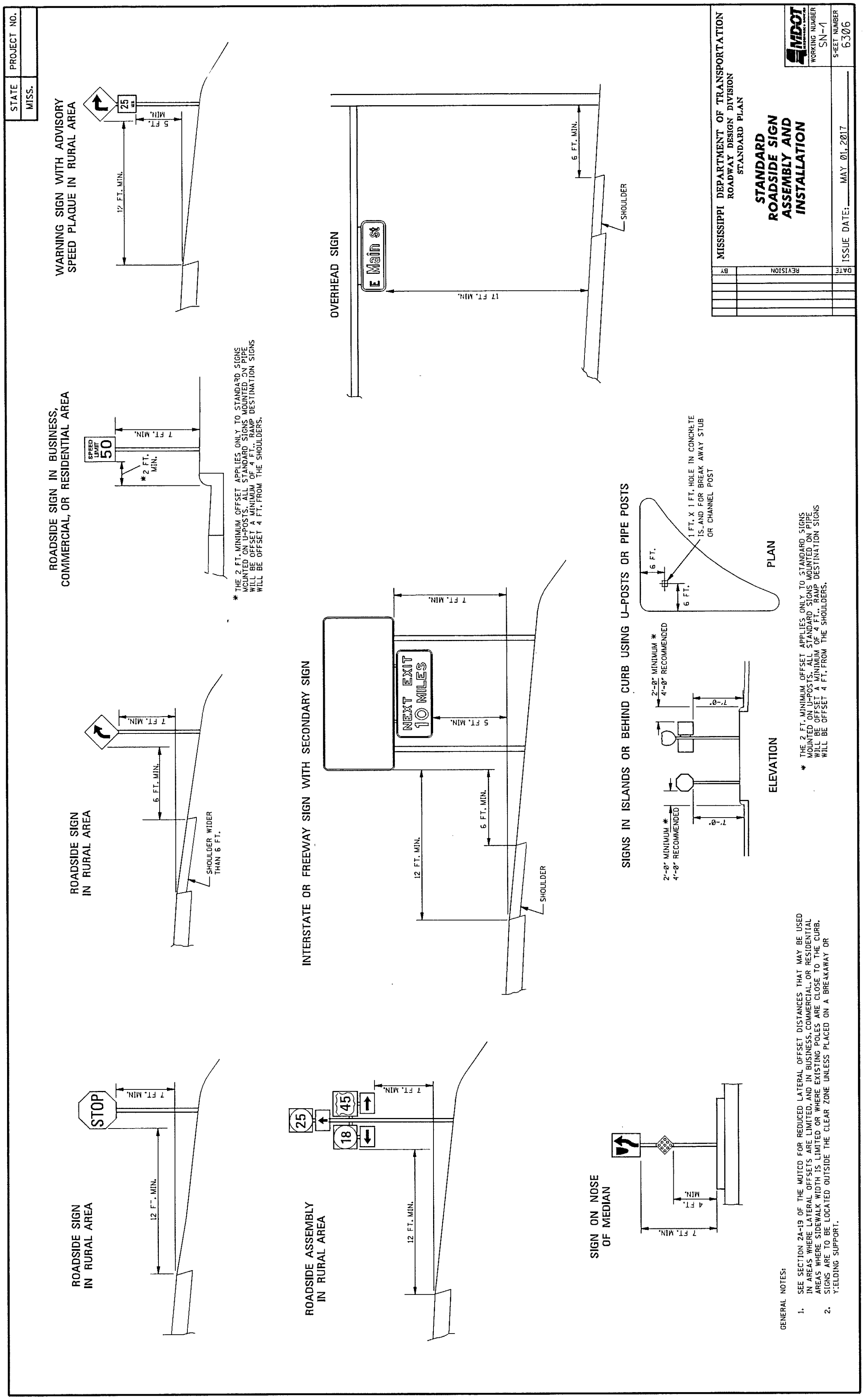
STANDARD ROADSIDE SIGNS

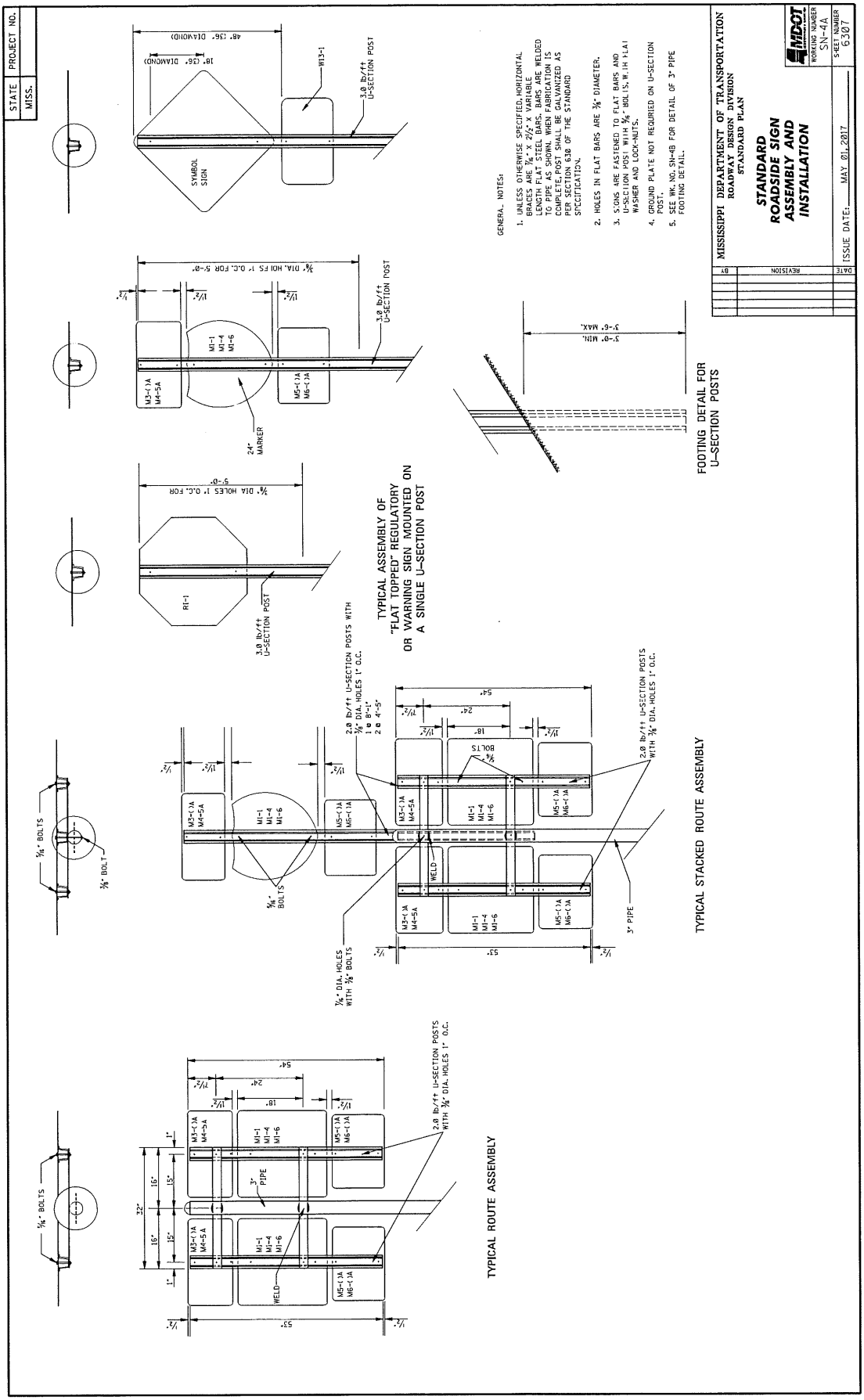
MDOT

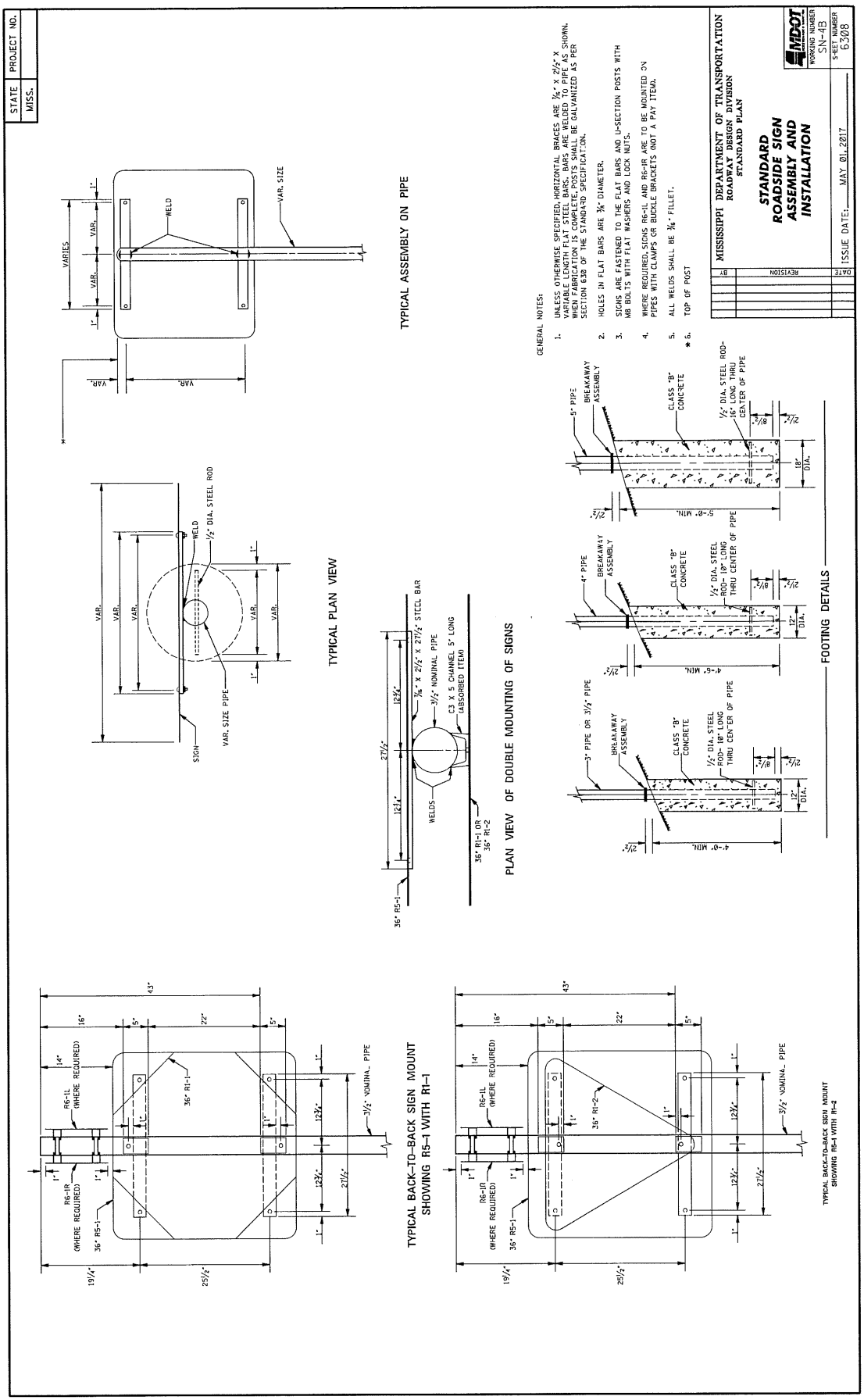
WORKING NUMBER SN-3B

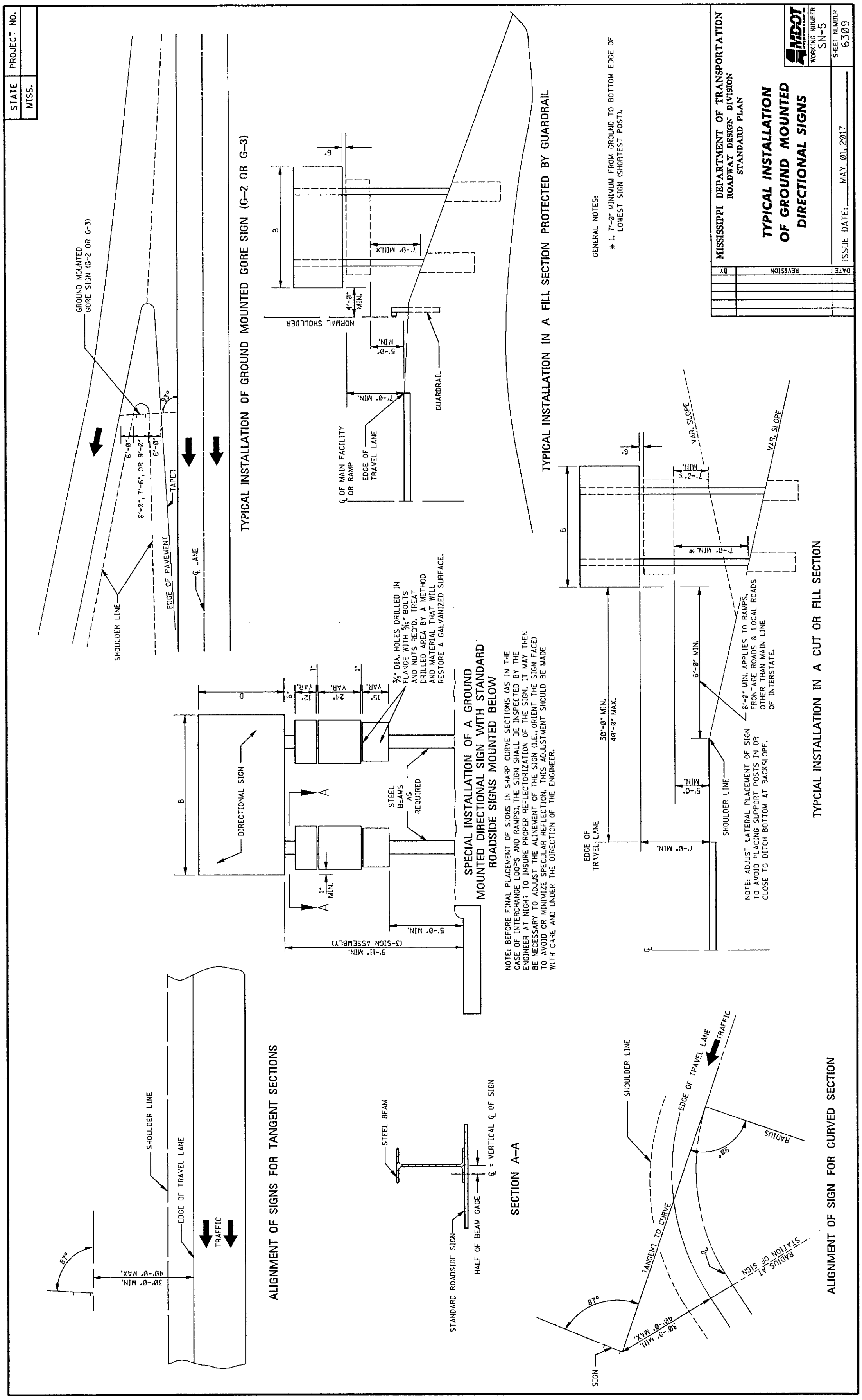
ISSUE DATE: MAY 01, 2017

SHEET NUMBER 6305

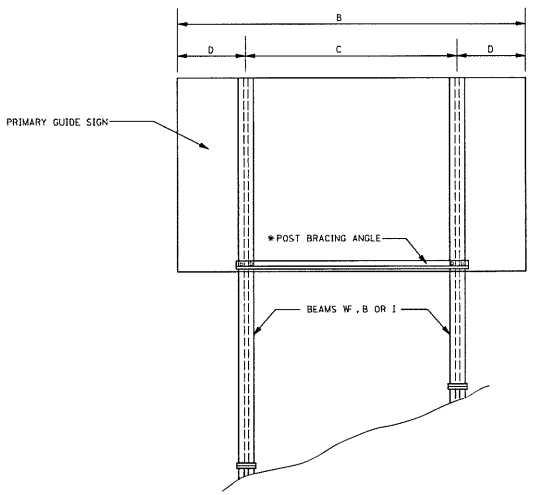

STATE
MISS.
PROJECT NO.
ROADSIDE SIGN IN RURAL AREA
STOP
12 FT. MIN.
7 FT. MIN.
ROADSIDE SIGN IN RURAL AREA
6 FT. MIN.
7 FT. MIN.
SHOULDER WIDER THAN 6 FT.
ROADSIDE SIGN IN BUSINESS, COMMERCIAL, OR RESIDENTIAL AREA
SPEED LIMIT 50
*2 FT. MIN.
7 FT. MIN.
* THE 2 FT. MINIMUM OFFSET APPLIES ONLY TO STANDARD SIGNS MOUNTED ON U-POSTS. ALL STANDARD SIGNS MOUNTED ON PIPE WILL BE OFFSET A MINIMUM OF 4 FT.. RAMP DESTINATION SIGNS WILL BE OFFSET 4 FT. FROM THE SHOULDERS.
WARNING SIGN WITH ADVISORY SPEED PLAQUE IN RURAL AREA
12 FT. MIN.
25
5 FT. MIN.
ROADSIDE ASSEMBLY IN RURAL AREA
25
18
45
12 FT. MIN.
7 FT. MIN.
INTERSTATE OR FREEWAY SIGN WITH SECONDARY SIGN
NEXT EXIT 10 MILES
12 FT. MIN.
6 FT. MIN.
5 FT. MIN.
7 FT. MIN.
SHOULDER
OVERHEAD SIGN
E Main St
17 FT. MIN.
6 FT. MIN.
SHOULDER
SIGN ON NOSE OF MEDIAN
7 FT. MIN.
4 FT. MIN.
SIGNS IN ISLANDS OR BEHIND CURB USING U-POSTS OR PIPE POSTS
2'-0" MINIMUM *
4'-0" RECOMMENDED
7'-0"
ELEVATION
6 FT.
1 FT. X 1 FT. HOLE IN CONCRETE IS. AND FOR BREAK AWAY STUB OR CHANNEL POST
PLAN
* THE 2 FT. MINIMUM OFFSET APPLIES ONLY TO STANDARD SIGNS MOUNTED ON U-POSTS. ALL STANDARD SIGNS MOUNTED ON PIPE WILL BE OFFSET A MINIMUM OF 4 FT.. RAMP DESTINATION SIGNS WILL BE OFFSET 4 FT. FROM THE SHOULDERS.
GENERAL NOTES:
1. SEE SECTION 2A-19 OF THE MUTCD FOR REDUCED LATERAL OFFSET DISTANCES THAT MAY BE USED IN AREAS WHERE LATERAL OFFSETS ARE LIMITED, AND IN BUSINESS, COMMERCIAL, OR RESIDENTIAL AREAS WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.
2. SIGNS ARE TO BE LOCATED OUTSIDE THE CLEAR ZONE UNLESS PLACED ON A BREAKAWAY OR YIELDING SUPPORT.
BY
REVISION
DATE
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
STANDARD ROADSIDE SIGN ASSEMBLY AND INSTALLATION
MDOT
WORKING NUMBER
SN-1
ISSUE DATE: MAY 01, 2017
SHEET NUMBER
6306


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
STANDARD ROADSIDE SIGN ASSEMBLY AND INSTALLATION
WORKING NUMBER SN-4A
SHEET NUMBER 6307
ISSUE DATE: MAY 01, 2017
REVISION
BY
DATE
GENERAL NOTES:
1. UNLESS OTHERWISE SPECIFIED, HORIZONTAL BRACES ARE 7/8" X 2 1/2" X VARIABLE LENGTH FLAT STEEL BARS. BARS ARE WELDED TO PIPE AS SHOWN. WHEN FABRICATION IS COMPLETE, POST SHALL BE GALVANIZED AS PER SECTION 630 OF THE STANDARD SPECIFICATION.
2. HOLES IN FLAT BARS ARE 3/8" DIAMETER.
3. SIGNS ARE FASTENED TO FLAT BARS AND U-SECTION POST WITH 3/8" BOLTS, W. IH FLAT WASHER AND LOCK-NUTS.
4. GROUND PLATE NOT REQUIRED ON U-SECTION POST.
5. SEE WK. NO. SN-4B FOR DETAIL OF 3" PIPE FOOTING DETAIL.
FOOTING DETAIL FOR U-SECTION POSTS
TYPICAL ASSEMBLY OF "FLAT TOPPED" REGULATORY OR WARNING SIGN MOUNTED ON A SINGLE U-SECTION POST
TYPICAL STACKED ROUTE ASSEMBLY
TYPICAL ROUTE ASSEMBLY
SYMBOL SIGN
48" (36" DIAMOND)
18" (36" DIAMOND)
W13-1
3.0 lb/ft U-SECTION POST
R1-1
24" MARKER
2.0 lb/ft U-SECTION POSTS WITH 3/8" DIA. HOLES 1" O.C.
3" PIPE
WELD
BOLTS
3/8" BOLT
3/4" BOLTS
3/4" DIA. HOLES WITH 3/8" BOLTS

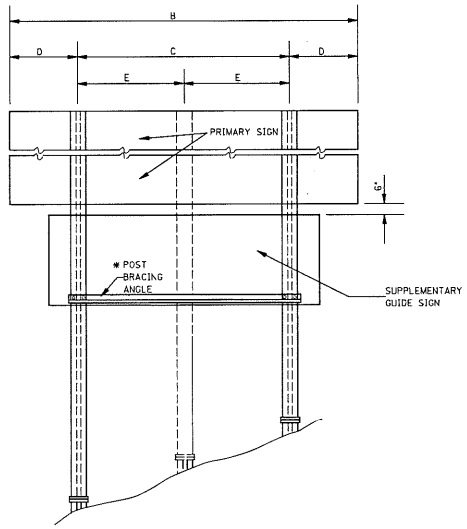

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
STANDARD ROADSIDE SIGN ASSEMBLY AND INSTALLATION
WORKING NUMBER SN-4B
SHEET NUMBER 6308
ISSUE DATE: MAY 01, 2017
REVISION
BY
DATE
GENERAL NOTES:
1. UNLESS OTHERWISE SPECIFIED, HORIZONTAL BRACES ARE ¾" X 2½" X VARIABLE LENGTH FLAT STEEL BARS. BARS ARE WELDED TO PIPE AS SHOWN. WHEN FABRICATION IS COMPLETE, POSTS SHALL BE GALVANIZED AS PER SECTION 630 OF THE STANDARD SPECIFICATION.
2. HOLES IN FLAT BARS ARE ¾" DIAMETER.
3. SIGNS ARE FASTENED TO THE FLAT BARS AND U-SECTION POSTS WITH ⅜ BOLTS WITH FLAT WASHERS AND LOCK NUTS.
4. WHERE REQUIRED, SIGNS R6-1L AND R6-1R ARE TO BE MOUNTED ON PIPES WITH CLAMPS OR BUCKLE BRACKETS (NOT A PAY ITEM).
5. ALL WELDS SHALL BE ⅜" FILLET.
★6. TOP OF POST
TYPICAL ASSEMBLY ON PIPE
TYPICAL PLAN VIEW
PLAN VIEW OF DOUBLE MOUNTING OF SIGNS
FOOTING DETAILS
TYPICAL BACK-TO-BACK SIGN MOUNT SHOWING R5-1 WITH R1-1
TYPICAL BACK-TO-BACK SIGN MOUNT SHOWING R5-1 WITH R1-2


STATE
PROJECT NO.
MISS.
TYPICAL INSTALLATION OF GROUND MOUNTED GORE SIGN (G-2 OR G-3)
TYPICAL INSTALLATION IN A FILL SECTION PROTECTED BY GUARDRAIL
GENERAL NOTES:
SPECIAL INSTALLATION OF A GROUND MOUNTED DIRECTIONAL SIGN WITH STANDARD ROADSIDE SIGNS MOUNTED BELOW
TYPICAL INSTALLATION IN A CUT OR FILL SECTION
ALIGNMENT OF SIGNS FOR TANGENT SECTIONS
SECTION A-A
ALIGNMENT OF SIGN FOR CURVED SECTION
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TYPICAL INSTALLATION OF GROUND MOUNTED DIRECTIONAL SIGNS
ISSUE DATE: MAY 01, 2017
WORKING NUMBER SN-5
SHEET NUMBER 6309

STATE	PROJECT NO.
MISS.	



TYPICAL 2–POST INSTALLATION
WITHOUT EXIT SIGN



TYPICAL 2 OR 3 POST INSTALLATION
WITH SUPPLEMENTARY GUIDE SIGN
AND POST BRACING ANGLE LOCATION

GENERAL NOTES FOR WORKING SHEETS SN-6, SN-6A AND SN-6B:

1. FOOTING
ALL FOOTINGS SHALL BE CLASS "B" CONCRETE. POST STUBS SHALL BE SET IN CONCRETE FOOTING AT REQUIRED GRADE AND ALIGNMENT WITH CARE SO THAT MINIMUM SHIMMING WILL BE REQUIRED.

2. BASE CONNECTION PROCEDURE
ASSEMBLE POST TO STUB WITH BOLTS AND WITH A FLAT WASHER ON EACH BOLT BETWEEN PLATES. SHIM AS REQUIRED TO PLUMB POST. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH A 12" TO 15" WRENCH TO BED WASHERS AND SHIMS AND TO CLEAN BOLT THREADS. THEN LOOSEN EACH BOLT IN TURN AND RETIGHTEN IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE AS SHOWN BY TABLE. BURR THREADS AT JUNCTION WITH NUT USING A CENTER PUNCH. HIGH STRENGTH BOLTS IN BASE CONNECTIONS SHALL BE TIGHTENED TO TORQUE AS SHOWN BY TABLE ON SN-6A. DO NOT OVER TIGHTEN!

3. POST LENGTH
ALL POST LENGTHS SHALL BE VERIFIED AND APPROVED BY THE ENGINEER PRIOR TO FABRICATION. WHERE FIELD CONDITIONS REQUIRE THE POST LENGTH TO VARY MORE THAN 12", IT MAY BE NECESSARY TO CHANGE THE SIZE OR NUMBER OF POSTS. SUCH DETERMINATION WILL BE MADE BY THE ROADWAY DESIGN ENGINEER. ANY CHANGE OF SIZE OR NUMBER OF POSTS SHALL NOT BE JUSTIFICATION FOR ANY CONTRACT PRICE ADJUSTMENTS.

4. FABRICATOR NOTE
IMPORTANT- ALL FRICTION FUSE BOLTS SHALL BE TIGHTENED IN SHOP BY A METHOD APPROVED BY THE BRIDGE DESIGN ENGINEER. TIGHTENING SHALL BE TO SUCH A DEGREE AS TO PROVIDE THE MINIMUM TENSION IN EACH BOLT WHEN ALL BOLTS ARE TIGHT, AS SHOWN BY TABLE SN-6A.

5. ALL HOLES IN FUSE PLATES AND HINGE PLATES SHALL BE DRILLED.

6. ALL PLATE CUTS SHALL PREFERABLY BE SAW CUTS. FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE ACCEPTABLE.

7. WELDING FOR STEEL SIGN SUPPORTS
WELDING SHALL BE PERFORMED IN SHOP BY ELECTRIC ARC PROCESS.

8. MATERIAL SPECIFICATIONS
THE MATERIALS USED IN THE CONSTRUCTION OF THE GROUND MOUNTED SIGN SUPPORT STRUCTURES, AS LISTED BELOW, SHALL CONFORM WITH THE REQUIREMENTS OF THE DESIGNATED ASTM SPECIFICATION. ALL OTHER MATERIALS, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS, EXCEPT AS OTHERWISE NOTED ON THE PLANS.

DESCRIPTION	MATERIALS PER ASTM DESIGNATION	GALVANIZE ① PER ASTM DESIGNATION
POSTS OF STEEL PIPE	A 53 (GRADE "B")②	A 53
BASE CONNECTION PLATES FOR PIPES	A 36	A 123
POSTS OF STEEL WF, B, AND I BEAMS INCLUDING BASE CONNECTION, FUSE AND HINGE PLATES	A 588 OR A 572 GRADE 50	A 123
POST BRACING ANGLES AND FLAT BARS USED IN FABRICATION AND ERECTION OF SIGN SUPPORTS	A 36	A 123
HIGH STRENGTH BOLTS, NUTS AND WASHERS	A 325	A 153
BOLTS OTHER THAN HIGH STRENGTH ③	A 307 (GRADE "A")	A 153

① ALL STEEL SHALL BE GALVANIZED AFTER FABRICATION EXCEPT AS NOTED ON THE PLANS.
② PIPES MAY BE WELDED OR SEAMLESS.
③ BOLTS, WASHERS, AND NUTS USED FOR FASTENING ALUMINUM SIGN SHEETS AND PANELS SHALL BE ALUMINUM AS PER FOLLOWING TABLE.

DESCRIPTION	ASTM DESIGNATION	ALLOY
BOLTS AND WASHERS	B 209	2024-T4
PANEL BOLT NUTS	B 211	6061-T6
STOP NUTS	B 211	2017-T4

* NOTE: PLACE POST BRACING ANGLE AT BOTTOM OF PRIMARY OR SUPPLEMENTARY SIGN WHICHEVER IS LOWER. (SEE "END ELEVATION OF POST AND FOOTING" ON SN-6A.)

SIGN POST SPACING TABLE

2 POST			2 POST (CONT'D)			3 POST			
"B"	"C"	"D"	"B"	"C"	"D"	"B"	"C"	"D"	"E"
4'-0"	2'-0"	1'-0"	14'-6"	8'-9"	2'-10½"	20'-0"	14'-0"	3'-0"	7'-0"
4'-6"	2'-6"	1'-0"	15'-0"	9'-0"	3'-0"	20'-6"	14'-3"	3'-1½"	7'-1½"
5'-0"	3'-0"	1'-0"	15'-6"	9'-3"	3'-1½"	21'-0"	14'-9"	3'-1½"	7'-4½"
5'-6"	3'-6"	1'-0"	16'-0"	9'-6"	3'-3"	21'-6"	15'-0"	3'-3"	7'-6"
6'-0"	4'-0"	1'-0"	16'-6"	10'-0"	3'-3"	22'-0"	15'-6"	3'-3"	7'-9"
6'-6"	4'-6"	1'-0"	17'-0"	10'-3"	3'-4½"	22'-6"	15'-9"	3'-4½"	7'-10½"
7'-0"	5'-0"	1'-0"	17'-6"	10'-6"	3'-6"	23'-0"	16'-0"	3'-6"	8'-0"
7'-6"	5'-6"	1'-0"	18'-0"	10'-9"	3'-7½"	23'-6"	16'-6"	3'-6"	8'-3"
8'-0"	6'-0"	1'-0"	18'-6"	11'-0"	3'-9"	24'-0"	16'-9"	3'-7½"	8'-4½"
8'-6"	6'-6"	1'-0"	19'-0"	11'-6"	3'-9"	24'-6"	17'-3"	3'-7½"	8'- 7½"
9'-0"	7'-0"	1'-0"	19'-6"	11'-9"	3'-10½"	25'-0"	17'-6"	3'-9"	8'-9"
9'-6"	7'-0"	1'-3"	20'-0"	12'-0"	4'-0"	25'-6"	17'-9"	3'-10½"	8'-10½"
10'-0"	7'-0"	1'-6"	20'-6"	12'-3"	4'-1½"	26'-0"	18'-3"	3'-10½"	9'-1½"
10'-6"	7'-0"	1'-9"	21'-0"	12'-6"	4'-3"	26'-6"	18'-6"	4'-0"	9'-3"
11'-0"	7'-0"	2'-0"	21'-6"	13'-0"	4'-3"	27'-0"	19'-0"	4'-0"	9'-6"
11'-6"	7'-0"	2'-3"	22'-0"	13'-3"	4'-4½"	27'-6"	19'-3"	4'-1½"	9'-7½"
12'-0"	7'-3"	2'-4½"	22'-6"	13'-6"	4'-6"	28'-0"	19'-6"	4'-3"	9'-9"
12'-6"	7'-6"	2'-6"	23'-0"	13'-9"	4'-7½"	28'-6"	20'-0"	4'-3"	10'-0"
13'-0"	7'-9"	2'-7½"	23'-6"	14'-0"	4'-9"	29'-0"	20'-3"	4'-4½"	10'-1½"
13'-6"	8'-0"	2'-9"	24'-0"	14'-6"	4'-9"	29'-6"	20'-6"	4'-6"	10'-3"
14'-0"	8'-6"	2'-9"				30'-0"	21'-0"	4'-6"	10'-6"

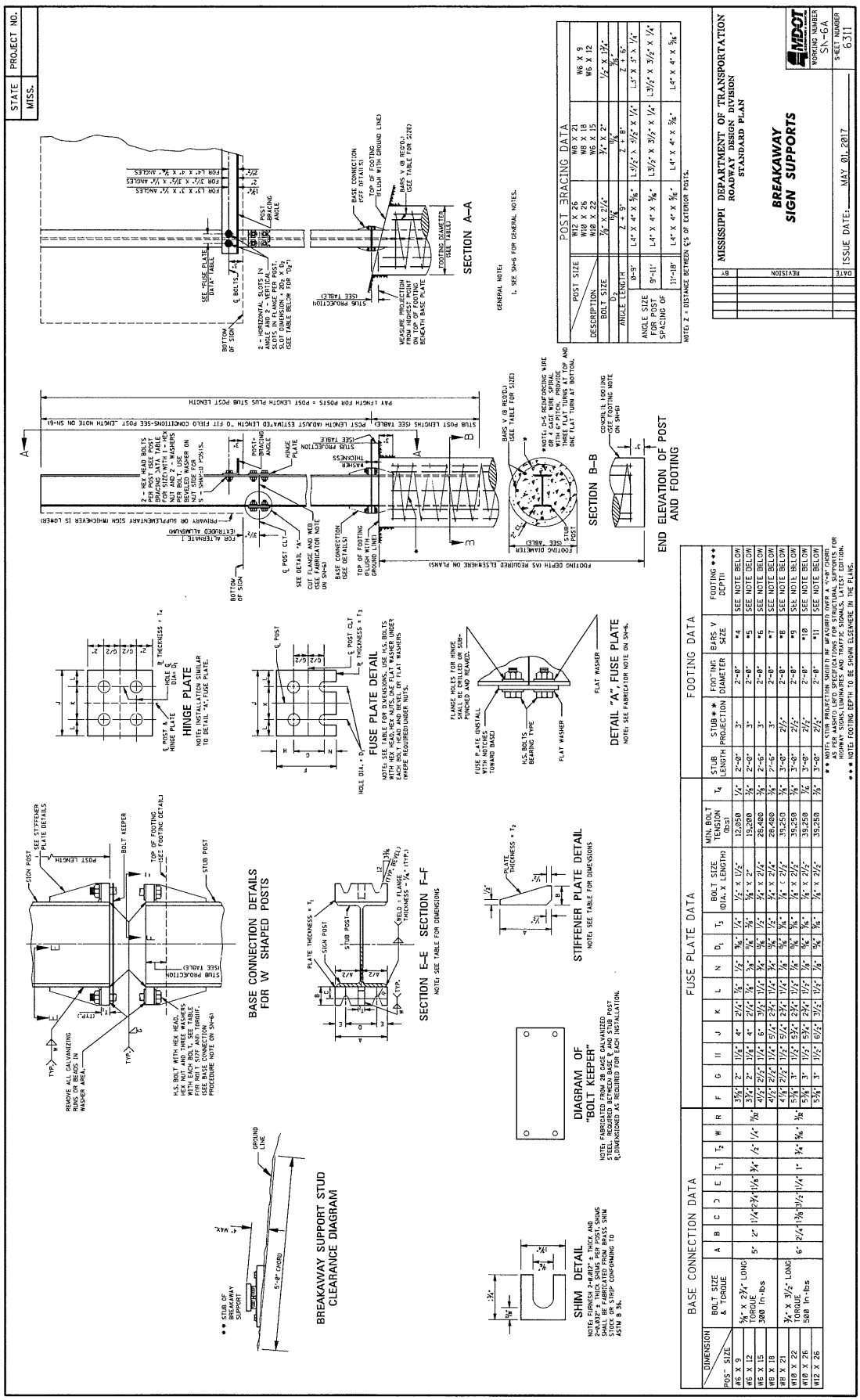
BY | REVISION | DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

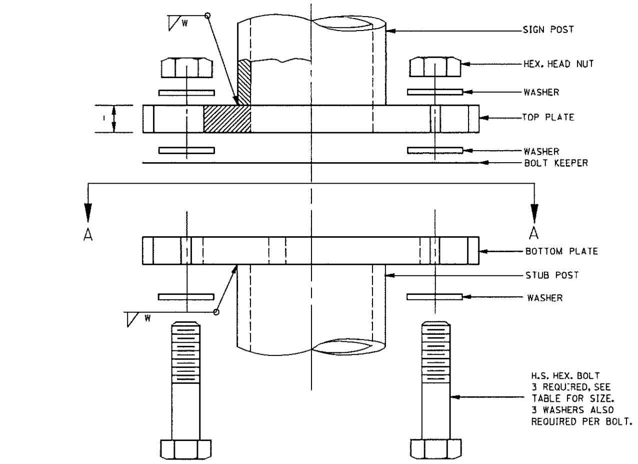
BREAKAWAY SIGN SUPPORTS

MDOT
WORKING NUMBER SN-6
SHEET NUMBER 6310

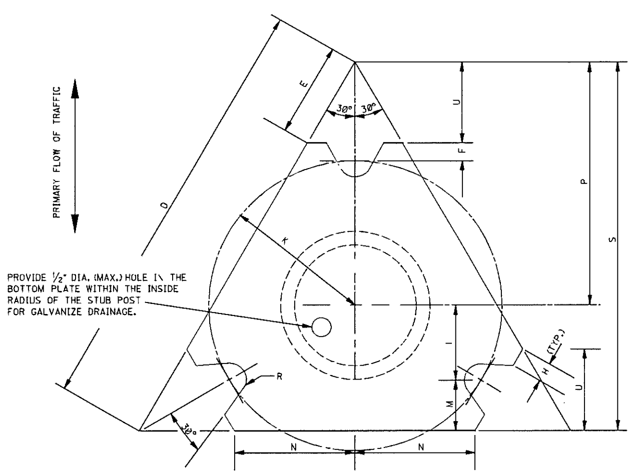
ISSUE DATE: MAY 01, 2017


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
BREAKAWAY SIGN SUPPORTS
MDOT
WORKING NUMBER SN-6A
SHEET NUMBER 6311
ISSUE DATE: MAY 01,2017
REVISION
BY
DATE
BASE CONNECTION DATA
FUSE PLATE DATA
FOOTING DATA
POST SIZE
DESCRIPTION
BOLT SIZE D2
ANGLE LENGTH
ANGLE SIZE FOR POST SPACING OF
0'-9'
9'-11'
11'-18'
W12 X 26
W10 X 26
W10 X 22
W8 X 24
W8 X 21
W8 X 18
W6 X 15
W6 X 9
W6 X 12
POST BRACING DATA
BREAKAWAY SUPPORT STUD CLEARANCE DIAGRAM
BASE CONNECTION DETAILS FOR W SHAPED POSTS
HINGE PLATE
FUSE PLATE DETAIL
SECTION E–E SECTION F–F
STIFFENER PLATE DETAIL
DETAIL "A", FUSE PLATE
SHIM DETAIL
DIAGRAM OF "BOLT KEEPER"
SECTION A–A
SECTION B–B
END ELEVATION OF POST AND FOOTING
GENERAL NOTES:
1. SEE SN-5 FOR GENERAL NOTES.

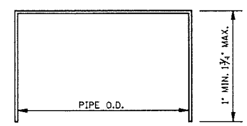
STATE	PROJECT NO.
MISS.	



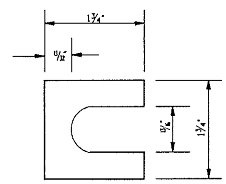
MULTI-DIRECTIONAL SIGN POST & STUB POST



SECTION A–A
NOTE: SEE DATA TABLE FOR DIMENSIONS

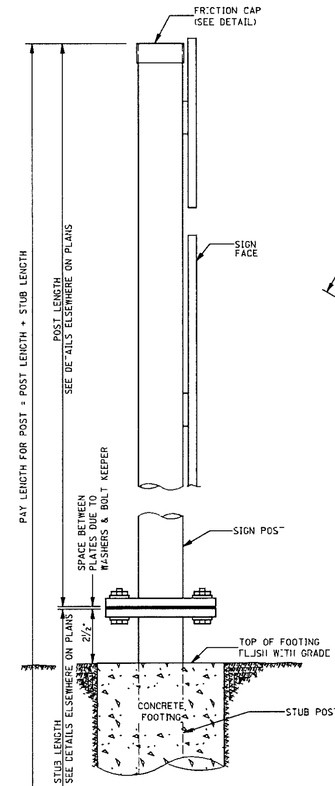


FRICTION CAP DETAIL
NOTE: SEE NOTE 3

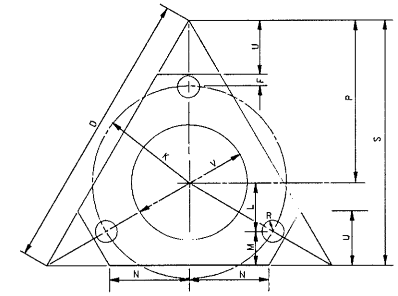


SHIM DETAIL

NOTE: FURNISH 2-0.012" ± THICK AND 2-0.032" ± THICK SHIMS PER POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM B 36.



POST ELEVATION



BOLT KEEPER PLATE DETAIL

NOTE: TO BE FABRICATED FROM 28 GAGE THICK GALVANIZED STEEL. TO BE INSTALLED AS SHOWN IN DETAIL AT UPPER LEFT.

GENERAL NOTES: (SEE WK. NO. SN-6 FOR ADDITIONAL GENERAL NOTES)

1. THE TOP PLATE OF THE TRIANGULAR SLIP BASE SHALL HAVE THE SAME EXTERIOR DIMENSIONS AS THE BOTTOM PLATE. THE LIFTING CONE SHALL BE WELDED TO THE BOTTOM PLATE ONLY. A HOLE EQUAL TO THE INSIDE DIAMETER OF THE SIGN POST SHALL BE CUT THROUGH THE CENTER OF THE TOP PLATE WITH THE HOLE EDGE BEVELED AS DETAILED. TOP & BOTTOM PLATES SHALL BE SYMMETRICAL FOR THE PURPOSE OF ASSEMBLY IN ANY POSITION.

2. BASE CONNECTION ASSEMBLY AS FOLLOWS:
   - A. ASSEMBLE POST TO STUB WITH 3 BOLTS AND WITH 3 FLAT WASHERS PER BOLT.
   - B. SHIM AS REQUIRED TO PLUMB POST.
   - C. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH A 12" TO 15" WRENCH TO BED WASHERS, KEEPER PLATE, SHIMS AND TO CLEAN THREADS.
   - D. LOOSEN EACH BOLT IN TURN & RETIGHTEN IN A SYSTEMATIC ORDER TO PRESCRIBED TORQUE. (SEE BASE CONNECTION DATA TABLE).
   - E. BURR THREADS AT JUNCTION WITH NUT WITH A CENTER PUNCH TO PREVENT NUT FROM LOOSENING.

3. FRICTION CAPS TO BE MANUFACTURED FROM HOT ROLLED OR COLD ROLLED STEEL SHEETS. FOR ALL PIPE SIZES, MINIMUM THICKNESS SHALL BE 20 GAGE SHEET METAL. RIM EDGES SHALL BE REASONABLY STRAIGHT AND SMOOTH. CAPS SHALL BE SIZED AND FORMED IN SUCH A MANNER AS TO PROVIDE A DRIVE-ON FRICTION FIT AND HAVE NO TENDENCY TO ROCK WHEN SEATED ON PIPE. THE DEPTH SHALL BE SUFFICIENT TO GIVE POSITIVE PROTECTION AGAINST ENTRANCE OF RAINWATER. THEY SHALL BE FREE OF SHARP CREASES OR INDENTATIONS AND SHOW NO SIGNS OF METAL FRACTURE. ALL CAPS TO BE SAME IN SHAPE AND GENERAL APPEARANCE AS APPROVED BY THE ENGINEER.

4. STUB PROJECTION SHOULD BE MEASURED OVER A 5'-0" CHORD AS PER AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, LATEST EDITION. SEE WK. NO. SN-6A FOR DIAGRAM.

5. AS AN ALTERNATIVE THE POST LENGTH OF THE SIGN POST CAN BE MADE-UP USING A NOMINIAL LENGTH OF GALVANIZED PIPE, A GALVANIZED SLIP BASE CASTING, GALVANIZED FLAT PLATES OR APPROVED EQUAL WITH ALL NECESSARY HARDWARE REQUIRED TO SECURE THEM TO THE SIGN POST, A GALVANIZED KEEPER PLATE AND A GALVANIZED FRICTION CAP. THE SLIP BASE CASTING SHALL HAVE 3-SCREWS TO SECURE THE POST TO THE CASTING AND ONE SET SCREW TO PREVENT ROTATION. THE MANUFACTURER SHALL PROVIDE SHOP DRAWINGS OF THE COMPLETE ASSEMBLY FOR MDOT APPROVAL.

BASE CONNECTION DATA TABLE

DIMENSIONS NOMINAL PIPE SIZES	BOLT SIZE & TORQUE	T	W	C	*D	*E	F	G	*H	J	K	L	M	*N	P	S	U	V	R
3" 3½"	⅝" X 2½" 300 In · lbs	⅝"	⅜"	1"	10⅜"	2 5/16"	½"	⅜"	½"	1¾"	3½"	1¾"	1¼"	2⅞"	6"	9"	2"	4¼"	11/32"
4" 5"	¾" X 3" 500 In · lbs	⅞"	7/16"	1 7/16"	13"	2⅞"	½"	⅜"	⅝"	2½"	4½"	2¼"	1½"	3⅝"	7½"	11¼"	2½"	5¾"	13/32"

*NOTE: APPROXIMATE DIMENSIONS

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

BREAKAWAY SIGN SUPPORTS

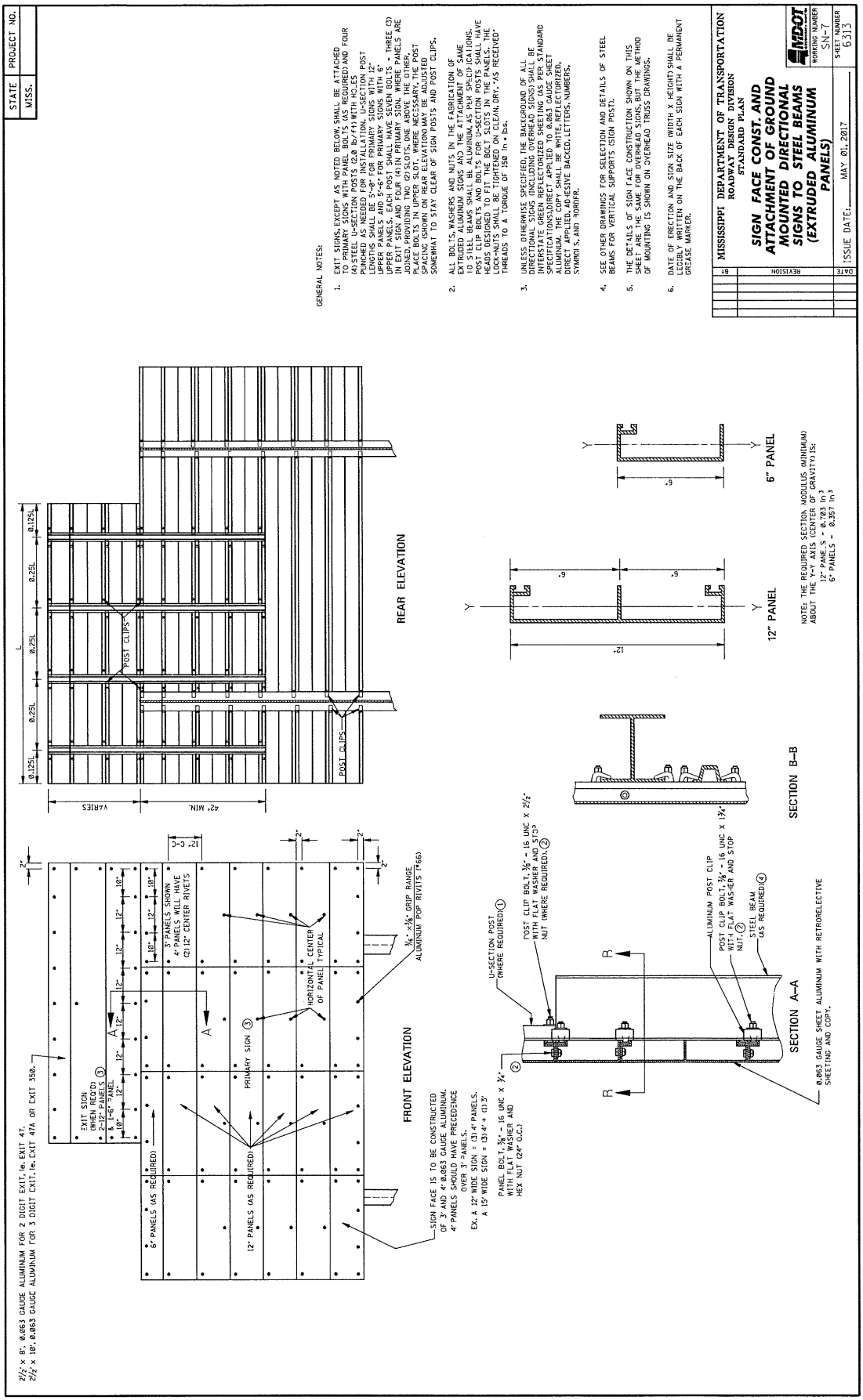
BY | REVISION | DATE

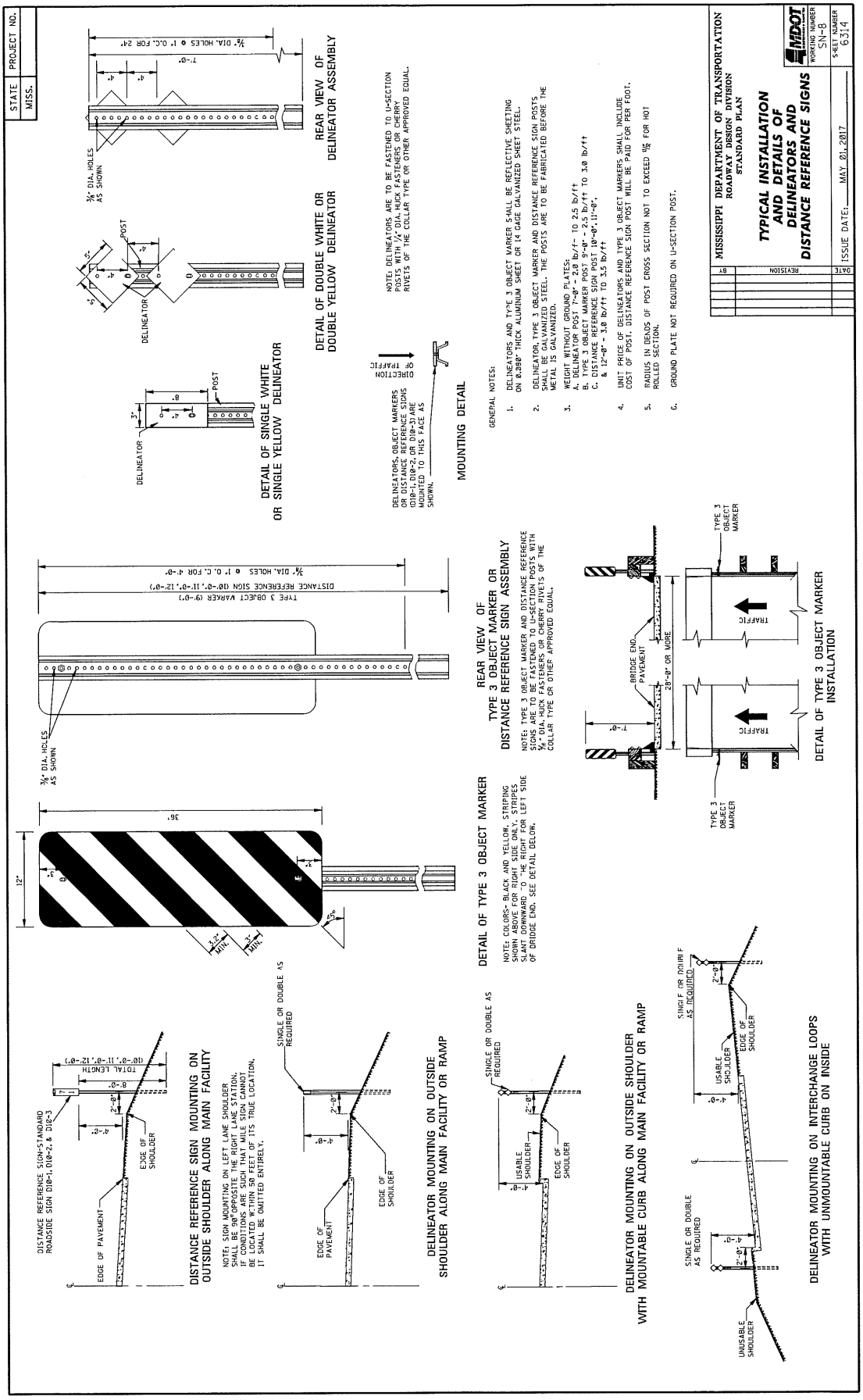
MDOT

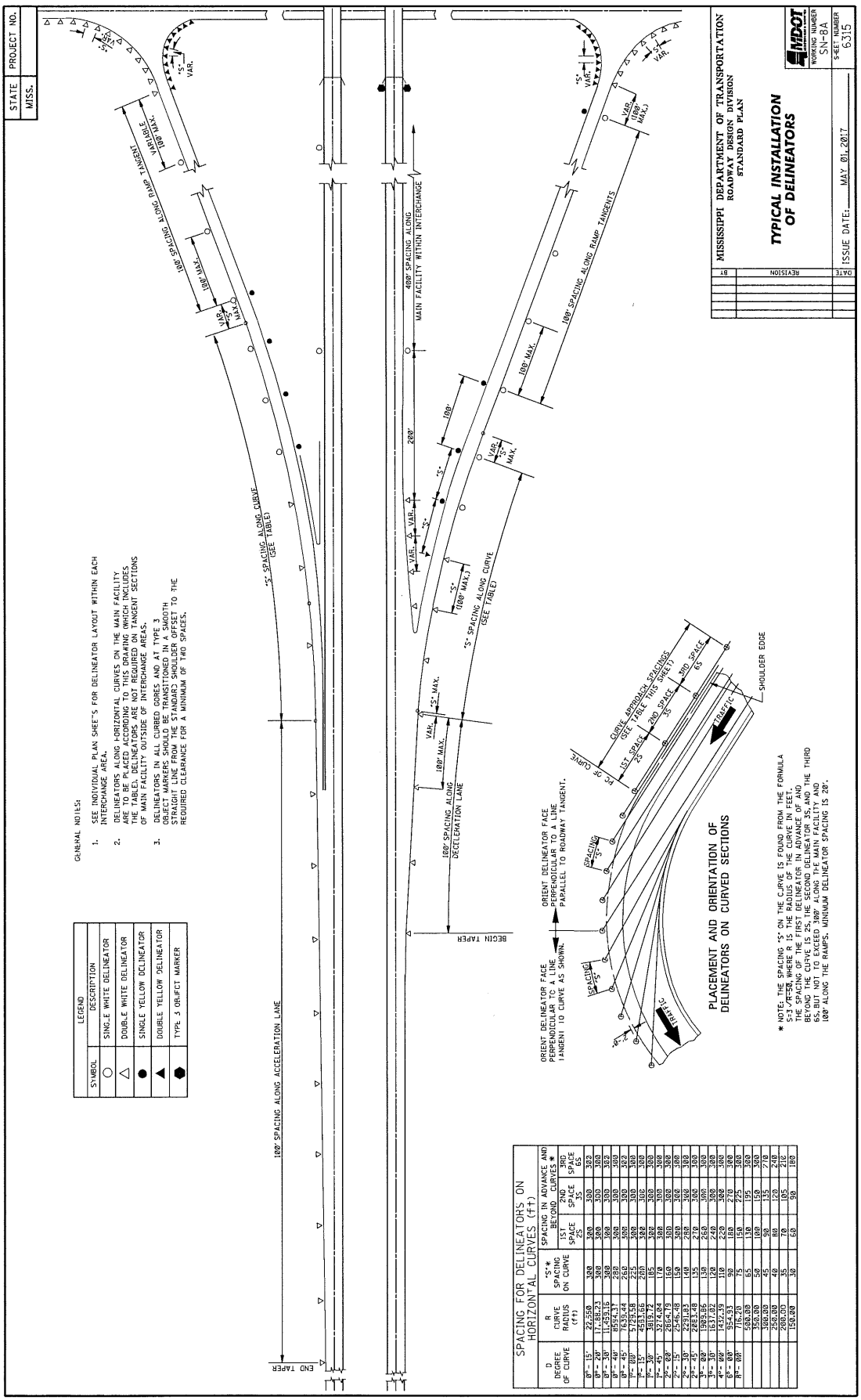
WORKING NUMBER SN-6B

ISSUE DATE: MAY 01, 2017

SHEET NUMBER 6312

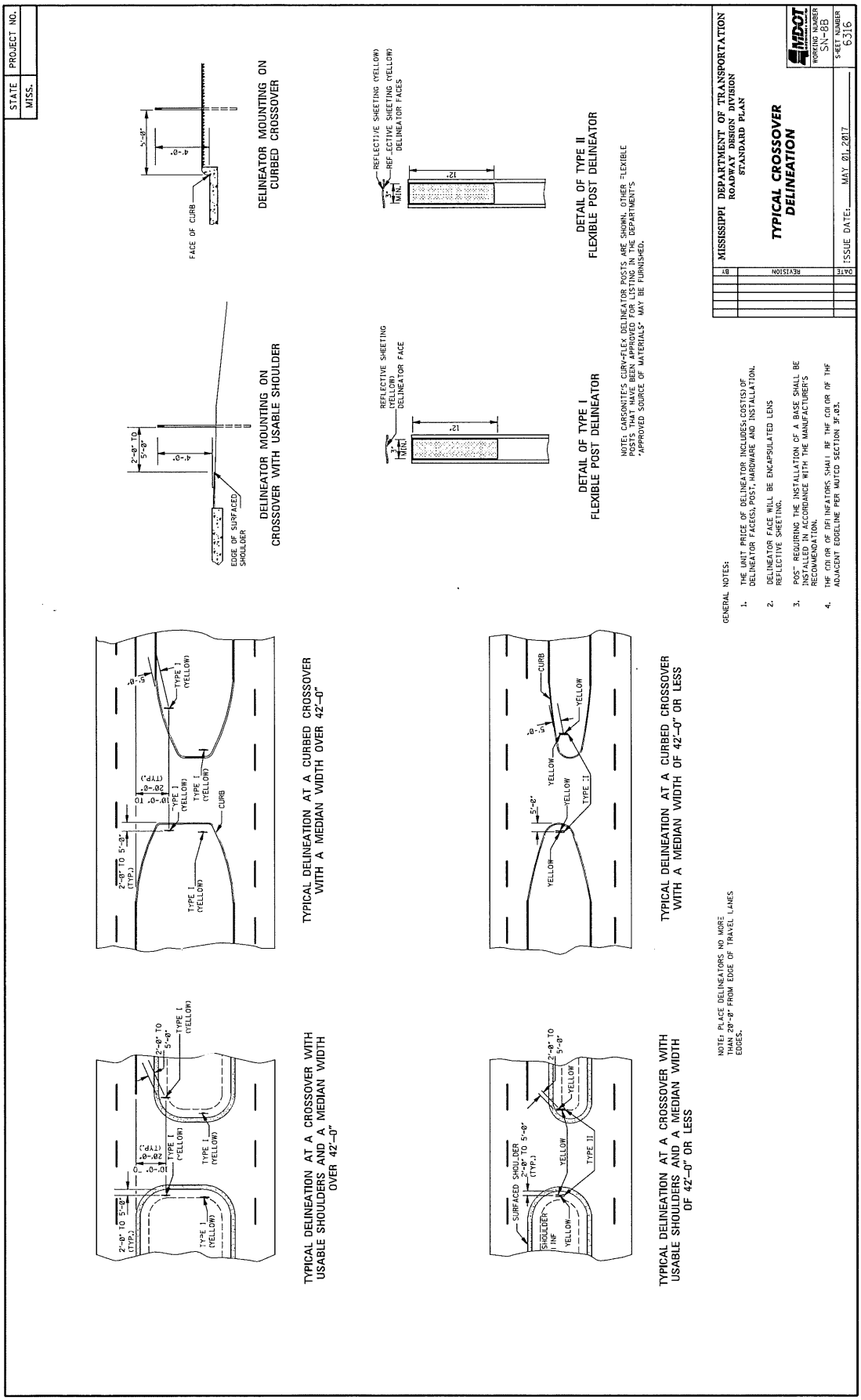

STATE MISS.
PROJECT NO.
2½" x 8', 0.063 GAUGE ALUMINUM FOR 2 DIGIT EXIT, ie. EXIT 41.
2½" x 10', 0.063 GAUGE ALUMINUM FOR 3 DIGIT EXIT, ie. EXIT 47A OR EXIT 350.
GENERAL NOTES:
1. EXIT SIGNS EXCEPT AS NOTED BELOW SHALL BE ATTACHED TO PRIMARY SIGNS WITH PANEL BOLTS (AS REQUIRED) AND FOUR (4) STEEL U-SECTION POSTS (2.0 lb./ft) WITH HOLES PUNCHED AS NEEDED FOR INSTALLATION. U-SECTION POST LENGTHS SHALL BE 5'-6" FOR GROUND MOUNTED SIGNS WITH 2'-0" UPPER PANELS AND 5'-4" FOR PRIMARY SIGNS WITH 6" UPPER PANELS. EACH POST SHALL HAVE SEVEN BOLTS - THREE (3) IN EXIT SIGN AND FOUR (4) IN PRIMARY SIGN. WHERE PANELS ARE JOINED, PROVIDING TWO (2) SLOTS, ONE ABOVE THE OTHER, PLACE POSTS IN UPPER SLOTS WHERE ACCESS TO THE POST SPACING SHOWN ON REAR ELEVATION MAY BE ADJUSTED SOMEWHAT TO STAY CLEAR OF SIGN POSTS AND POST CLIPS.
2. ALL BOLTS, WASHERS AND NUTS IN THE FABRICATION OF EXTRUDED ALUMINUM SIGNS AND THE ATTACHMENT OF SAME TO STEEL BEAMS SHALL BE ALUMINUM ALLOY OF SAME SPECIFICATIONS. POST CLIP BOLTS AND BOLTS FOR U-SECTION POSTS SHALL HAVE HEADS DESIGNED TO FIT THE BOLT SLOTS IN THE PANELS. THE LOCK-NUTS SHALL BE TIGHTENED ON CLEAN, DRY, "AS RECEIVED" THREADS TO A TORQUE OF 150 in.• lbs.
3. UNLESS OTHERWISE SPECIFIED, THE BACKGROUND OF ALL DIRECTIONAL SIGNS (INCLUDING OVERHEAD SIGNS) SHALL BE INTERSTATE GREEN REFLECTORIZED SHEETING (AS PER STANDARD SPECIFICATIONS) DIRECT APPLIED TO 0.063 GAUGE SHEET ALUMINUM. LEGEND SHALL BE WHITE REFLECTORIZED, DIRECT APPLIED, ADHESIVE BACKED LETTERS, NUMBERS, SYMBOLS, AND BORDER.
4. SEE OTHER DRAWINGS FOR SELECTION AND DETAILS OF STEEL BEAMS FOR VERTICAL SUPPORTS (SIGN POST).
5. THE DETAILS OF SIGN FACE CONSTRUCTION SHOWN ON THIS SHEET ARE THE SAME FOR OVERHEAD SIGNS, BUT THE METHOD OF MOUNTING IS SHOWN ON OVERHEAD TRUSS DRAWINGS.
6. DATE OF ERECTION AND SIGN SIZE (WIDTH X HEIGHT) SHALL BE CLEARLY WRITTEN ON THE BACK OF EACH SIGN WITH A PERMANENT GREASE MARKER.
REVISION BY DATE
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
SIGN FACE CONST. AND ATTACHMENT OF GROUND MOUNTED DIRECTIONAL SIGNS TO STEEL BEAMS (EXTRUDED ALUMINUM PANELS)
MDOT
WORKING NUMBER SN-7
SHEET NUMBER 6313
ISSUE DATE: MAY 01, 2017
EXIT SIGN (WHEN REQ'D) 2-12" PANELS 8-6" PANEL
6" PANELS (AS REQUIRED)
12" PANELS (AS REQUIRED)
3' PANELS SHOWN 4' PANELS WILL HAVE (2) 12" CENTER RIVETS
PRIMARY SIGN
HORIZONTAL CENTER OF PANEL TYPICAL
3/16" x 7/16" GRIP RANGE ALUMINUM POP RIVITS (46)
SIGN FACE IS TO BE CONSTRUCTED OF 3' AND 4' 0.063 GAUGE ALUMINUM. 4' PANELS SHOULD HAVE PRECEDENCE OVER 3' PANELS.
EX. A 12' WIDE SIGN = (3) 4' PANELS. A 15' WIDE SIGN = (3) 4' + (1) 3'
PANEL BOLT, 3/8" - 16 UNC x 3/4" WITH FLAT WASHER AND HEX NUT (24" O.C.)
FRONT ELEVATION
POST CLIPS
REAR ELEVATION
U-SECTION POST (WHERE REQUIRED) (1)
POST CLIP BOLT 3/8" - 16 UNC x 2 1/2" WITH FLAT WASHER AND STOP NUT (WHERE REQUIRED) (2)
ALUMINUM POST CLIP
POST CLIP BOLT 3/8" - 16 UNC x 1 3/4" WIT-4 FLAT WAS-ER AND STOP NUT. (2)
STEEL BEAM (AS REQUIRED) (4)
0.063 GAUGE SHEET ALUMINUM WITH RETROREFLECTIVE SHEETING AND COPY.
SECTION A–A
SECTION B–B
6" PANEL
12" PANEL
NOTE: THE REQUIRED SECTION MODULUS (MINIMUM) ABOUT THE Y-Y AXIS (CENTER OF GRAVITY) IS:
12" PANELS - 8.703 in.3
6" PANELS - 6.357 in.3

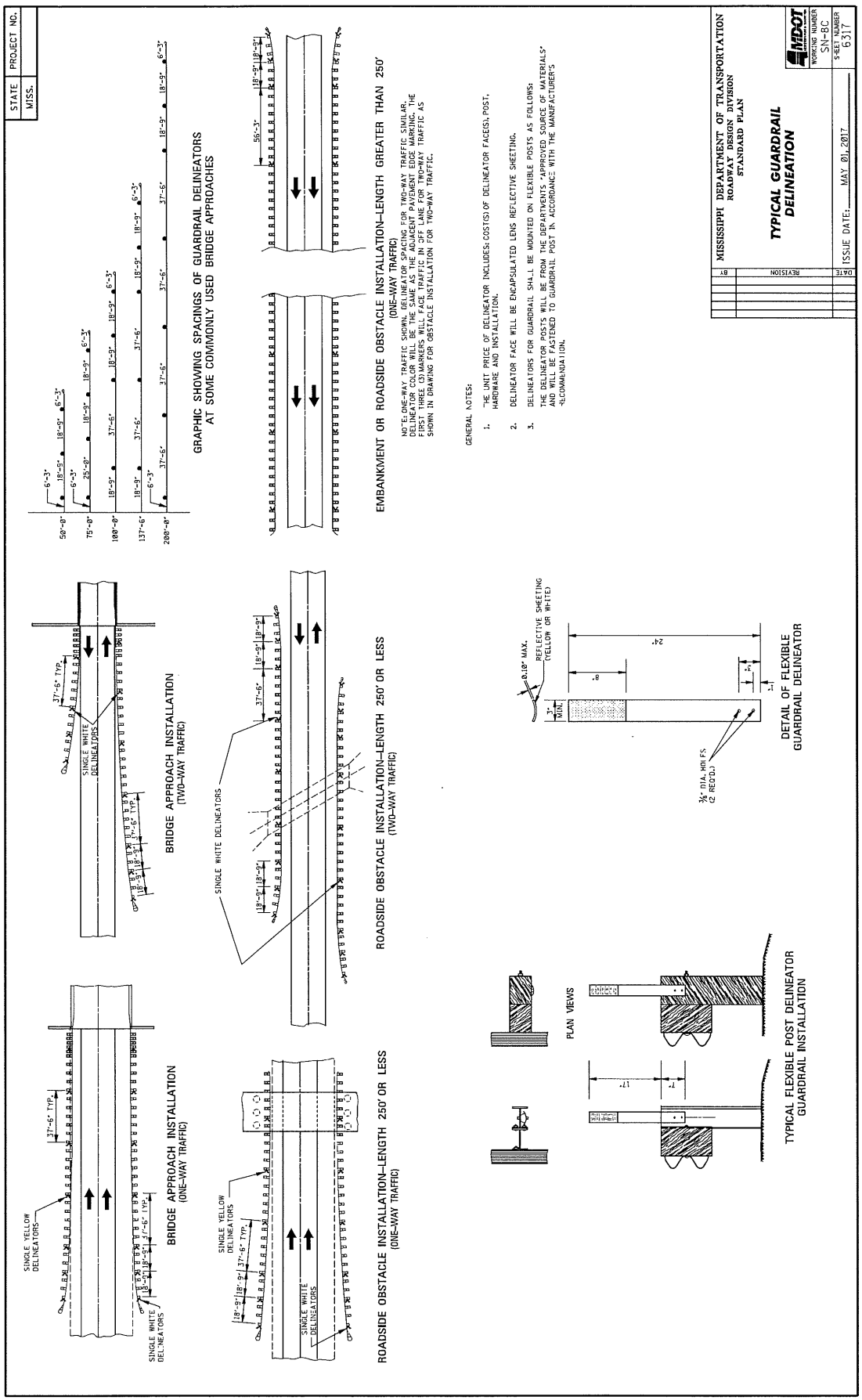

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TYPICAL INSTALLATION AND DETAILS OF DELINEATORS AND DISTANCE REFERENCE SIGNS
WORKING NUMBER SN-8
SHEET NUMBER 6314
ISSUE DATE: MAY 01, 2017
BY REVISION DATE
REAR VIEW OF DELINEATOR ASSEMBLY
DETAIL OF DOUBLE WHITE OR DOUBLE YELLOW DELINEATOR
DETAIL OF SINGLE WHITE OR SINGLE YELLOW DELINEATOR
MOUNTING DETAIL
GENERAL NOTES:
1. DELINEATORS AND TYPE 3 OBJECT MARKER S SHALL BE REFLECTIVE SHEETING ON 0.080" THICK ALUMINUM SHEET OR 14 GAGE GALVANIZED SHEET STEEL.
2. DELINEATOR, TYPE 3 OBJECT MARKER AND DISTANCE REFERENCE SIGN POSTS SHALL BE GALVANIZED STEEL. THE POSTS ARE TO BE FABRICATED BEFORE THE METAL IS GALVANIZED.
3. WEIGHT WITHOUT GROUND PLATES:
A. DELINEATOR POST 7'-0" - 2.0 lb/ft- TO 2.5 lb/ft
B. TYPE 3 OBJECT MARKER POST 9'-0" - 2.5 lb/ft TO 3.0 lb/ft
C. DISTANCE REFERENCE SIGN POST 10'-0",11'-0", & 12'-0" - 3.0 lb/ft TO 3.5 lb/ft
4. UNIT PRICE OF DELINEATORS AND TYPE 3 OBJECT MARKERS SHALL INCLUDE COST OF POST. DISTANCE REFERENCE SIGN POST WILL BE PAID FOR PER FOOT.
5. RADIUS IN BENDS OF POST CROSS SECTION NOT TO EXCEED 1/8 FOR HOT ROLLED SECTION.
6. GROUND PLATE NOT REQUIRED ON U-SECTION POST.
REAR VIEW OF TYPE 3 OBJECT MARKER OR DISTANCE REFERENCE SIGN ASSEMBLY
DETAIL OF TYPE 3 OBJECT MARKER
DETAIL OF TYPE 3 OBJECT MARKER INSTALLATION
DISTANCE REFERENCE SIGN MOUNTING ON OUTSIDE SHOULDER ALONG MAIN FACILITY
DELINEATOR MOUNTING ON OUTSIDE SHOULDER ALONG MAIN FACILITY OR RAMP
DELINEATOR MOUNTING ON OUTSIDE SHOULDER WITH MOUNTABLE CURB ALONG MAIN FACILITY OR RAMP
DELINEATOR MOUNTING ON INTERCHANGE LOOPS WITH UNMOUNTABLE CURB ON INSIDE

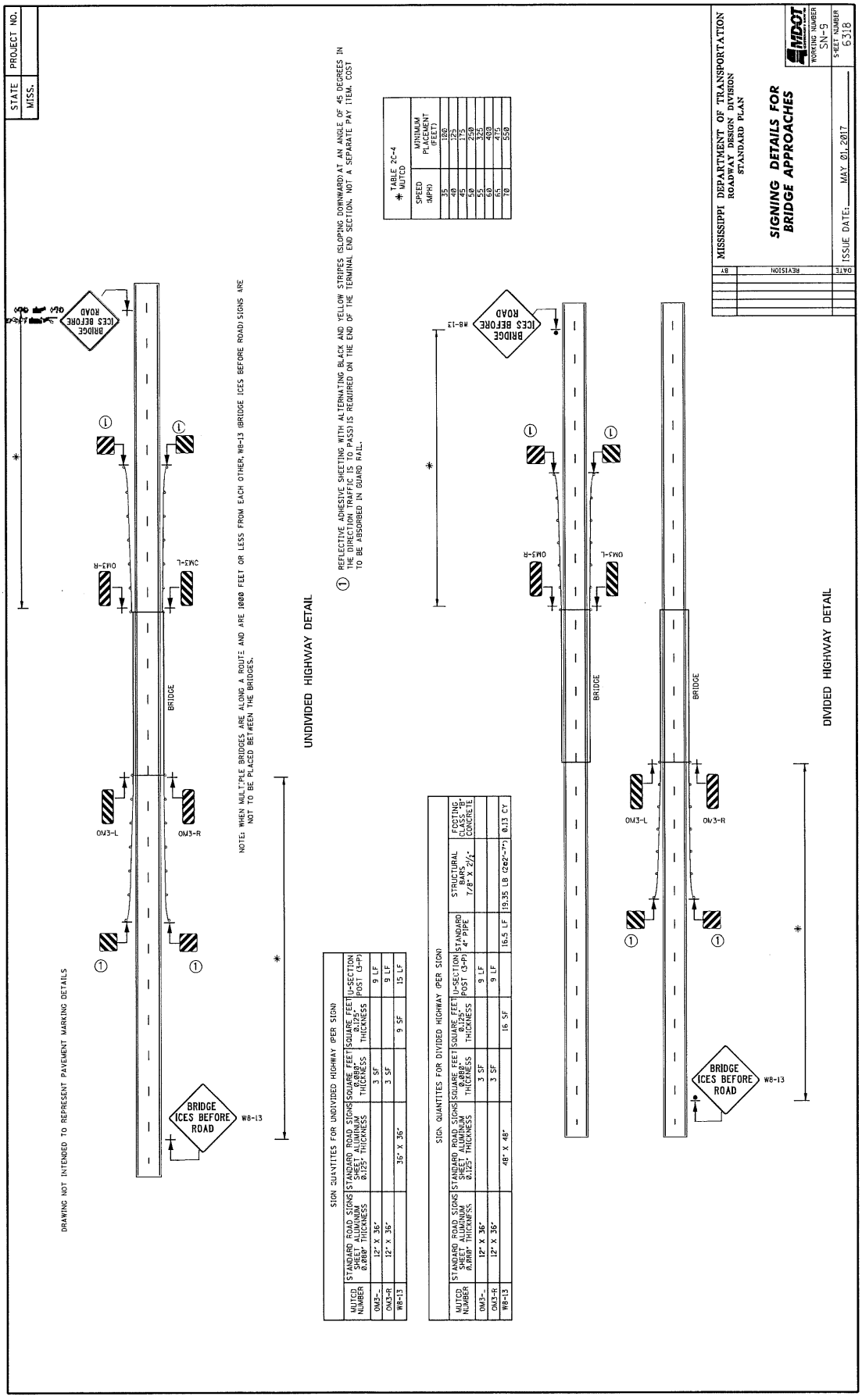


SPACING FOR DELINEATORS ON HORIZONTAL CURVES (ft)

D DEGREE OF CURVE	R CURVE RADIUS (ft)	"S"* SPACING ON CURVE	SPACING IN ADVANCE AND BEYOND CURVES * 1ST SPACE 2S	2ND SPACE 3S	3RD SPACE 6S
0°- 15'	22,918	300	300	300	300
0°- 20'	17,185.23	300	300	300	300
0°- 30'	11,459.16	300	300	300	300
0°- 40'	8594.37	280	300	300	300
0°- 45'	7639.44	260	300	300	300
1°- 00'	5729.58	245	300	300	300
1°- 15'	4583.66	225	300	300	300
1°- 30'	3819.72	185	300	300	300
1°- 45'	3274.04	170	300	300	300
2°- 00'	2864.79	160	300	300	300
2°- 15'	2546.48	150	300	300	300
2°- 30'	2291.83	140	290	300	300
2°- 45'	2083.48	135	270	300	300
3°- 00'	1909.86	130	260	300	300
3°- 30'	1637.02	120	240	300	300
4°- 00'	1432.39	110	220	300	300
4°- 30'	1273.24	100	200	300	300
5°- 00'	1146.28	75	150	225	300
	500.00	65	130	195	300
	350.00	50	100	150	300
	300.00	45	90	135	270
	250.00	40	80	120	240
	200.00	35	70	105	210
	150.00	30	60	90	180


STATE
MISS.
PROJECT NO.
DELINEATOR MOUNTING ON CURBED CROSSOVER
FACE OF CURB
DELINEATOR MOUNTING ON CROSSOVER WITH USABLE SHOULDER
EDGE OF SURFACED SHOULDER
REFLECTIVE SHEETING (YELLOW)
REFLECTIVE SHEETING (YELLOW) DELINEATOR FACES
DETAIL OF TYPE II FLEXIBLE POST DELINEATOR
REFLECTIVE SHEETING (YELLOW) DELINEATOR FACE
DETAIL OF TYPE I FLEXIBLE POST DELINEATOR
NOTE: CARSONITE'S CURV-FLEX DELINEATOR POSTS ARE SHOWN. OTHER "FLEXIBLE POSTS THAT HAVE BEEN APPROVED FOR LISTING IN THE DEPARTMENT'S "APPROVED SOURCE OF MATERIALS" MAY BE FURNISHED.
TYPICAL DELINEATION AT A CURBED CROSSOVER WITH A MEDIAN WIDTH OVER 42'-0"
TYPICAL DELINEATION AT A CROSSOVER WITH USABLE SHOULDERS AND A MEDIAN WIDTH OVER 42'-0"
TYPICAL DELINEATION AT A CURBED CROSSOVER WITH A MEDIAN WIDTH OF 42'-0" OR LESS
TYPICAL DELINEATION AT A CROSSOVER WITH USABLE SHOULDERS AND A MEDIAN WIDTH OF 42'-0" OR LESS
NOTE: PLACE DELINEATORS NO MORE THAN 20'-0" FROM EDGE OF TRAVEL LANES EDGES.
GENERAL NOTES:
1. THE UNIT PRICE OF DELINEATOR INCLUDES COST(S) OF DELINEATOR FACE(S), POST, HARDWARE AND INSTALLATION.
2. DELINEATOR FACE WILL BE ENCAPSULATED LENS REFLECTIVE SHEETING.
3. POST REQUIRING THE INSTALLATION OF A BASE SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
4. THE COLOR OF DELINEATORS SHALL BE THE COLOR OF THE ADJACENT EDGELINE PER MUTCD SECTION 3F.03.
BY
REVISION
DATE
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TYPICAL CROSSOVER DELINEATION
MDOT
WORKING NUMBER SN-88
SHEET NUMBER 6316
ISSUE DATE: MAY 01, 2017


STATE MISS.
PROJECT NO.
GRAPHIC SHOWING SPACINGS OF GUARDRAIL DELINEATORS AT SOME COMMONLY USED BRIDGE APPROACHES
50'-0" 6'-3" 18'-9" 18'-9" 6'-3"
75'-0" 6'-3" 25'-0" 18'-9" 18'-9" 6'-3"
100'-0" 18'-9" 37'-6" 18'-9" 18'-9" 6'-3"
137'-6" 18'-9" 37'-6" 37'-6" 18'-9" 6'-3"
200'-0" 6'-3" 37'-6" 37'-6" 37'-6" 18'-9" 18'-9" 6'-3"
BRIDGE APPROACH INSTALLATION (ONE-WAY TRAFFIC)
SINGLE YELLOW DELINEATORS
37'-6" TYP.
SINGLE WHITE DELINEATORS
BRIDGE APPROACH INSTALLATION (TWO-WAY TRAFFIC)
37'-6" TYP.
SINGLE WHITE DELINEATORS
ROADSIDE OBSTACLE INSTALLATION-LENGTH 250' OR LESS (ONE-WAY TRAFFIC)
SINGLE YELLOW DELINEATORS
18'-9" 18'-9" 37'-6" TYP.
SINGLE WHITE DELINEATORS
ROADSIDE OBSTACLE INSTALLATION-LENGTH 250' OR LESS (TWO-WAY TRAFFIC)
SINGLE WHITE DELINEATORS
37'-6" 18'-9" 18'-9"
18'-9" 18'-9"
EMBANKMENT OR ROADSIDE OBSTACLE INSTALLATION-LENGTH GREATER THAN 250' (ONE-WAY TRAFFIC)
56'-3" 18'-9" 18'-9"
NOTE: ONE-WAY TRAFFIC SHOWN. DELINEATOR SPACING FOR TWO-WAY TRAFFIC SIMILAR. DELINEATOR COLOR WILL BE THE SAME AS THE ADJACENT PAVEMENT EDGE MARKING. THE FIRST THREE (3) MARKERS WILL FACE TRAFFIC IN OFF LANE FOR TWO-WAY TRAFFIC AS SHOWN IN DRAWING FOR OBSTACLE INSTALLATION FOR TWO-WAY TRAFFIC.
GENERAL NOTES:
1. THE UNIT PRICE OF DELINEATOR INCLUDES: COST(S) OF DELINEATOR FACE(S), POST, HARDWARE AND INSTALLATION.
2. DELINEATOR FACE WILL BE ENCAPSULATED LENS REFLECTIVE SHEETING.
3. DELINEATORS FOR GUARDRAIL SHALL BE MOUNTED ON FLEXIBLE POSTS AS FOLLOWS: THE DELINEATOR POSTS WILL BE FROM THE DEPARTMENTS "APPROVED SOURCE OF MATERIALS" AND WILL BE FASTENED TO GUARDRAIL POST IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
0.18" MAX.
REFLECTIVE SHEETING (YELLOW OR WHITE)
3" MIN.
8"
24"
3/8" DIA. HOLES (2 REQ'D.)
DETAIL OF FLEXIBLE GUARDRAIL DELINEATOR
PLAN VIEWS
TYPICAL FLEXIBLE POST DELINEATOR GUARDRAIL INSTALLATION
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TYPICAL GUARDRAIL DELINEATION
MDOT
WORKING NUMBER SN-BC
SHEET NUMBER 6317
ISSUE DATE: MAY 01, 2017
DATE REVISION BY


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
SIGNING DETAILS FOR BRIDGE APPROACHES
WORKING NUMBER SN-9
SHEET NUMBER 6318
ISSUE DATE: MAY 01, 2017
REVISION
BY
DATE
DRAWING NOT INTENDED TO REPRESENT PAVEMENT MARKING DETAILS
NOTE: WHEN MULTIPLE BRIDGES ARE ALONG A ROUTE AND ARE 1000 FEET OR LESS FROM EACH OTHER, W8-13 (BRIDGE ICES BEFORE ROAD) SIGNS ARE NOT TO BE PLACED BETWEEN THE BRIDGES.
UNDIVIDED HIGHWAY DETAIL
DIVIDED HIGHWAY DETAIL
BRIDGE ICES BEFORE ROAD
W8-13
OM3-L
OM3-R
BRIDGE
① REFLECTIVE ADHESIVE SHEETING WITH ALTERNATING BLACK AND YELLOW STRIPES (SLOPING DOWNWARD) AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS) IS REQUIRED ON THE END OF THE TERMINAL END SECTION. NOT A SEPARATE PAY ITEM. COST TO BE ABSORBED IN GUARD RAIL.
* TABLE 2C-4 MUTCD
SPEED (MPH) | MINIMUM PLACEMENT (FEET)
35 | 100
40 | 125
45 | 175
50 | 250
55 | 325
60 | 400
65 | 475
70 | 550
SIGN QUANTITIES FOR UNDIVIDED HIGHWAY (PER SIGN)
MUTCD NUMBER | STANDARD ROAD SIGNS SHEET ALUMINUM 0.080" THICKNESS | STANDARD ROAD SIGNS SHEET ALUMINUM 0.125" THICKNESS | SQUARE FEET ALUMINUM PANELS THICKNESS | SQUARE FEET 0.125" THICKNESS | U-SECTION POST (3-P)
OM3-_ | 12" X 36" | | 3 SF | | 9 LF
OM3-R | 12" X 36" | | 3 SF | | 9 LF
W8-13 | | 36" X 36" | | 9 SF | 15 LF
SIGN QUANTITES FOR DIVIDED HIGHWAY (PER SIGN)
MUTCD NUMBER | STANDARD ROAD SIGNS SHEET ALUMINUM 0.080" THICKNESS | STANDARD ROAD SIGNS SHEET ALUMINUM 0.125" THICKNESS | SQUARE FEET 0.080" THICKNESS | SQUARE FEET 0.125" THICKNESS | U-SECTION POST (3-P) | STANDARD 4" PIPE | STRUCTURAL BARS 1/8" X 2½" | FOOTING CLASS "B" CONCRETE
OM3-_ | 12" X 36" | | 3 SF | | 9 LF | | | |
OM3-R | 12" X 36" | | 3 SF | | 9 LF | | | |
W8-13 | | 48" X 48" | | 16 SF | | 16.5 LF | 19.35 LB (2@2-7") | 0.13 CY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 – NOTICE TO BIDDERS NO. 3599 **CODE: (SP)**

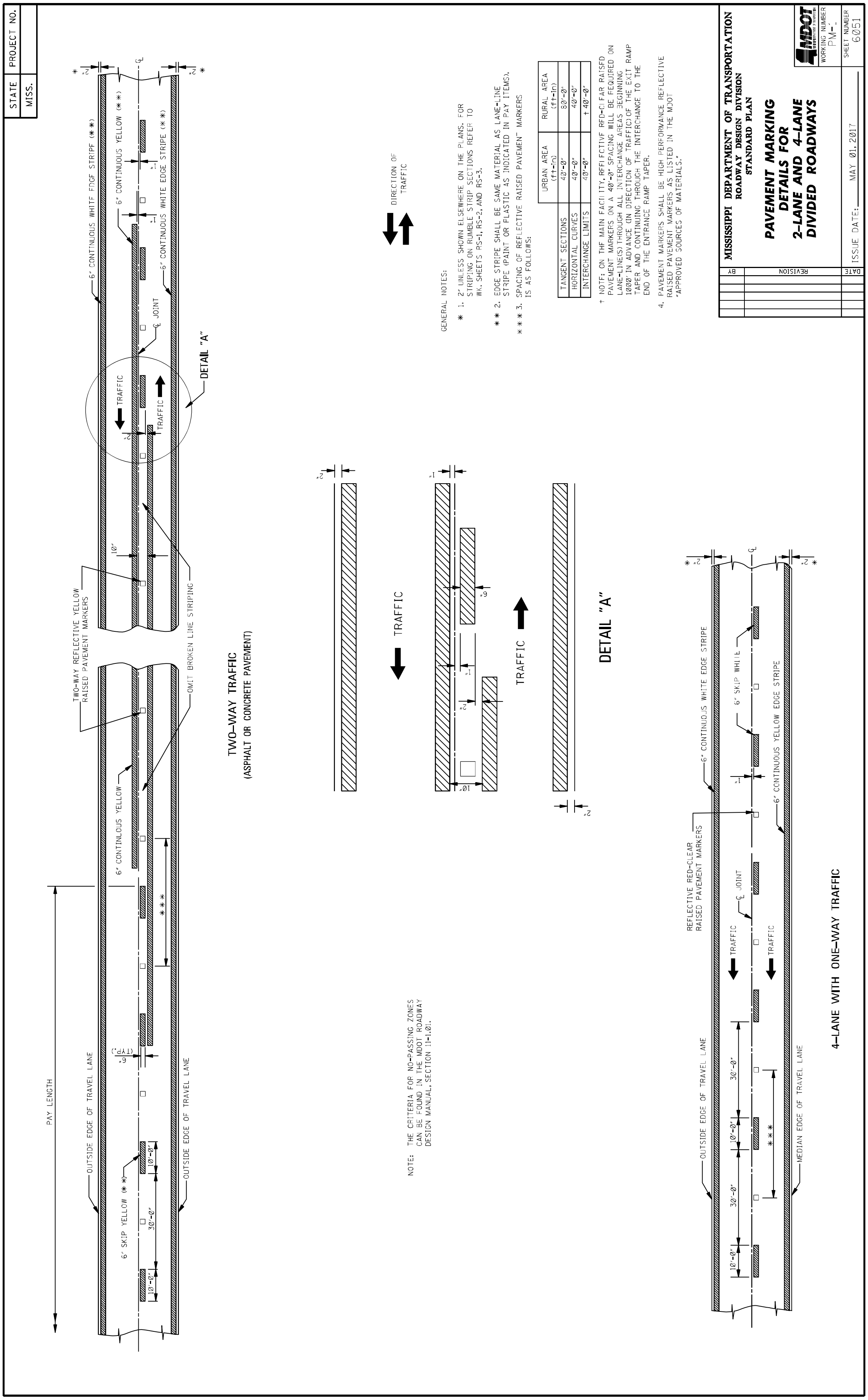
DATE: 08/11/2021

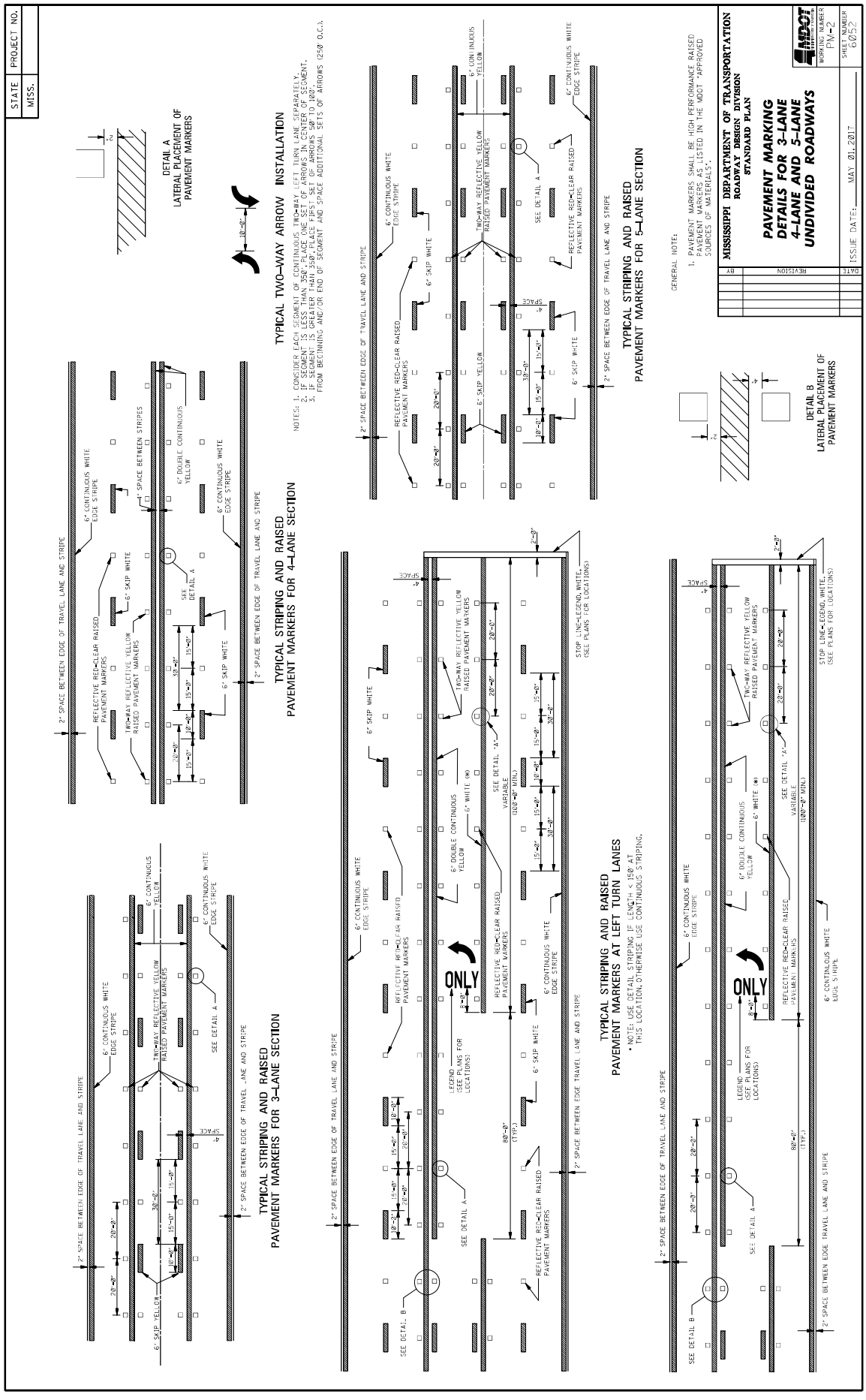
SUBJECT: Standard Drawings

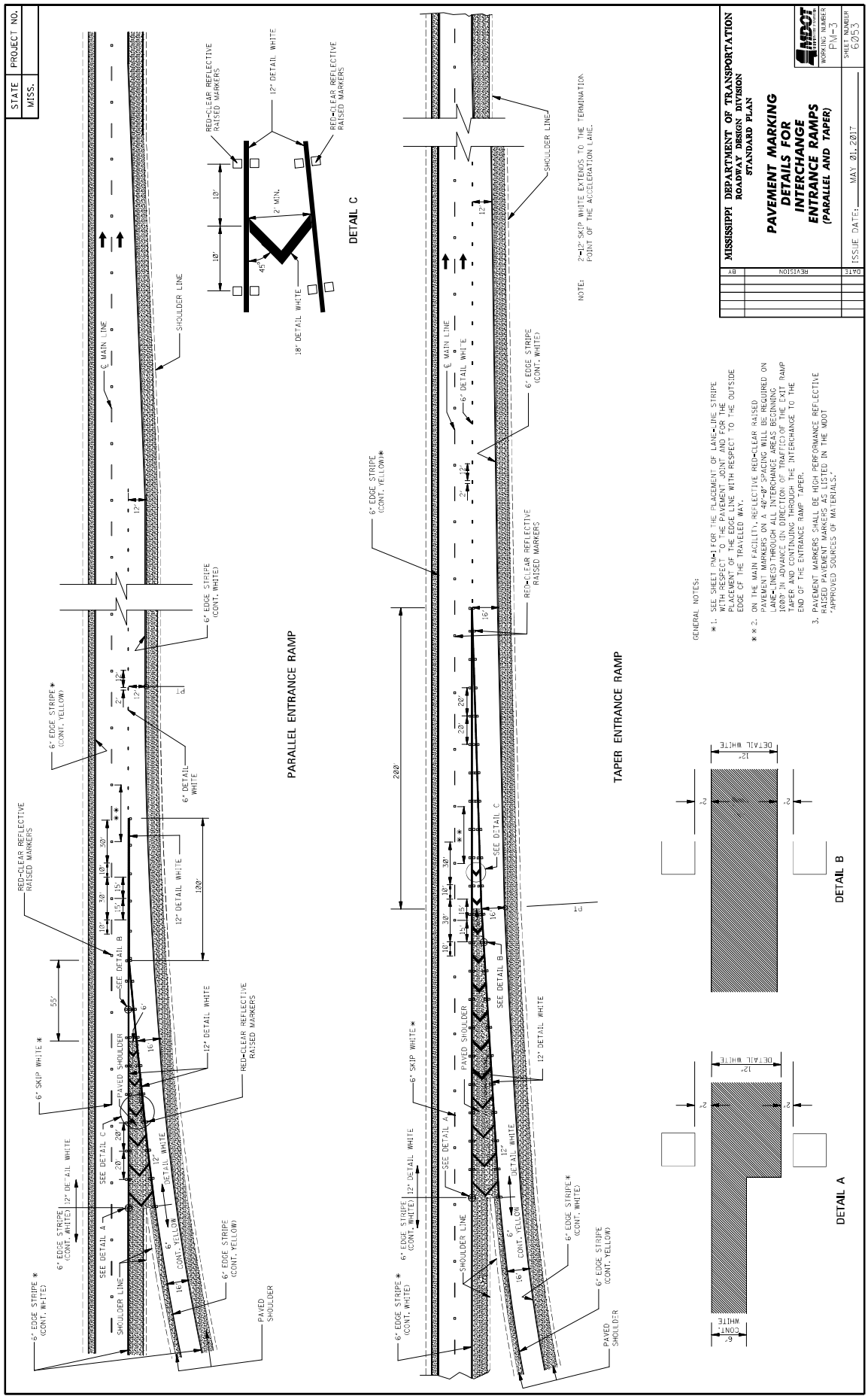
Standard Drawings attached hereto shall govern appropriate items of required work.

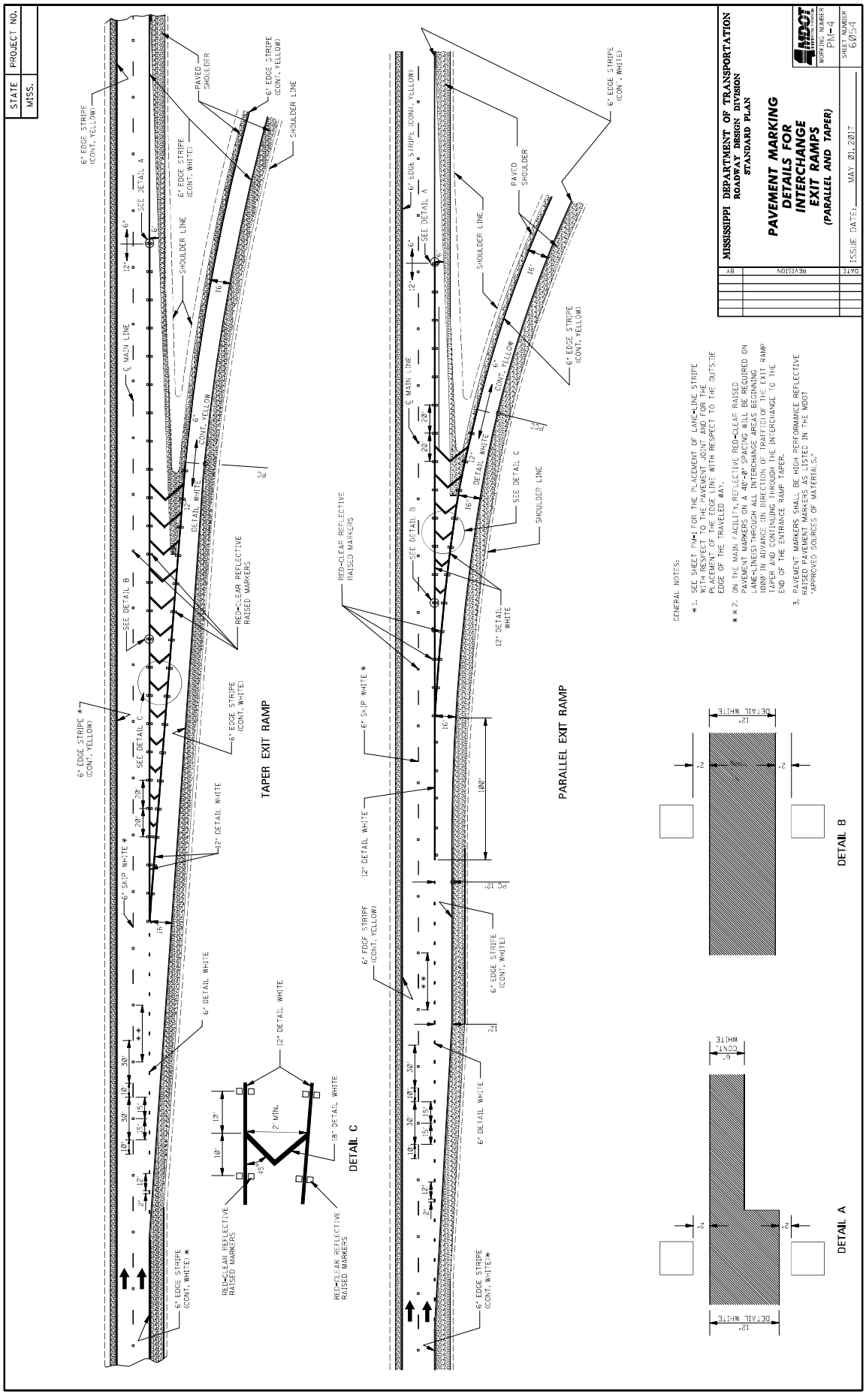
Larger copies of Standard Drawings may be purchased from:

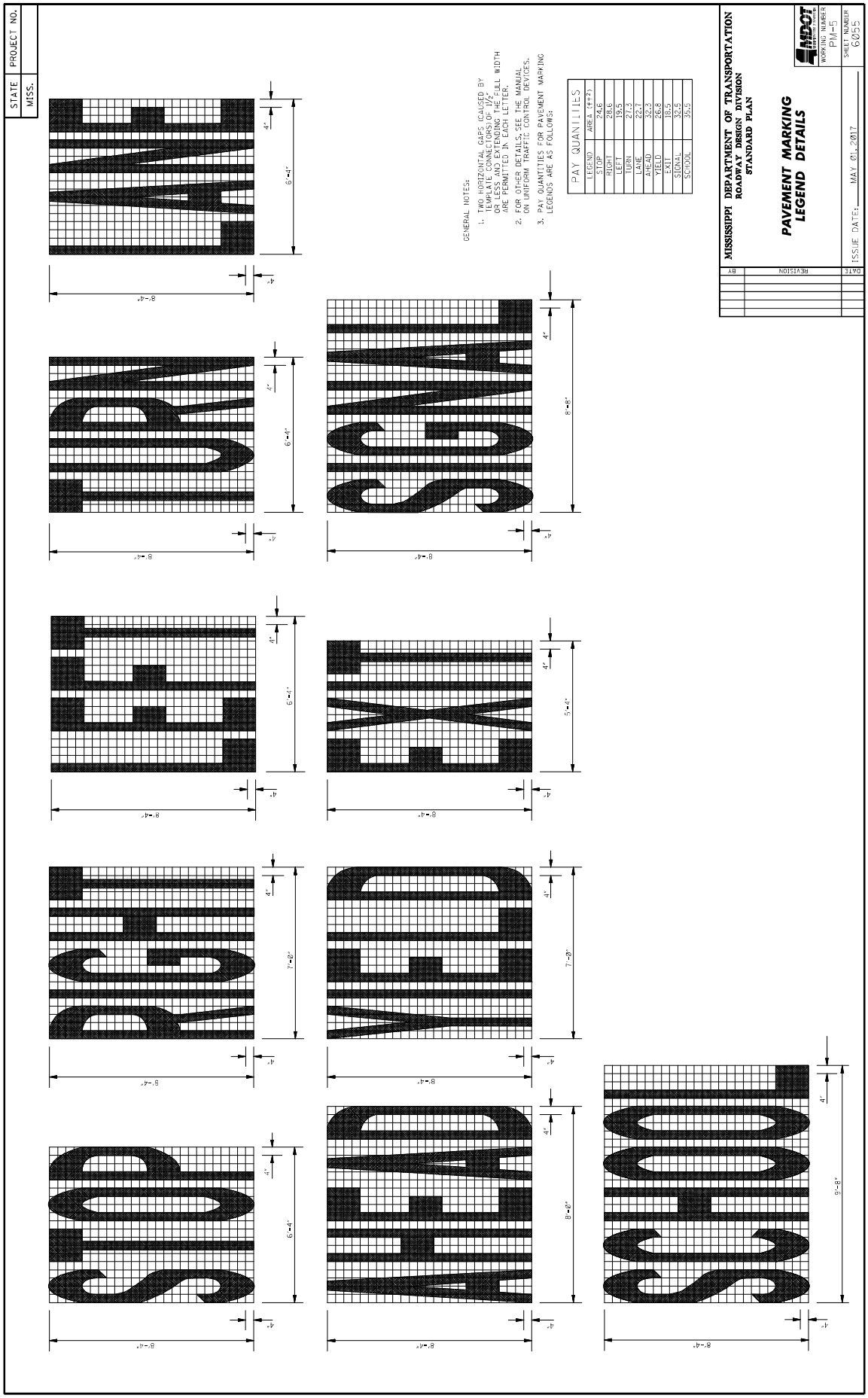
MDOT Plans Print Shop
MDOT Shop Complex, Building C, Room 114
2567 North West Street
P.O. Box 1850
Jackson, MS 39215-1850
Telephone: (601) 359-7460
or FAX: (601) 359-7461
or e-mail: plans@mdot.state.ms.us

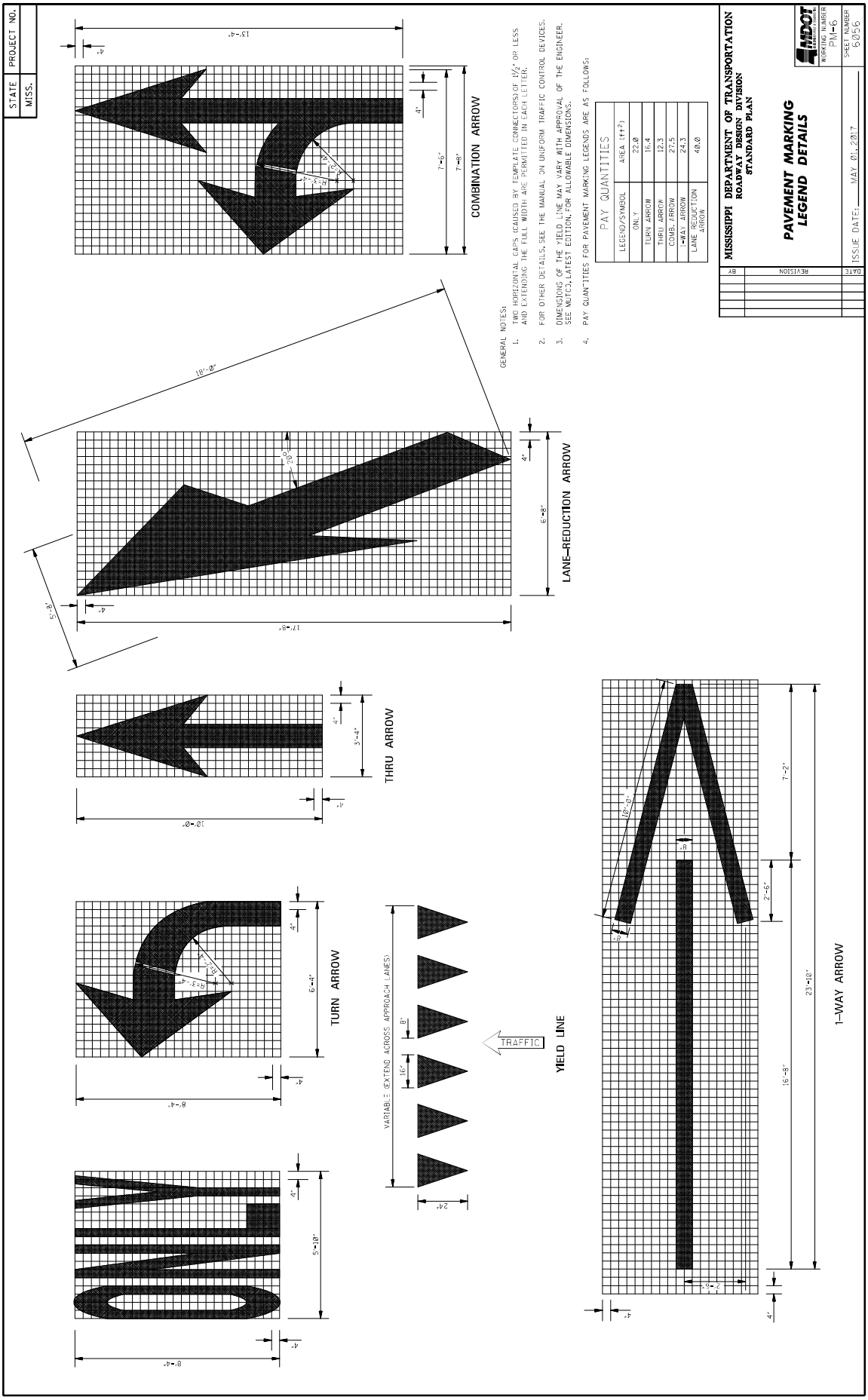

STATE MISS. PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
PAVEMENT MARKING DETAILS FOR 2-LANE AND 4-LANE DIVIDED ROADWAYS
ISSUE DATE: MAY 01, 2017
WORKING NUMBER PM-2
SHEET NUMBER 6051
DATE REVISION BY
TWO-WAY TRAFFIC
(ASPHALT OR CONCRETE PAVEMENT)
DETAIL "A"
4-LANE WITH ONE-WAY TRAFFIC
PAY LENGTH
OUTSIDE EDGE OF TRAVEL LANE
6" SKIP YELLOW (**)
6" CONTINUOUS YELLOW
TWO-WAY REFLECTIVE YELLOW RAISED PAVEMENT MARKERS
OMIT BROKEN LINE STRIPING
6" CONTINUOUS WHITE EDGE STRIPE (**)
6" CONTINUOUS YELLOW (**)
℄ JOINT
TRAFFIC
DIRECTION OF TRAFFIC
REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS
6" CONTINUOUS WHITE EDGE STRIPE
6" SKIP WHITE
6" CONTINUOUS YELLOW EDGE STRIPE
MEDIAN EDGE OF TRAVEL LANE
NOTE: THE CRITERIA FOR NO-PASSING ZONES CAN BE FOUND IN THE MDOT ROADWAY DESIGN MANUAL, SECTION 11-1.01.
GENERAL NOTES:
* 1. 2" UNLESS SHOWN ELSEWHERE ON THE PLANS. FOR STRIPING ON RUMBLE STRIP SECTIONS REFER TO WK. SHEETS RS-1, RS-2, AND RS-3.
** 2. EDGE STRIPE SHALL BE SAME MATERIAL AS LANE-LINE STRIPE (PAINT OR PLASTIC AS INDICATED IN PAY ITEMS).
*** 3. SPACING OF REFLECTIVE RAISED PAVEMENT MARKERS IS AS FOLLOWS:
URBAN AREA (ft-in) | RURAL AREA (ft-in)
TANGENT SECTIONS 40'-0" 80'-0"
HORIZONTAL CURVES 40'-0" 40'-0"
INTERCHANGE LIMITS 40'-0" †40'-0"
† NOTE: ON THE MAIN FACILITY, REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS ON A 40'-0" SPACING WILL BE REQUIRED ON LANE-LINE(S) 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.
4. PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE REFLECTIVE RAISED PAVEMENT MARKERS AS LISTED IN THE MDOT "APPROVED SOURCES OF MATERIALS."

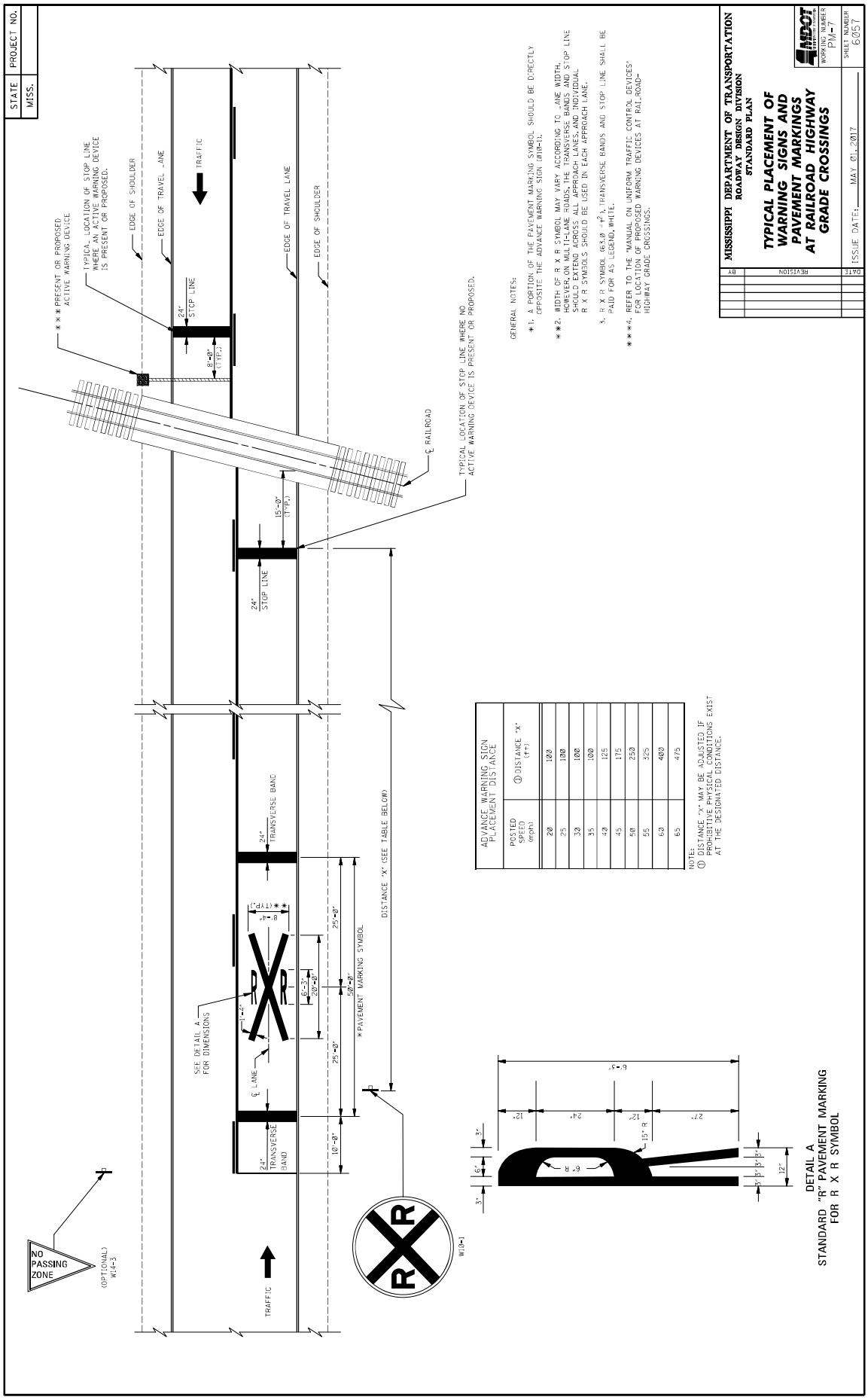

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
PAVEMENT MARKING
DETAILS FOR 3-LANE
4-LANE AND 5-LANE
UNDIVIDED ROADWAYS
WORKING NUMBER PM-2
SHEET NUMBER 6052
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
GENERAL NOTE:
1. PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE RAISED PAVEMENT MARKERS AS LISTED IN THE MDOT "APPROVED SOURCES OF MATERIALS".
TYPICAL STRIPING AND RAISED PAVEMENT MARKERS FOR 3-LANE SECTION
TYPICAL STRIPING AND RAISED PAVEMENT MARKERS FOR 4-LANE SECTION
TYPICAL STRIPING AND RAISED PAVEMENT MARKERS FOR 5-LANE SECTION
TYPICAL STRIPING AND RAISED PAVEMENT MARKERS AT LEFT TURN LANES
* NOTE: USE DETAIL STRIPING IF LENGTH < 150' AT THIS LOCATION, OTHERWISE USE CONTINUOUS STRIPING.
TYPICAL TWO-WAY ARROW INSTALLATION
NOTES: 1. CONSIDER EACH SEGMENT OF CONTINUOUS TWO-WAY LEFT TURN LANE SEPARATELY.
2. IF SEGMENT IS LESS THAN 350' PLACE ONE SET OF ARROWS AT CENTER OF SEGMENT.
3. IF SEGMENT IS GREATER THAN 350' PLACE FIRST SET OF ARROWS 50' TO 100' FROM BEGINNING AND/OR END OF SEGMENT AND SPACE ADDITIONAL SETS OF ARROWS (250' O.C.).
DETAIL A
LATERAL PLACEMENT OF PAVEMENT MARKERS
DETAIL B
LATERAL PLACEMENT OF PAVEMENT MARKERS
6" CONTINUOUS WHITE EDGE STRIPE
6" SKIP WHITE
6" DOUBLE CONTINUOUS YELLOW
6" CONTINUOUS YELLOW
TWO-WAY REFLECTIVE YELLOW RAISED PAVEMENT MARKERS
REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS
2" SPACE BETWEEN EDGE OF TRAVEL LANE AND STRIPE
2" SPACE BETWEEN EDGE TRAVEL LANE AND STRIPE
6" WHITE (**)
SEE DETAIL A
SEE DETAIL B
SEE DETAIL "A"
LEGEND (SEE PLANS FOR LOCATIONS)
ONLY
STOP LINE-LEGEND, WHITE, (SEE PLANS FOR LOCATIONS)
VARIABLE (100'-0" MIN.)
80'-0" (TYP.)
SPACE
2'-0"
20'-0"
15'-0"
30'-0"
10'-0"

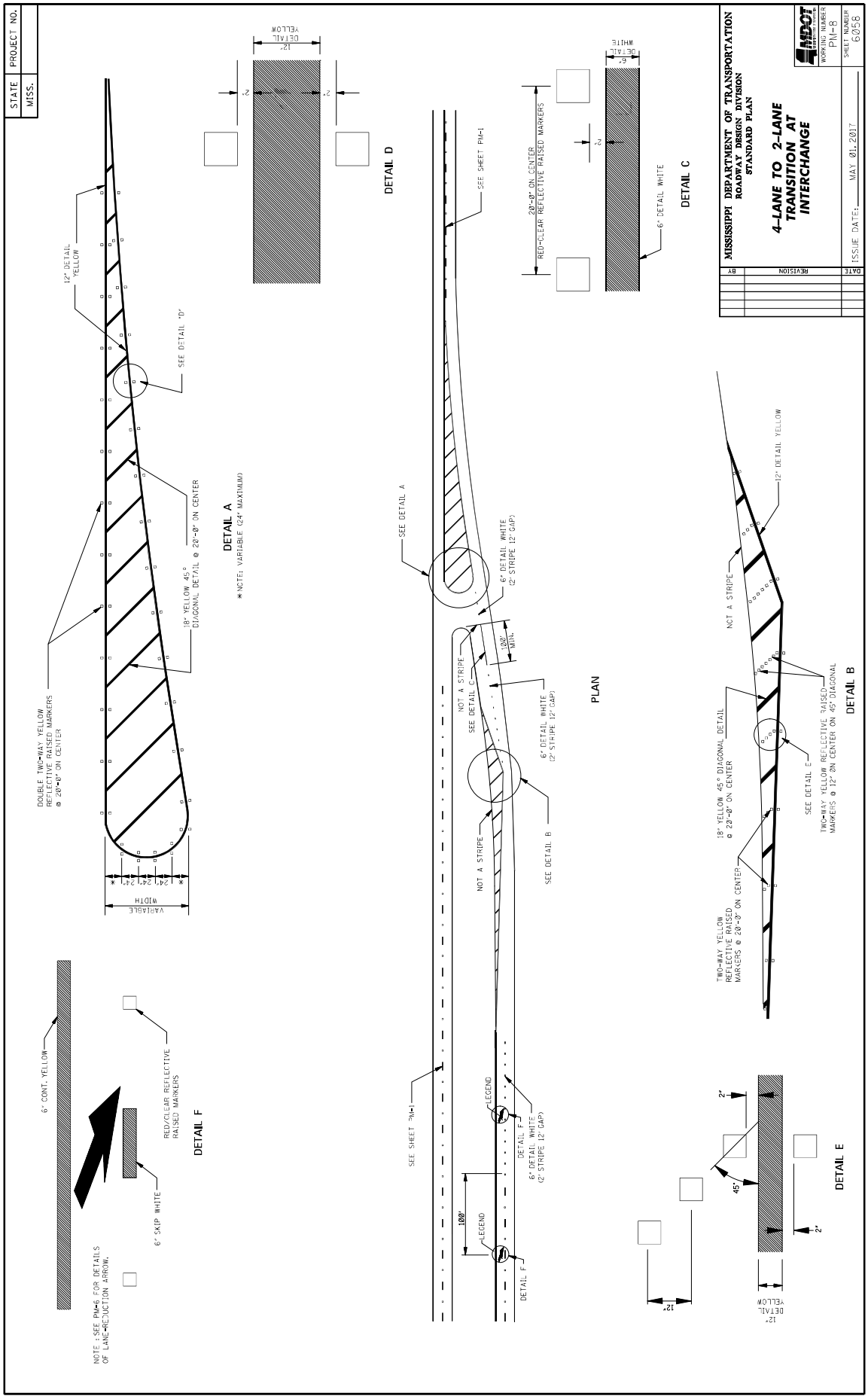

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
PAVEMENT MARKING DETAILS FOR INTERCHANGE ENTRANCE RAMPS (PARALLEL AND TAPER)
WORKING NUMBER FM-3
SHEET NUMBER 6055
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
PARALLEL ENTRANCE RAMP
TAPER ENTRANCE RAMP
DETAIL A
DETAIL B
DETAIL C
GENERAL NOTES:
*1. SEE SHEET FM-1 FOR THE PLACEMENT OF LANE-LINE STRIPE WITH RESPECT TO THE PAVEMENT JOINT AND FOR THE PLACEMENT OF THE EDGE LINE WITH RESPECT TO THE OUTSIDE EDGE OF THE TRAVELED WAY.
**2. ON THE MAIN FACILITY, REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS ON A 40'-0" SPACING WILL BE REQUIRED ON LANE-LINE(S) 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.
3. PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE REFLECTIVE RAISED PAVEMENT MARKERS AS LISTED IN THE MDOT "APPROVED SOURCES OF MATERIALS."
NOTE: 2-12" SKIP WHITE EXTENDS TO THE TERMINATION POINT OF THE ACCELERATION LANE.

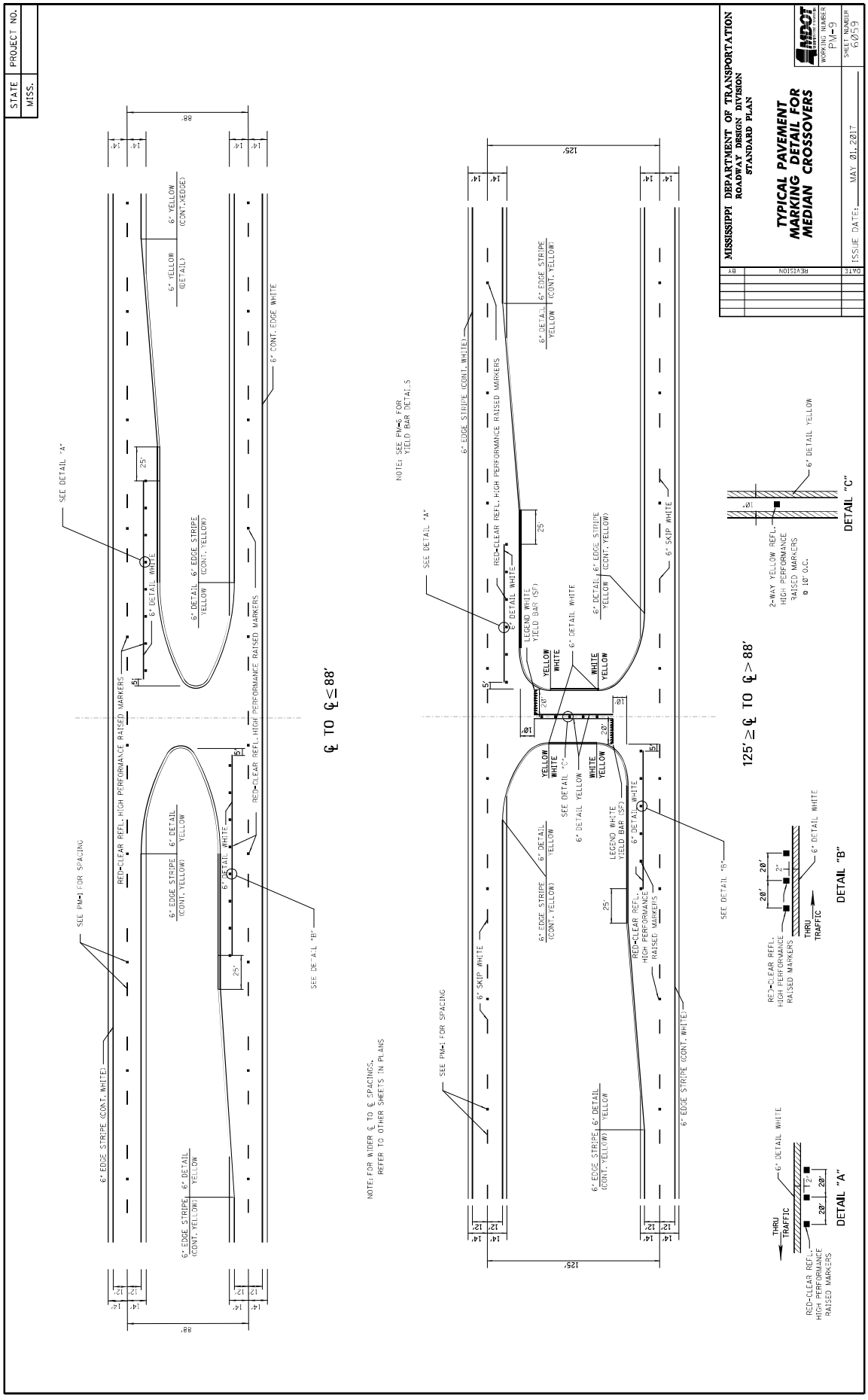

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
PAVEMENT MARKING DETAILS FOR INTERCHANGE EXIT RAMPS
(PARALLEL AND TAPER)
WORKING NUMBER PIN-4
SHEET NUMBER 6054
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
TAPER EXIT RAMP
PARALLEL EXIT RAMP
DETAIL A
DETAIL B
DETAIL C
GENERAL NOTES:
*1: SEE SHEET PM-1 FOR THE PLACEMENT OF LANE-LINE STRIPE WITH RESPECT TO THE PAVEMENT JOINT AND/OR THE PLACEMENT OF THE EDGE LINE WITH RESPECT TO THE OUTSIDE EDGE OF THE TRAVELED WAY.
**2: ON THE MAIN FACILITY, REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS ON A 40'-0" SPACING WILL BE REQUIRED ON LANE-LINE(S) 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.
3. PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE REFLECTIVE RAISED PAVEMENT MARKERS AS LISTED IN THE MDOT "APPROVED SOURCES OF MATERIALS."

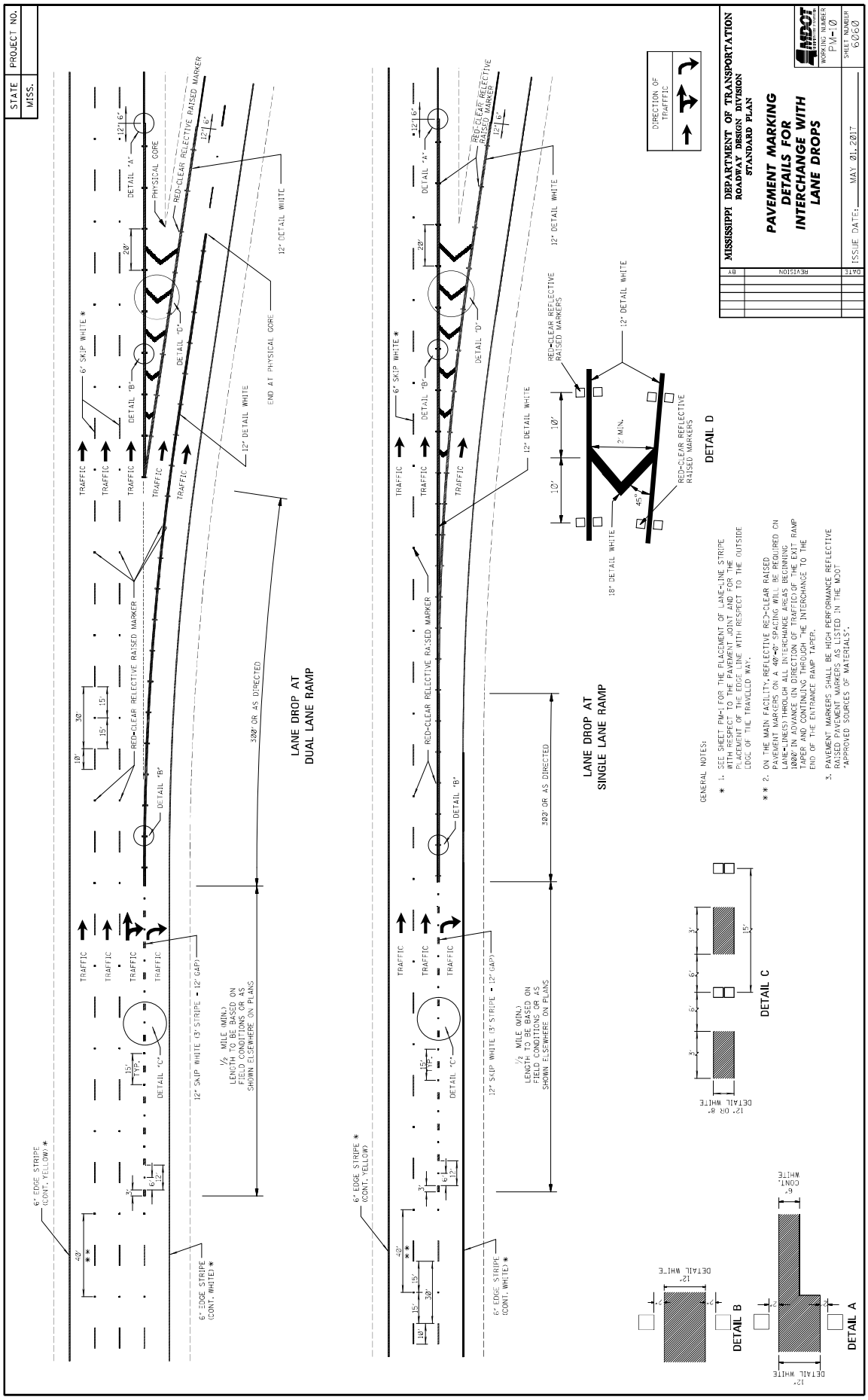

STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
PAVEMENT MARKING
LEGEND DETAILS
WORKING NUMBER
PM-5
SHEET NUMBER
6055
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
GENERAL NOTES:
1. TWO HORIZONTAL GAPS (CAUSED BY TEMPLATE CONNECTORS) OF 1½" OR LESS AND EXTENDING THE FULL WIDTH ARE PERMITTED IN EACH LETTER.
2. FOR OTHER DETAILS, SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. PAY QUANTITIES FOR PAVEMENT MARKING LEGENDS ARE AS FOLLOWS:
PAY QUANTITIES
LEGEND
AREA (SF)
STOP
24.6
RIGHT
28.6
LEFT
19.5
TURN
27.3
LANE
22.7
AHEAD
32.3
YIELD
26.8
EXIT
18.5
SIGNAL
32.5
SCHOOL
35.5

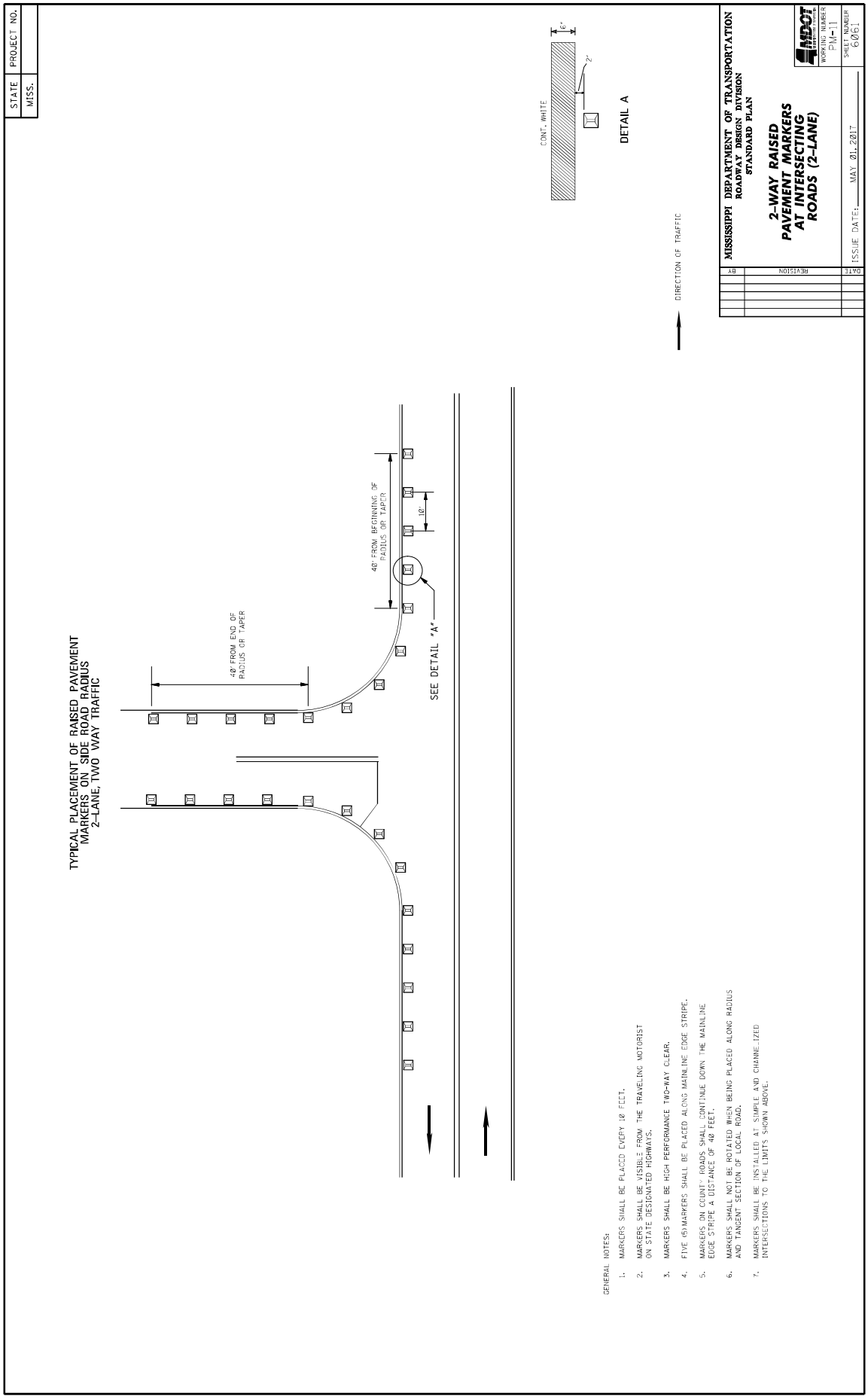

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
PAVEMENT MARKING LEGEND DETAILS
WORKING NUMBER PM-6
SHEET NUMBER 6056
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
GENERAL NOTES:
1. TWO HORIZONTAL CAPS (CAUSED BY TEMPLATE CONNECTORS) OF 1½" OR LESS AND EXTENDING THE FULL WIDTH ARE PERMITTED IN EACH LETTER.
2. FOR OTHER DETAILS, SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. DIMENSIONS OF THE YIELD LINE MAY VARY WITH APPROVAL OF THE ENGINEER. SEE MUTCD, LATEST EDITION, FOR ALLOWABLE DIMENSIONS.
4. PAY QUANTITIES FOR PAVEMENT MARKING LEGENDS ARE AS FOLLOWS:
PAY QUANTITIES
LEGEND/SYMBOL | AREA (ft²)
ONLY | 22.0
TURN ARROW | 16.4
THRU ARROW | 12.3
COMB. ARROW | 27.5
1-WAY ARROW | 24.3
LANE REDUCTION ARROW | 40.0
COMBINATION ARROW
LANE-REDUCTION ARROW
THRU ARROW
TURN ARROW
YIELD LINE
TRAFFIC
VARIABLE (EXTEND ACROSS APPROACH LANES)
1-WAY ARROW

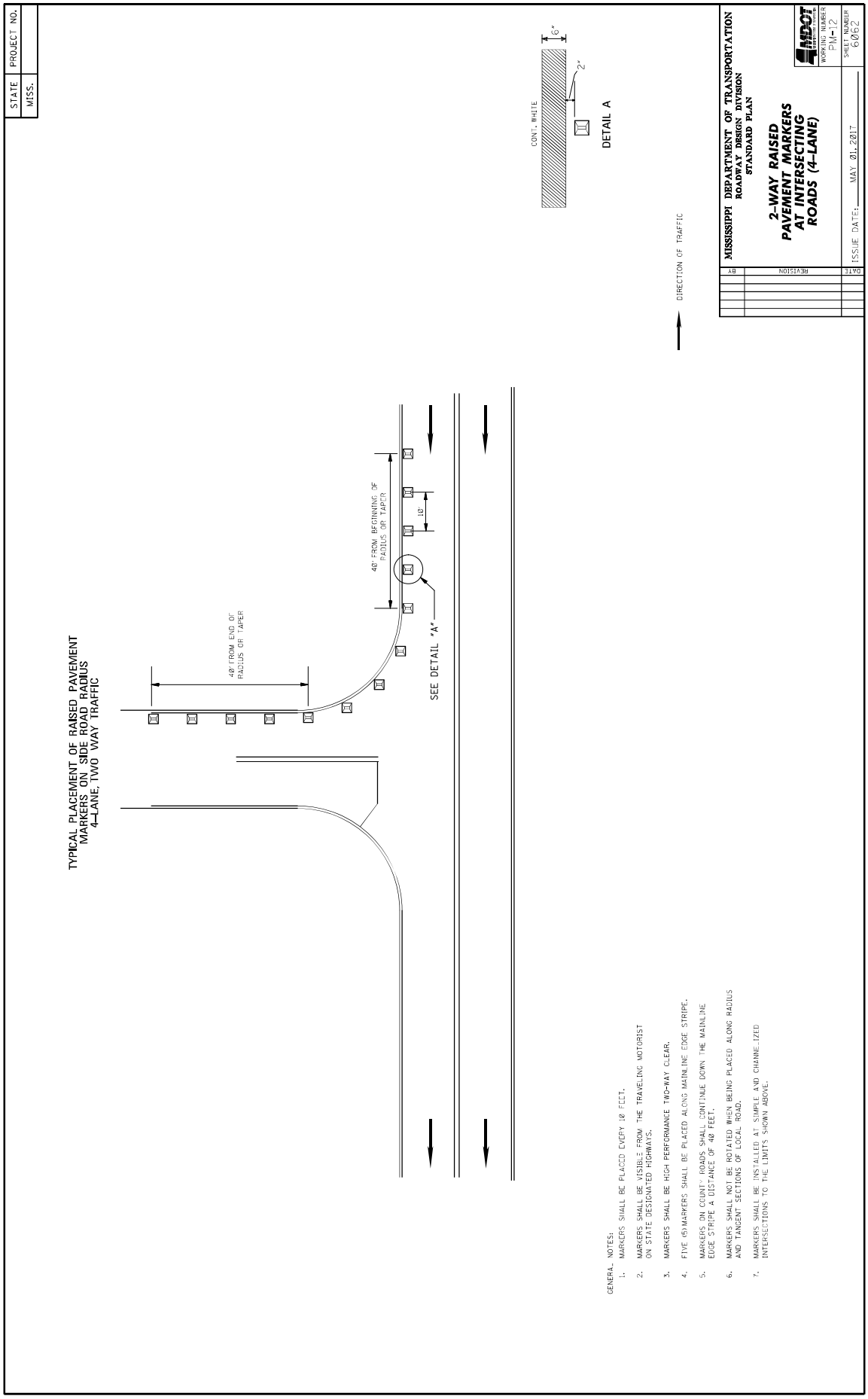

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TYPICAL PLACEMENT OF WARNING SIGNS AND PAVEMENT MARKINGS AT RAILROAD HIGHWAY GRADE CROSSINGS
WORKING NUMBER PM-7
SHEET NUMBER 6057
ISSUE DATE: MAY 01, 2017
BY REVISION DATE
GENERAL NOTES:
*1. A PORTION OF THE PAVEMENT MARKING SYMBOL SHOULD BE DIRECTLY OPPOSITE THE ADVANCE WARNING SIGN (W10-1).
**2. WIDTH OF R X R SYMBOL MAY VARY ACCORDING TO LANE WIDTH. HOWEVER, ON MULTI-LANE ROADS, THE TRANSVERSE BANDS AND STOP LINE SHOULD EXTEND ACROSS ALL APPROACH LANES, AND INDIVIDUAL R X R SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.
3. R X R SYMBOL (65.0 ft²), 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 RAIL-ROAD-HIGHWAY GRADE CROSSINGS.
***PRESENT OR PROPOSED ACTIVE WARNING DEVICE
TYPICAL LOCATION OF STOP LINE WHERE AN ACTIVE WARNING DEVICE IS PRESENT OR PROPOSED.
EDGE OF SHOULDER
EDGE OF TRAVEL LANE
TRAFFIC
24" STOP LINE
8'-0" (TYP.)
℄ RAILROAD
TYPICAL LOCATION OF STOP LINE WHERE NO ACTIVE WARNING DEVICE IS PRESENT OR PROPOSED.
15'-0" (TYP.)
24" TRANSVERSE BAND
SEE DETAIL A FOR DIMENSIONS
℄ LANE
*PAVEMENT MARKING SYMBOL
DISTANCE "X" (SEE TABLE BELOW)
25'-0"
50'-0"
10'-0"
NO PASSING ZONE
(OPTIONAL) W14-3
W10-1
ADVANCE WARNING SIGN PLACEMENT 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
NOTE:
① DISTANCE "X" MAY BE ADJUSTED IF PROHIBITIVE PHYSICAL CONDITIONS EXIST AT THE DESIGNATED DISTANCE.
DETAIL A
STANDARD "R" PAVEMENT MARKING FOR R X R SYMBOL

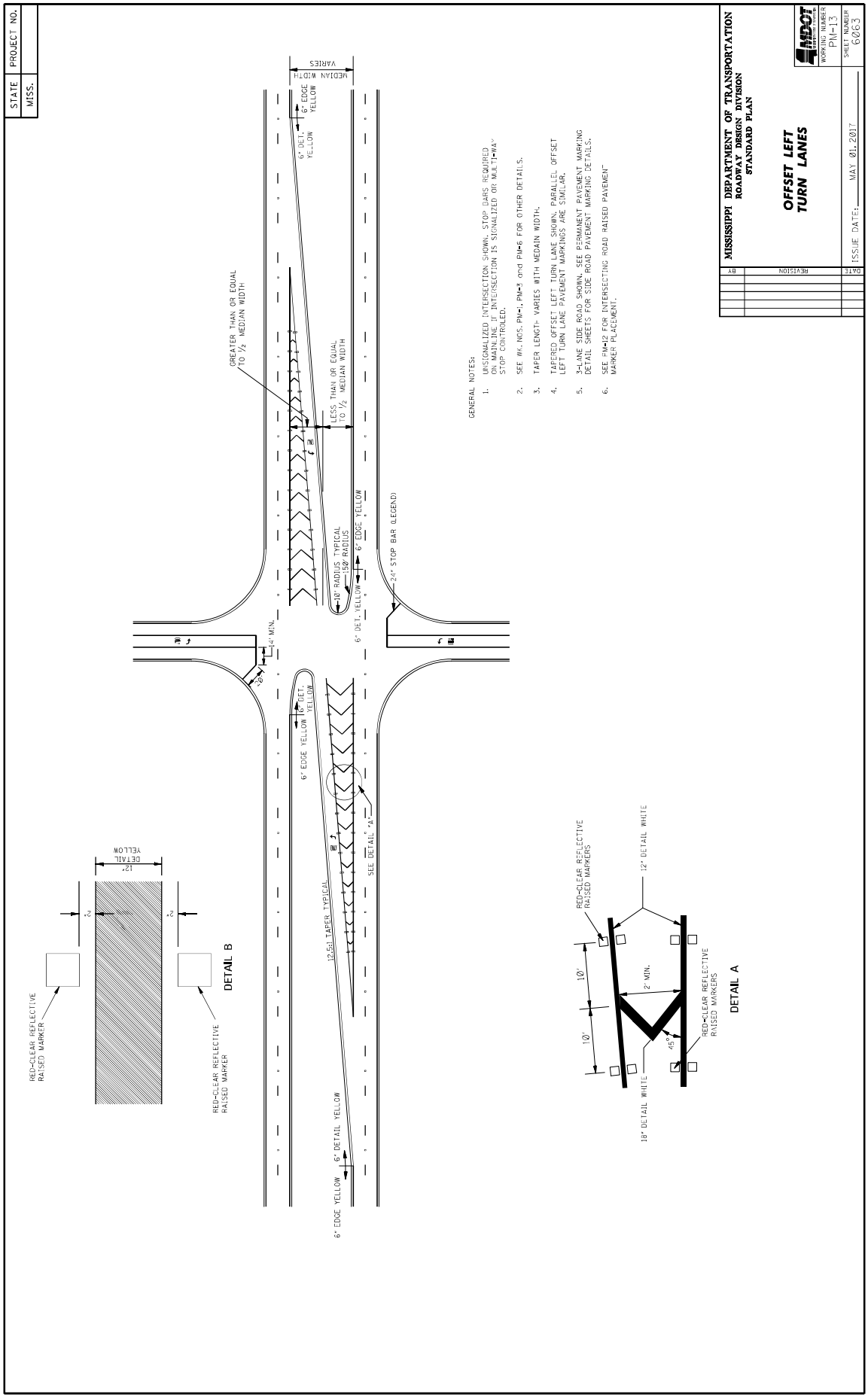

STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
4-LANE TO 2-LANE TRANSITION AT INTERCHANGE
WORKING NUMBER PM-8
SHEET NUMBER 6058
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
DETAIL A
* NOTE: VARIABLE (24" MAXIMUM)
12" DETAIL YELLOW
SEE DETAIL "D"
18" YELLOW 45° DIAGONAL DETAIL @ 20'-0" ON CENTER
DOUBLE TWO-WAY YELLOW REFLECTIVE RAISED MARKERS @ 20'-0" ON CENTER
VARIABLE WIDTH
24" 24" 24"
DETAIL D
12" DETAIL YELLOW
2"
DETAIL C
20'-0" ON CENTER
RED-CLEAR REFLECTIVE RAISED MARKERS
6" DETAIL WHITE
PLAN
SEE SHEET PM-1
SEE DETAIL A
6" DETAIL WHITE (2" STRIPE 12' GAP)
100' MIN.
NOT A STRIPE
SEE DETAIL C
6" DETAIL WHITE (2" STRIPE 12' GAP)
SEE DETAIL B
LEGEND
DETAIL F
6" DETAIL WHITE (2" STRIPE 12' GAP)
100'
LEGEND
DETAIL F
SEE SHEET PM-1
DETAIL B
12" DETAIL YELLOW
NOT A STRIPE
18" YELLOW 45° DIAGONAL DETAIL @ 20'-0" ON CENTER
SEE DETAIL E
TWO-WAY YELLOW REFLECTIVE RAISED MARKERS @ 20'-0" ON CENTER
TWO-WAY YELLOW REFLECTIVE RAISED MARKERS @ 12" ON CENTER ON 45° DIAGONAL
DETAIL E
2"
45°
2"
12"
DETAIL YELLOW
12"
DETAIL F
6" CONT. YELLOW
RED/CLEAR REFLECTIVE RAISED MARKERS
6" SKIP WHITE
NOTE 1: SEE PM-6 FOR DETAILS OF LANE-REDUCTION ARROW.

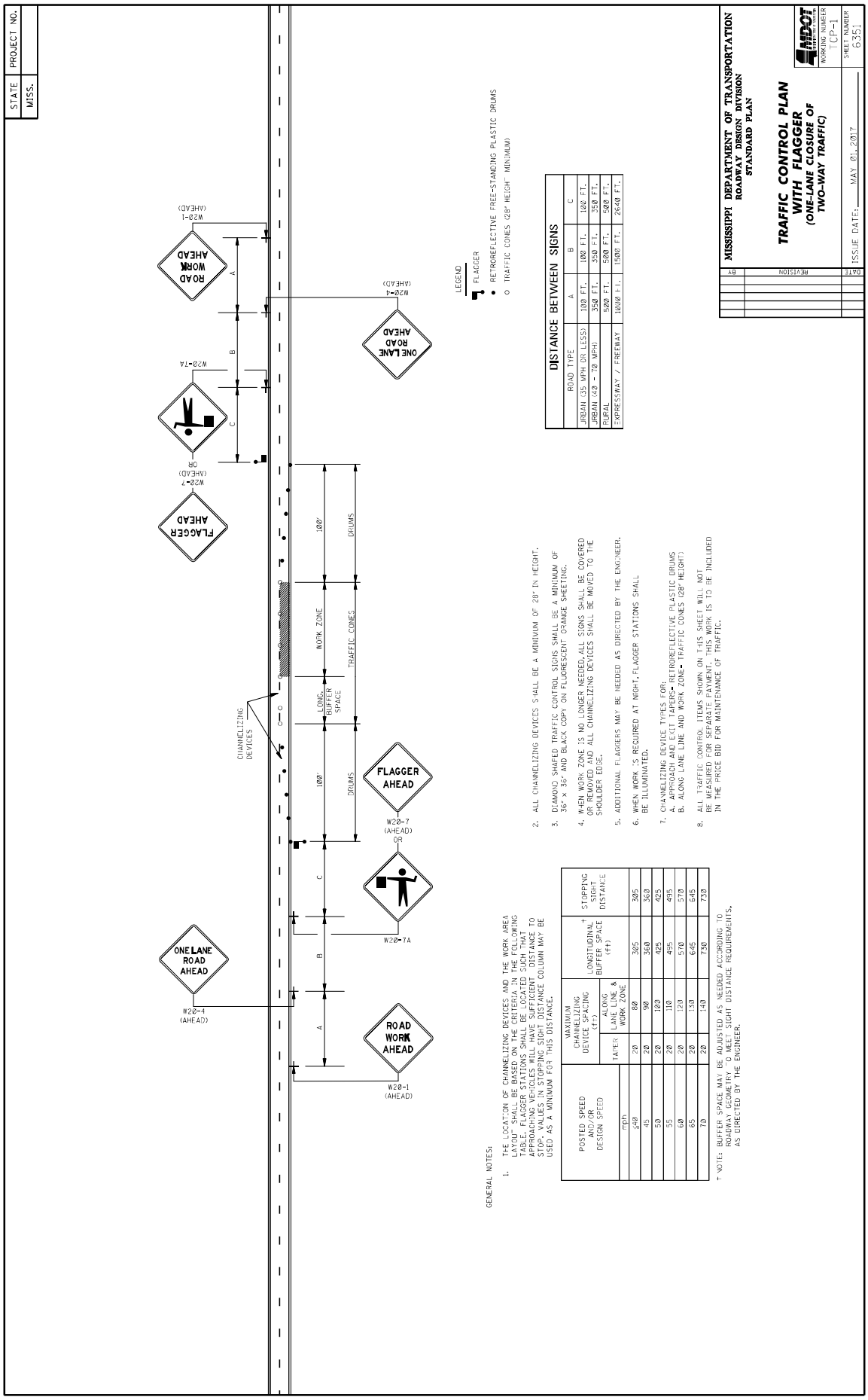

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TYPICAL PAVEMENT MARKING DETAIL FOR MEDIAN CROSSOVERS
WORKING NUMBER FM-49
SHEET NUMBER 60759
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
℄ TO ℄ ≤ 88'
125' ≥ ℄ TO ℄ > 88'
NOTE: FOR WIDER ℄ TO ℄ SPACINGS, REFER TO OTHER SHEETS IN PLANS
NOTE: SEE PM-5 FOR YIELD BAR DETAILS
SEE DETAIL "A"
SEE DETAIL "B"
SEE DETAIL "C"
SEE DETAIL "D"
SEE PM-1 FOR SPACING
6" EDGE STRIPE (CONT. WHITE)
6" CONT. EDGE WHITE
RED-CLEAR REFL. HIGH PERFORMANCE RAISED MARKERS
6" EDGE STRIPE (CONT. YELLOW)
6" DETAIL YELLOW
6" DETAIL WHITE
6" YELLOW (DETAIL)
6" YELLOW (CONT.-EDGE)
6" SKIP WHITE
LEGEND WHITE YIELD BAR (SP)
2-WAY YELLOW REFL. HIGH PERFORMANCE RAISED MARKERS @ 10' O.C.
THRU TRAFFIC
DETAIL "A"
DETAIL "B"
DETAIL "C"


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
PAVEMENT MARKING DETAILS FOR INTERCHANGE WITH LANE DROPS
WORKING NUMBER PM-10
SHEET NUMBER 6060
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
LANE DROP AT DUAL LANE RAMP
LANE DROP AT SINGLE LANE RAMP
DIRECTION OF TRAFFIC
TRAFFIC
6" SKIP WHITE *
6" EDGE STRIPE (CONT. YELLOW) *
6" EDGE STRIPE (CONT. WHITE) *
RED-CLEAR REFLECTIVE RAISED MARKER
PHYSICAL GORE
12" DETAIL WHITE
END AT PHYSICAL GORE
DETAIL "A"
DETAIL "B"
DETAIL "C"
DETAIL "D"
12" SKIP WHITE (3' STRIPE - 12' GAP)
1/2 MILE MIN.) LENGTH TO BE BASED ON FIELD CONDITIONS OR AS SHOWN ELSEWHERE ON PLANS
300' OR AS DIRECTED
RED-CLEAR REFLECTIVE RAISED MARKERS
18" DETAIL WHITE
2' MIN.
45°
DETAIL D
DETAIL C
DETAIL A
DETAIL B
GENERAL NOTES:
* 1. SEE SHEET PM-1 FOR THE PLACEMENT OF LANE-LINE STRIPE WITH RESPECT TO THE PAVEMENT JOINT AND FOR THE PLACEMENT OF THE EDGE LINE WITH RESPECT TO THE OUTSIDE EDGE OF THE TRAVELED WAY.
** 2. ON THE MAIN FACILITY, REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS ON A 40'-40' SPACING WILL BE REQUIRED ON LANE-LINE(S) 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.
3. PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE REFLECTIVE RAISED PAVEMENT MARKERS AS LISTED IN THE MDOT *APPROVED SOURCES OF MATERIALS*.


STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
2-WAY RAISED PAVEMENT MARKERS AT INTERSECTING ROADS (2-LANE)
WORKING NUMBER
PM-11
SHEET NUMBER
6061
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS ON SIDE ROAD RADIUS 2-LANE, TWO WAY TRAFFIC
40' FROM END OF RADIUS OR TAPER
40' FROM BEGINNING OF RADIUS OR TAPER
10'
SEE DETAIL "A"
DIRECTION OF TRAFFIC
DETAIL A
CONT. WHITE
6"
2"
GENERAL NOTES:
1. MARKERS SHALL BE PLACED EVERY 10 FEET.
2. MARKERS SHALL BE VISIBLE FROM THE TRAVELING MOTORIST ON STATE DESIGNATED HIGHWAYS.
3. MARKERS SHALL BE HIGH PERFORMANCE TWO-WAY CLEAR.
4. FIVE (5) MARKERS SHALL BE PLACED ALONG MAINLINE EDGE STRIPE.
5. MARKERS ON COUNTY ROADS SHALL CONTINUE DOWN THE MAINLINE EDGE STRIPE A DISTANCE OF 40 FEET.
6. MARKERS SHALL NOT BE ROTATED WHEN BEING PLACED ALONG RADIUS AND TANGENT SECTION OF LOCAL ROAD.
7. MARKERS SHALL BE INSTALLED AT SIMPLE AND CHANNELIZED INTERSECTIONS TO THE LIMITS SHOWN ABOVE.


STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
2-WAY RAISED PAVEMENT MARKERS AT INTERSECTING ROADS (4-LANE)
WORKING NUMBER PM-12
SHEET NUMBER 6062
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
TYPICAL PLACEMENT OF RAISED PAVEMENT MARKERS ON SIDE ROAD RADIUS 4-LANE, TWO WAY TRAFFIC
40' FROM END OF RADIUS OR TAPER
40' FROM BEGINNING OF RADIUS OR TAPER
10'
SEE DETAIL "A"
DIRECTION OF TRAFFIC
CONT. WHITE
6"
2"
DETAIL A
GENERAL NOTES:
1. MARKERS SHALL BE PLACED EVERY 10 FEET.
2. MARKERS SHALL BE VISIBLE FROM THE TRAVELING MOTORIST ON STATE DESIGNATED HIGHWAYS.
3. MARKERS SHALL BE HIGH PERFORMANCE TWO-WAY CLEAR.
4. FIVE (5) MARKERS SHALL BE PLACED ALONG MAINLINE EDGE STRIPE.
5. MARKERS ON COUNTY ROADS SHALL CONTINUE DOWN THE MAINLINE EDGE STRIPE A DISTANCE OF 40 FEET.
6. MARKERS SHALL NOT BE ROTATED WHEN BEING PLACED ALONG RADIUS AND TANGENT SECTIONS OF LOCAL ROAD.
7. MARKERS SHALL BE INSTALLED AT SIMPLE AND CHANNELIZED INTERSECTIONS TO THE LIMITS SHOWN ABOVE.


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
OFFSET LEFT TURN LANES
WORKING NUMBER PM-13
SHEET NUMBER 6063
ISSUE DATE: MAY 01, 2017
BY REVISION DATE
GENERAL NOTES:
1. UNSIGNALIZED INTERSECTION SHOWN. STOP BARS REQUIRED ONLY WHEN THE INTERSECTION IS SIGNALIZED OR MULTI-WAY STOP CONTROLED.
2. SEE MX. NOS. PM-1, PM-3 and PM-6 FOR OTHER DETAILS.
3. TAPER LENGTH VARIES WITH MEDAIN WIDTH.
4. TAPERED OFFSET LEFT TURN LANE SHOWN. PARALLEL OFFSET LEFT TURN LANE PAVEMENT MARKINGS ARE SIMILAR.
5. 3-LANE SIDE ROAD SHOWN. SEE PERMANENT PAVEMENT MARKING DETAIL SHEETS FOR SIDE ROAD PAVEMENT MARKING DETAILS.
6. SEE PM-12 FOR INTERSECTING ROAD RAISED PAVEMENT MARKER PLACEMENT.
GREATER THAN OR EQUAL TO ½ MEDIAN WIDTH
LESS THAN OR EQUAL TO ½ MEDIAN WIDTH
MEDIAN WIDTH VARIES
6" DET. YELLOW
6" EDGE YELLOW
10' RADIUS TYPICAL
24" STOP BAR (LEGEND)
4' MIN.
SEE DETAIL "A"
12:6:1 TAPER TYPICAL
6" EDGE YELLOW
6" DETAIL YELLOW
DETAIL B
12" DETAIL YELLOW
RED-CLEAR REFLECTIVE RAISED MARKER
DETAIL A
12" DETAIL WHITE
18" DETAIL WHITE
10'
2' MIN.
45°



DISTANCE BETWEEN SIGNS			
ROAD TYPE	A	B	C
URBAN (35 MPH OR LESS)	100 FT.	100 FT.	100 FT.
URBAN (40 - 70 MPH)	350 FT.	350 FT.	350 FT.
RURAL	500 FT.	500 FT.	500 FT.
EXPRESSWAY / FREEWAY	1000 FT.	1500 FT.	2640 FT.

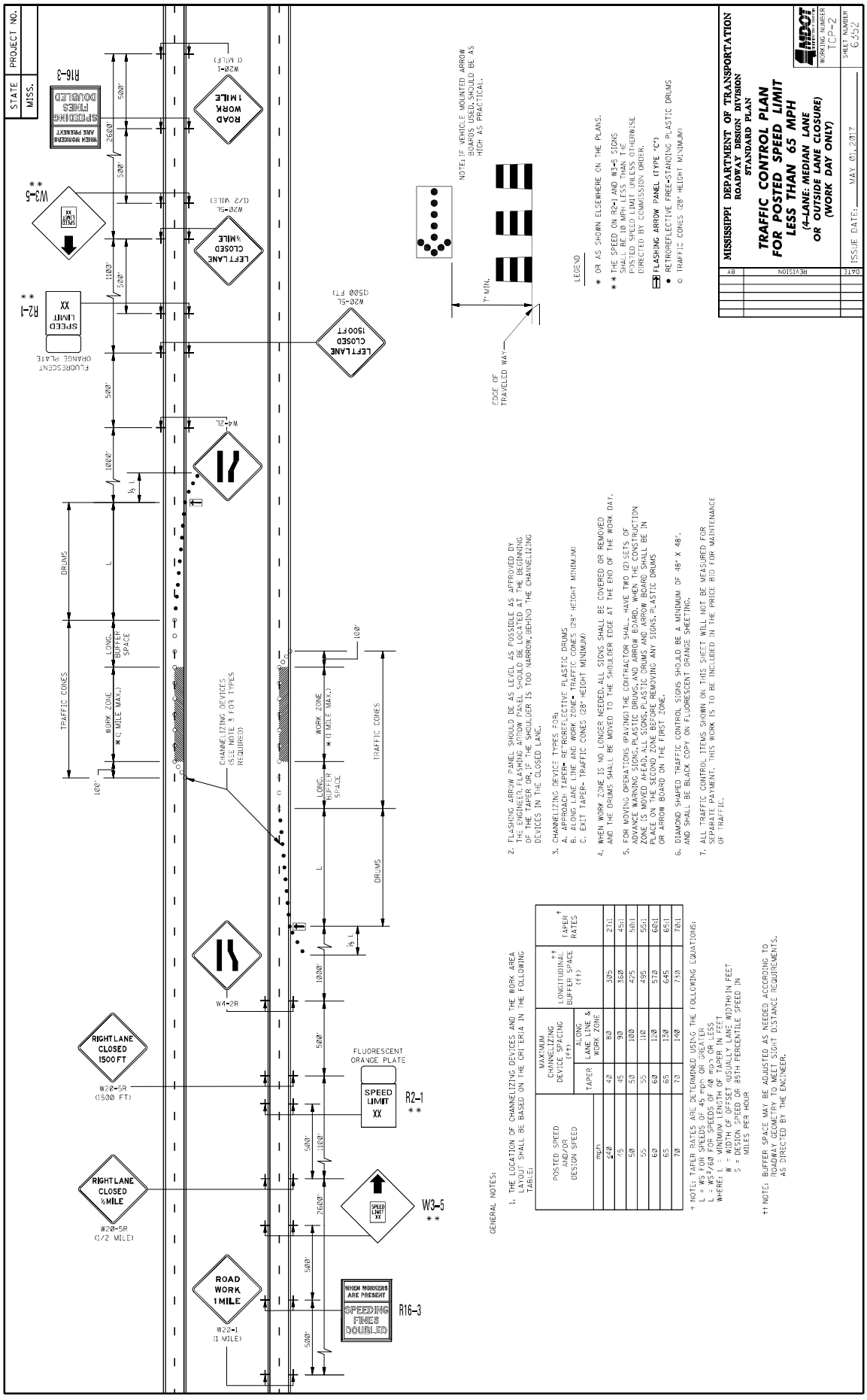
GENERAL NOTES:

1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LAYOUT SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE. FLAGGER STATIONS SHALL BE LOCATED SUCH THAT APPROACHING VEHICLES WILL HAVE SUFFICIENT DISTANCE TO STOP. VALUES IN STOPPING SIGHT DISTANCE COLUMN MAY BE USED AS A MINIMUM FOR THIS DISTANCE.

POSTED SPEED AND/OR DESIGN SPEED	MAXIMUM CHANNELIZING DEVICE SPACING (ft)		LONGITUDINAL† BUFFER SPACE (ft)	STOPPING SIGHT DISTANCE
	TAPER	ALONG LANE LINE & WORK ZONE		
mph				
≤40	20	80	305	305
45	20	90	360	360
50	20	100	425	425
55	20	110	495	495
60	20	120	570	570
65	20	130	645	645
70	20	140	730	730

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

2. ALL CHANNELIZING DEVICES SHALL BE A MINIMUM OF 28" IN HEIGHT.
3. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHALL BE A MINIMUM OF 36" x 36" AND BLACK COPY ON FLUORESCENT ORANGE SHEETING.
4. WHEN WORK ZONE IS NO LONGER NEEDED, ALL SIGNS SHALL BE COVERED OR REMOVED AND ALL CHANNELIZING DEVICES SHALL BE MOVED TO THE SHOULDER EDGE.
5. ADDITIONAL FLAGGERS MAY BE NEEDED AS DIRECTED BY THE ENGINEER.
6. WHEN WORK IS REQUIRED AT NIGHT, FLAGGER STATIONS SHALL BE ILLUMINATED.
7. CHANNELIZING DEVICE TYPES FOR:
   A. APPROACH AND EXIT TAPERS- RETROREFLECTIVE PLASTIC DRUMS
   B. ALONG LANE LINE AND WORK ZONE- TRAFFIC CONES (28" HEIGHT)
8. 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	TAPER	MAXIMUM CHANNELIZING DEVICE SPACING (ft) ALONG LANE LINE & WORK ZONE	LONGITUDINAL BUFFER SPACE (ft) ††	TAPER RATES †
mph				
≤40	2	80	305	2:1
45	3	90	360	4.5:1
50	3	100	425	5.0:1
55	3	110	495	5.5:1
60	3	120	570	6.0:1
65	3	130	645	6.5:1
70	3	140	730	7.0:1

† NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
L = WS FOR SPEEDS OF 45 mph OR GREATER
L = WS²/60 FOR SPEEDS OF 40 mph OR LESS
WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
W = 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.

2. 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, IF THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.

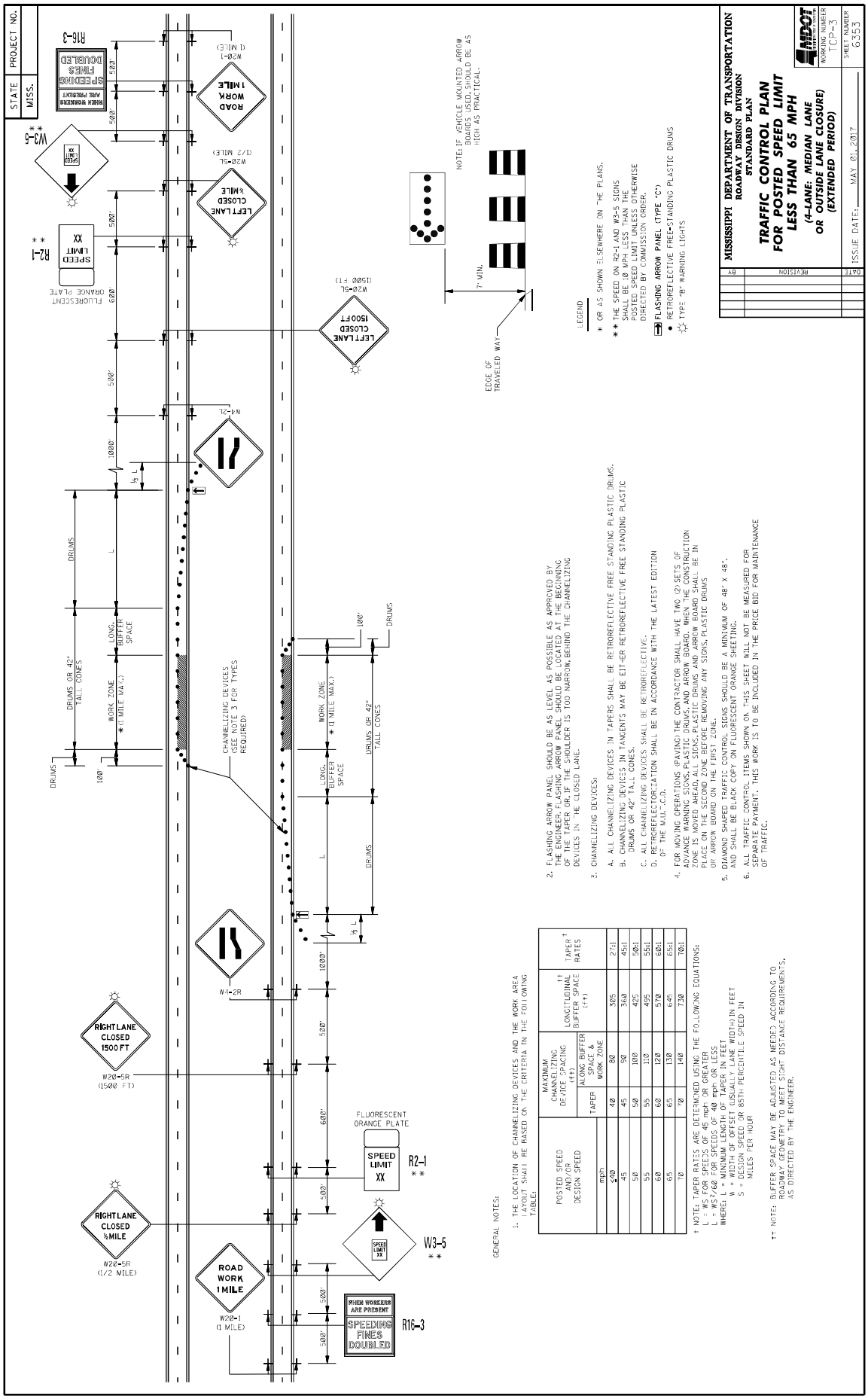
3. CHANNELIZING DEVICE TYPES FOR:
A. APPROACH TAPER- RETROREFLECTIVE PLASTIC DRUMS
B. ALONG LANE LINE AND WORK ZONE- TRAFFIC CONES (28" HEIGHT MINIMUM)
C. EXIT TAPER- TRAFFIC CONES (28" HEIGHT MINIMUM)

4. WHEN WORK ZONE IS NO LONGER NEEDED, ALL SIGNS SHALL BE COVERED OR REMOVED AND THE DRUMS SHALL BE MOVED TO THE SHOULDER EDGE AT THE END OF THE WORK DAY.

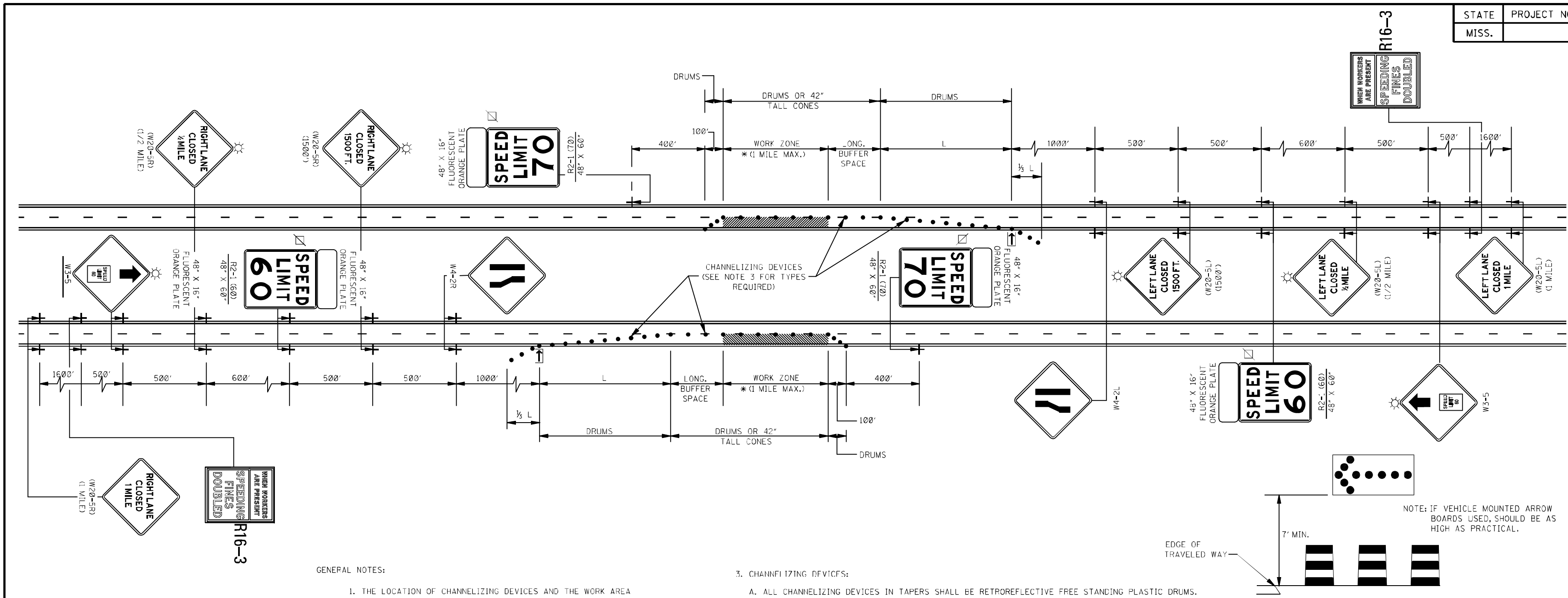
5. FOR MOVING OPERATIONS (PAVING) THE CONTRACTOR SHALL HAVE TWO (2) SETS OF ADVANCE WARNING SIGNS, PLASTIC DRUMS, AND ARROW BOARD. WHEN THE CONSTRUCTION ZONE IS MOVED AHEAD, ALL SIGNS, PLASTIC DRUMS AND ARROW BOARD SHALL BE IN PLACE ON THE SECOND ZONE BEFORE REMOVING ANY SIGNS, PLASTIC DRUMS OR ARROW 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 SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.


STATE MISS.
PROJECT NO.
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 TCP-3
SHEET NUMBER 6353
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
ROAD WORK 1 MILE
W20-1 (1 MILE)
LEFT LANE CLOSED ½MILE
W20-5L (1/2 MILE)
LEFT LANE CLOSED 1500FT
W20-5L (1500 FT)
SPEED LIMIT XX
R2-1
FLUORESCENT ORANGE PLATE
W3-5
RIGHT LANE CLOSED 1500 FT
W20-5R (1500 FT)
RIGHT LANE CLOSED ½MILE
W20-5R (1/2 MILE)
WHEN WORKERS ARE PRESENT
SPEEDING FINES DOUBLED
R16-3
W4-2R
W4-2L
DRUMS
DRUMS OR 42" TALL CONES
LONG. BUFFER SPACE
WORK ZONE * (1 MILE MAX.)
CHANNELIZING DEVICES (SEE NOTE 3 FOR TYPES REQUIRED)
100'
L
½ L
500'
600'
1000'
NOTE: IF VEHICLE MOUNTED ARROW BOARDS USED, 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.
FLASHING ARROW PANEL (TYPE "C")
RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS
TYPE "B" WARNING LIGHTS
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
MAXIMUM CHANNELIZING DEVICE SPACING (++)
TAPER
ALONG BUFFER SPACE & WORK ZONE
LONGITUDINAL BUFFER SPACE (++)
TAPER † RATES
mph
≤40 40 80 305 2:1
45 45 90 360 4.5:1
50 50 100 425 5.0:1
55 55 110 495 5.5:1
60 60 120 570 6.0:1
65 65 130 645 6.5:1
70 70 140 730 7.0:1
† NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
L = WS²/60 FOR SPEEDS OF 40 MPH OR LESS
L = WS/2.60 FOR SPEEDS OF 45 MPH OR GREATER
WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
W = 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.
2. FLASHING ARROW PANEL SHOULD BE AS LEVEL AS POSSIBLE AS APPROVED BY THE ENGINEER. THE FLASHING ARROW PANEL SHOULD BE LOCATED AT THE BEGINNING OF THE TAPER OR AT THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.
3. CHANNELIZING DEVICES:
A. ALL CHANNELIZING DEVICES IN TAPERS SHALL BE RETROREFLECTIVE FREE STANDING PLASTIC DRUMS.
B. CHANNELIZING DEVICES IN TANGENTS MAY BE EITHER RETROREFLECTIVE FREE STANDING PLASTIC DRUMS OR 42" TALL CONES.
C. ALL CHANNELIZING DEVICES SHALL BE RETROREFLECTIVE.
D. RETROREFLECTORIZATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MAS.C.O.
4. FOR MOVING OPERATIONS (PAVING) THE CONTRACTOR SHALL HAVE TWO (2) SETS OF ADVANCE WARNING SIGNS, PLASTIC DRUMS, AND ARROW BOARD, WHEN THE CONSTRUCTION ZONES MOVES 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.
5. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHOULD BE A MINIMUM OF 48" X 48", AND SHALL BE BLACK COPY ON FLUORESCENT ORANGE SHEETING.
6. 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	PROJECT NO.
MISS.	



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	MAXIMUM CHANNELIZING DEVICE SPACING (ft)		LONGITUDINAL BUFFER SPACE (ft) ††	TAPER RATES †
	TAPER	ALONG BUFFER SPACE & WORK ZONE		
mph				
≤40	40	80	305	27:1
45	45	90	360	45:1
50	50	100	425	50:1
55	55	110	495	55:1
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 = $WS^2/60$ FOR SPEEDS OF 40 mph OR LESS
WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
W = 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.

2. 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, IF THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.

3. CHANNELIZING DEVICES:

A. ALL CHANNELIZING DEVICES IN TAPERS SHALL BE RETROREFLECTIVE FREE STANDING PLASTIC DRUMS.
B. CHANNELIZING DEVICES IN TANGENTS MAY BE EITHER RETROREFLECTIVE FREE STANDING PLASTIC DRUMS OR 42" TALL CONES.
C. ALL CHANNELIZING DEVICES SHALL BE RETROREFLECTIVE.
D. RETROREFLECTORIZATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE M.U.T.C.D.

4. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHOULD BE A MINIMUM OF 48" X 48", AND SHALL BE BLACK COPY ON FLUORESCENT ORANGE SHEETING.

5. ALL EXISTING SPEED LIMIT SIGNS WHICH ARE INFLUENCED BY OR CONFLICT 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 FACE OF SIGN.

6. ADDITIONAL REDUCED 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.

7. 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.

8. 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.

9. A FLUORESCENT ORANGE PLATE IS REQUIRED WITH ALL REGULATORY SPEED LIMIT SIGNS REQUIRED FOR LANE CLOSURE.

10. 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.

LEGEND

- * OR AS SHOWN ELSEWHERE ON THE PLANS.
- ⇨ FLASHING ARROW PANEL (TYPE "C")
- ⊠ BLACK LEGEND AND BORDER ON WHITE BACKGROUND
- ☼ TYPE "B" WARNING LIGHTS
- ● RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS

DATE	REVISION	BY

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

TRAFFIC CONTROL PLAN FOR POSTED SPEED LIMIT OF 65 OR 70 MPH
(INTERSTATES AND OTHER 4-LANE DIVIDED HIGHWAYS) (MEDIAN LANE OR OUTSIDE LANE CLOSURE) (EXTENDED PERIOD)

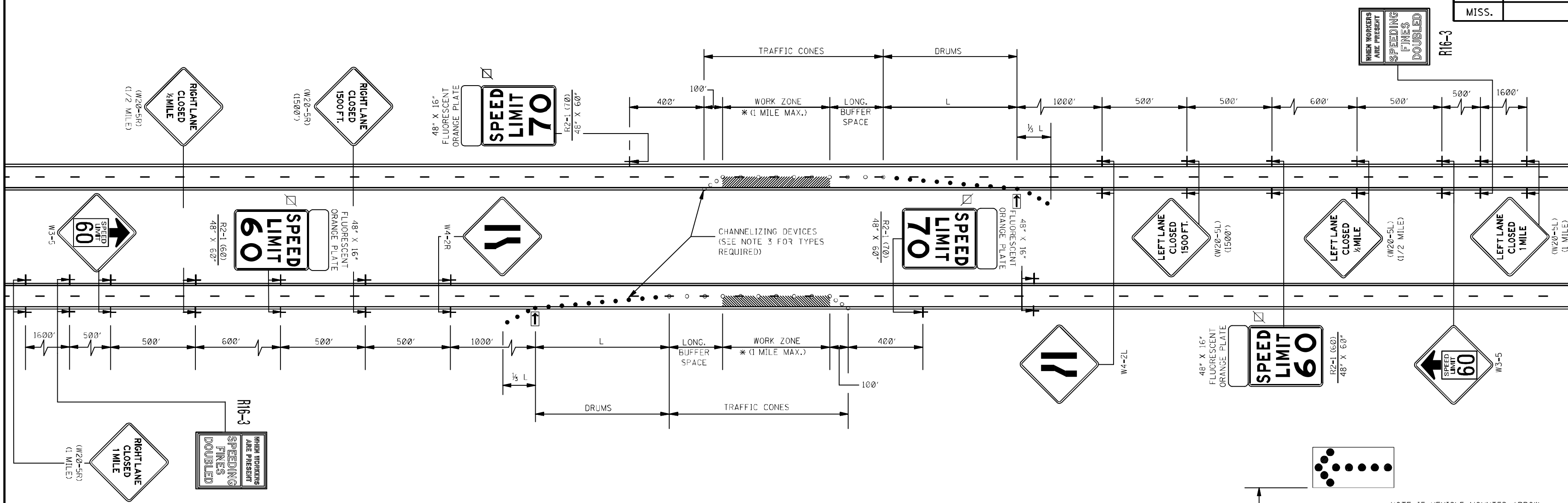
ISSUE DATE: MAY 01, 2017

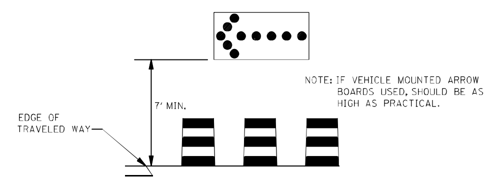
MDOT

WORKING NUMBER TCP-4

SHEET NUMBER 6354

STATE	PROJECT NO.
MISS.	





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

LEGEND

* OR AS SHOWN ELSEWHERE ON THE PLANS.
FLASHING ARROW PANEL (TYPE "C")
BLACK LEGEND AND BORDER ON WHITE BACKGROUND
● RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS
○ TRAFFIC CONES (28" HEIGHT)

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	MAXIMUM CHANNELIZING DEVICE SPACING (ft)		LONGITUDINAL BUFFER SPACE †† (ft)	TAPER † RATES
	TAPER	ALONG LANE LINE & WORK ZONE		
mph				
≤40	40	80	305	27:1
45	45	90	360	45:1
50	50	100	425	50:1
55	55	110	495	55:1
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
$L = WS^2/60$ FOR SPEEDS OF 40 mph OR LESS
WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
W = 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.

2. 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, IF THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.

3. CHANNELIZING DEVICE TYPES 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 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. 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 EXISTING SPEED LIMIT SIGNS WHICH ARE INFLUENCED BY OR CONFLICT 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 REDUCED 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 WHERE THE POSTED SPEED LIMIT IS BELOW 65 MPH WITHOUT A COMMISSION ORDER 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.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

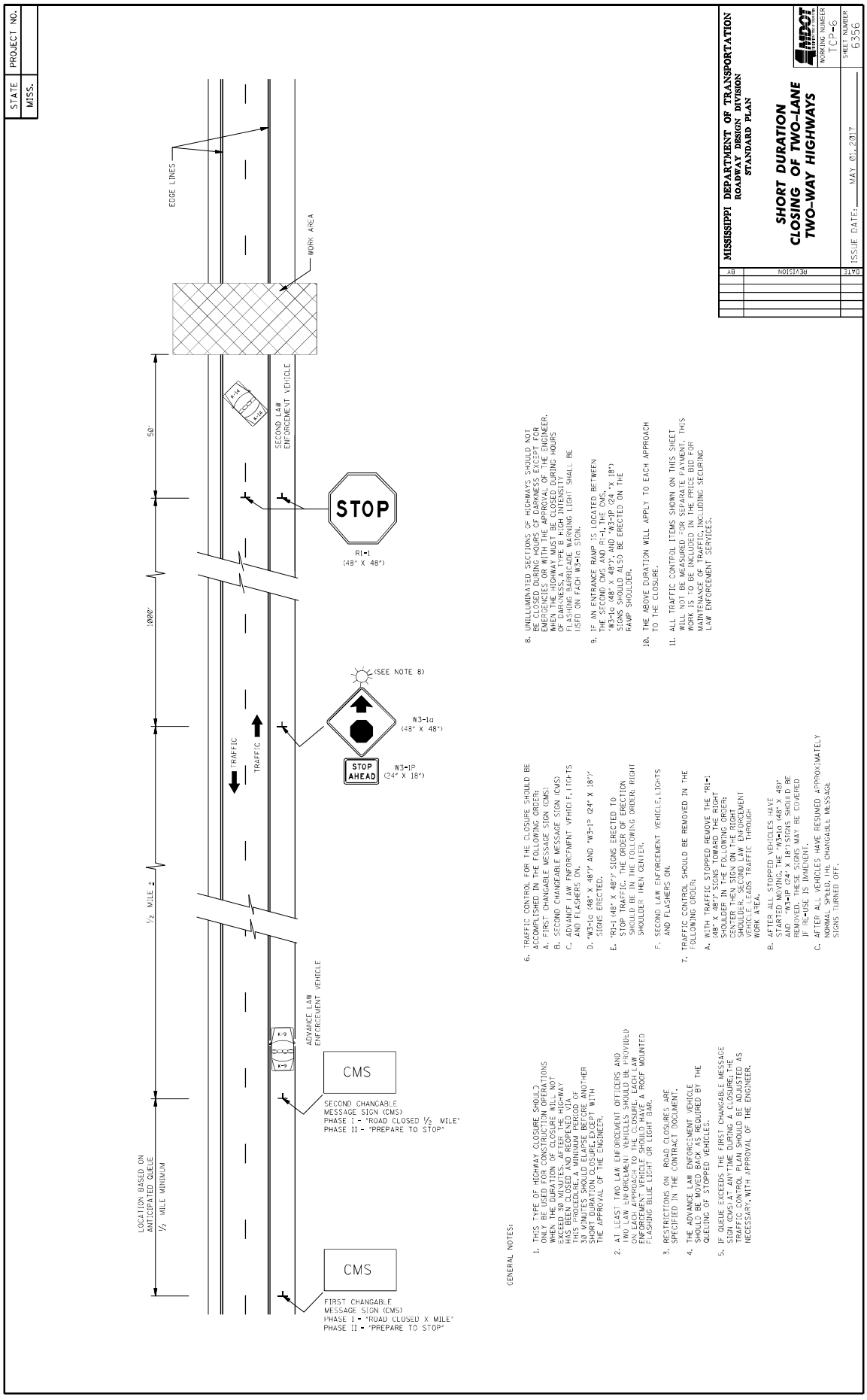
TRAFFIC CONTROL PLAN FOR POSTED SPEED LIMIT OF 65 OR 70 MPH
(INTERSTATES AND OTHER 4-LANE DIVIDED HIGHWAYS) (MEDIAN LANE OR OUTSIDE LANE CLOSURE) (WORK DAY ONLY)

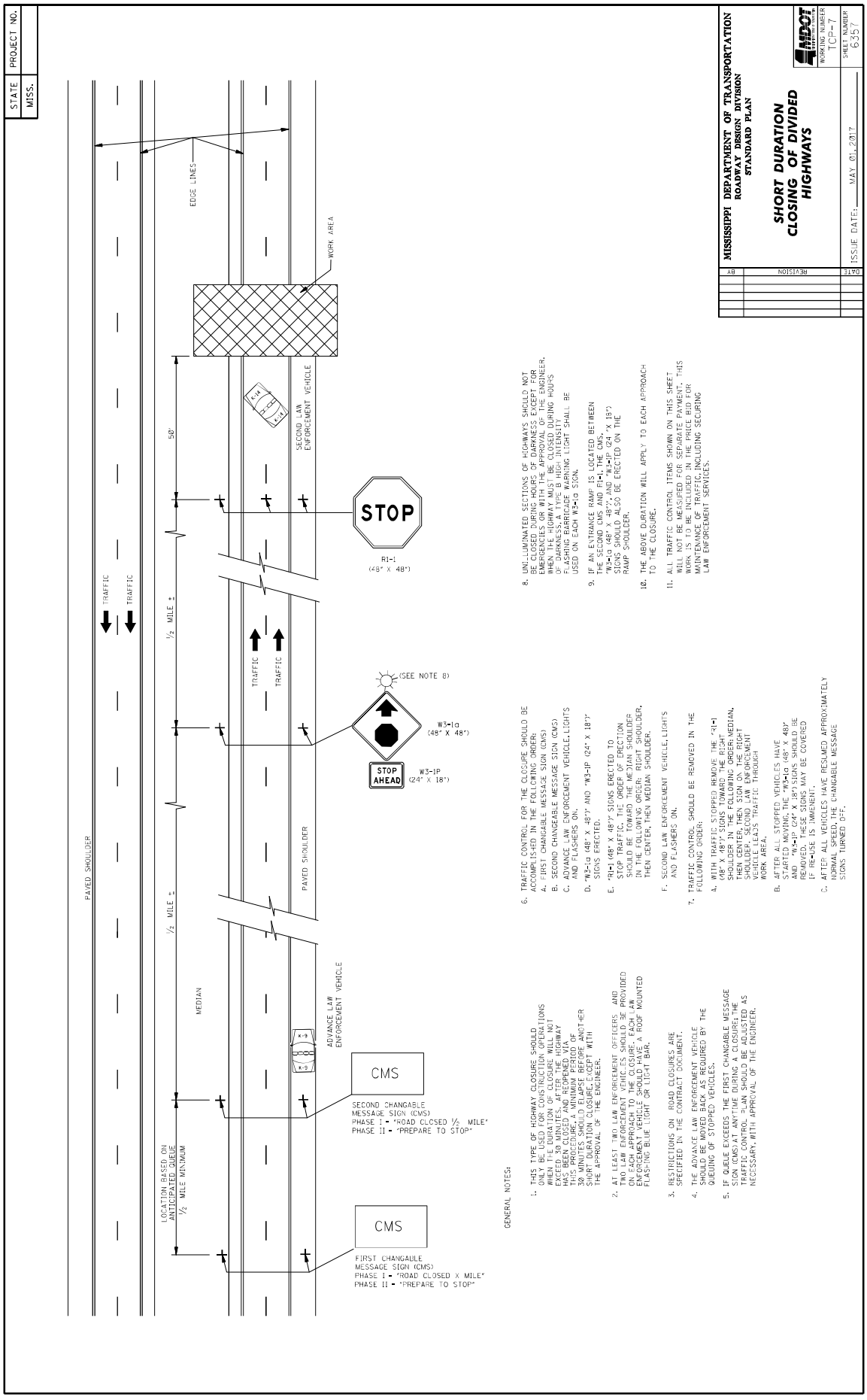
ISSUE DATE: MAY 01, 2017

WORKING NUMBER TCP-5

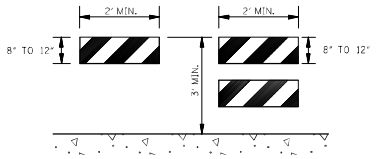
SHEET NUMBER 6355

BY / REVISION / DATE

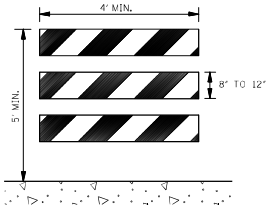

STATE MISS.
PROJECT NO.
EDGE LINES
WORK AREA
SECOND LAW ENFORCEMENT VEHICLE
STOP
R1-1 (48" X 48")
50'
1000'
½ MILE ±
TRAFFIC
TRAFFIC
(SEE NOTE 8)
W3-1a (48" X 48")
STOP AHEAD
W3-1P (24" X 18")
ADVANCE LAW ENFORCEMENT VEHICLE
CMS
SECOND CHANGABLE MESSAGE SIGN (CMS) PHASE I - "ROAD CLOSED ½ MILE" PHASE II - "PREPARE TO STOP"
CMS
FIRST CHANGABLE MESSAGE SIGN (CMS) PHASE I - "ROAD CLOSED X MILE" PHASE II - "PREPARE TO STOP"
LOCATION BASED ON ANTICIPATED QUEUE
½ MILE MINIMUM
GENERAL NOTES:
1. THIS TYPE OF HIGHWAY CLOSURE SHOULD ONLY BE USED FOR CONSTRUCTION OPERATIONS WHEN THE DURATION OF CLOSURE WILL NOT EXCEED 30 MINUTES, AFTER THE HIGHWAY HAS BEEN CLOSED AND TRAFFIC STOPPED. THIS PROCEDURE A MINIMUM PERIOD OF 30 MINUTES SHOULD ELAPSE BEFORE ANOTHER SHORT DURATION CLOSURE, EXCEPT WITH THE APPROVAL OF THE ENGINEER.
2. AT LEAST TWO LAW ENFORCEMENT OFFICERS AND TWO LAW ENFORCEMENT VEHICLES SHOULD BE PROVIDED ON EACH APPROACH TO THE CLOSURE. EACH LAW ENFORCEMENT VEHICLE SHALL HAVE A ROOF MOUNTED FLASHING BLUE LIGHT OR LIGHT BAR.
3. RESTRICTIONS ON ROAD CLOSURES ARE SPECIFIED IN THE CONTRACT DOCUMENT.
4. THE ADVANCE LAW ENFORCEMENT VEHICLE SHOULD BE MOVED BACK AS REQUIRED BY THE QUEUING OF STOPPED VEHICLES.
5. IF QUEUE EXCEEDS THE FIRST CHANGABLE MESSAGE SIGN (CMS) AT ANY TIME DURING A CLOSURE, THE TRAFFIC CONTROL PLAN SHOULD BE ADJUSTED AS NECESSARY, WITH APPROVAL OF THE ENGINEER.
6. TRAFFIC CONTROL FOR THE CLOSURE SHOULD BE ACCOMPLISHED IN THE FOLLOWING ORDER:
A. FIRST CHANGABLE MESSAGE SIGN (CMS).
B. SECOND CHANGABLE MESSAGE SIGN (CMS).
C. ADVANCE LAW ENFORCEMENT VEHICLE, LIGHTS AND FLASHERS ON.
D. W3-1a (48" X 48") AND W3-1P (24" X 18") SIGNS ERECTED.
E. R1-1 (48" X 48") SIGNS ERECTED TO STOP TRAFFIC. THE ORDER OF ERECTION SHOULD BE IN THE FOLLOWING ORDER: RIGHT SHOULDER THEN CENTER.
F. SECOND LAW ENFORCEMENT VEHICLE, LIGHTS AND FLASHERS ON.
7. TRAFFIC CONTROL SHOULD BE REMOVED IN THE FOLLOWING ORDER:
A. WITH TRAFFIC STOPPED REMOVE THE "R1-1" SIGNS ACROSS ROADWAY IN THE FOLLOWING ORDER: SHOULDER, THE FOLLOWING ORDER: CENTER THEN SIGN ON THE RIGHT SHOULDER, SECOND LAW ENFORCEMENT VEHICLE LEADS TRAFFIC THROUGH WORK AREA.
B. AFTER ALL STOPPED VEHICLES HAVE STARTED MOVING, THE "W3-1a (48" X 48") AND "W3-1P (24" X 18") SIGNS SHOULD BE REMOVED. THESE SIGNS MAY BE COVERED IF REUSE IS IMMINENT.
C. AFTER ALL VEHICLES HAVE RESUMED APPROXIMATELY NORMAL SPEED, THE CHANGABLE MESSAGE SIGNS TURNED OFF.
8. UNILLUMINATED SECTIONS OF HIGHWAYS SHOULD NOT BE CLOSED DURING HOURS OF DARKNESS, EXCEPT FOR EMERGENCIES, OR WITH THE APPROVAL OF THE ENGINEER. WHEN THE HIGHWAY MUST BE CLOSED DURING HOURS OF DARKNESS, A TYPE B HIGH INTENSITY FLASHING BARRICADE WARNING LIGHT SHALL BE USED ON EACH W3-1a SIGN.
9. IF AN ENTRANCE RAMP IS LOCATED BETWEEN THE SECOND CMS AND R1-1, THE CMS, W3-1a (48" X 48") AND W3-1P (24" X 18") SIGNS SHOULD ALSO BE ERECTED ON THE RAMP SHOULDER.
10. THE ABOVE DURATION WILL APPLY TO EACH APPROACH TO THE CLOSURE.
11. 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, INCLUDING SECURING LAW ENFORCEMENT SERVICES.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
SHORT DURATION CLOSING OF TWO-LANE TWO-WAY HIGHWAYS
MDOT
WORKING NUMBER TCP-6
SHEET NUMBER 6356
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
SHORT DURATION CLOSING OF DIVIDED HIGHWAYS
WORKING NUMBER TCP-7
SHEET NUMBER 6357
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
PAVED SHOULDER
½ MILE ±
MEDIAN
½ MILE ±
PAVED SHOULDER
EDGE LINES
WORK AREA
50'
TRAFFIC
TRAFFIC
TRAFFIC
TRAFFIC
SECOND LAW ENFORCEMENT VEHICLE
ADVANCE LAW ENFORCEMENT VEHICLE
LOCATION BASED ON ANTICIPATED QUEUE
½ MILE MINIMUM
STOP
R1-1 (48" X 48")
(SEE NOTE 8)
W3-1a (48" X 48")
STOP AHEAD
W3-1P (24" X 18")
CMS
SECOND CHANGABLE MESSAGE SIGN (CMS)
PHASE I - "ROAD CLOSED ½ MILE"
PHASE II - "PREPARE TO STOP"
CMS
FIRST CHANGABLE MESSAGE SIGN (CMS)
PHASE I - "ROAD CLOSED X MILE"
PHASE II - "PREPARE TO STOP"
GENERAL NOTES:
1. THIS TYPE OF HIGHWAY CLOSURE SHOULD ONLY BE USED FOR CONSTRUCTION OPERATIONS WHEN THE DURATION OF CLOSURE WILL NOT EXCEED 30 MINUTES AFTER THE HIGHWAY HAS BEEN CLOSED AND REOPENED WITH THIS PROCEDURE. A MINIMUM PERIOD OF 30 MINUTES SHOULD ELAPSE BEFORE ANOTHER SHORT DURATION CLOSURE EXCEPT WITH THE APPROVAL OF THE ENGINEER.
2. AT LEAST TWO LAW ENFORCEMENT OFFICERS AND TWO LAW ENFORCEMENT VEHICLES SHOULD BE PROVIDED FOR EACH APPROACH TO THE CLOSURE. A LAW ENFORCEMENT VEHICLE SHOULD HAVE A ROOF MOUNTED FLASHING BLUE LIGHT OR LIGHT BAR.
3. RESTRICTIONS ON ROAD CLOSURES ARE SPECIFIED IN THE CONTRACT DOCUMENT.
4. THE ADVANCE LAW ENFORCEMENT VEHICLE SHOULD BE MOVED BACK AS REQUIRED BY THE QUEUING OF STOPPED VEHICLES.
5. IF QUEUE EXCEEDS THE FIRST CHANGABLE MESSAGE SIGN, CONSULT ANYTIME DURING A CLOSURE, THE TRAFFIC CONTROL PLAN SHOULD BE ADJUSTED AS NECESSARY, WITH APPROVAL OF THE ENGINEER.
6. TRAFFIC CONTROL FOR THE CLOSURE SHOULD BE ACCOMPLISHED IN THE FOLLOWING ORDER:
A. FIRST CHANGABLE MESSAGE SIGN (CMS)
B. SECOND CHANGEABLE MESSAGE SIGN (CMS)
C. ADVANCE LAW ENFORCEMENT VEHICLE LIGHTS AND FLASHERS ON.
D. "W3-1a (48" X 48") AND "W3-1P (24" X 18") SIGNS ERECTED.
E. "R1-1 (48" X 48") SIGNS ERECTED TO STOP TRAFFIC TRAVELING IN EACH DIRECTION. SHOULD BE TOWARD THE MEDIAN SHOULDER IN THE FOLLOWING ORDER: RIGHT SHOULDER, THEN CENTER, THEN MEDIAN SHOULDER.
F. SECOND LAW ENFORCEMENT VEHICLE LIGHTS AND FLASHERS ON.
7. TRAFFIC CONTROL SHOULD BE REMOVED IN THE FOLLOWING ORDER:
A. WITH TRAFFIC STOPPED REMOVE THE "R1-1 (48" X 48") SIGNS TOWARD THE RIGHT SHOULDER IN THE FOLLOWING ORDER: MEDIAN, THEN CENTER, THEN SIGN ON THE RIGHT SHOULDER. SECOND LAW ENFORCEMENT SHOULD CLEAR TRAFFIC THROUGH WORK AREA.
B. AFTER ALL STOPPED VEHICLES HAVE STARTED MOVING, THE "W3-1a (48" X 48" AND "W3-1P (24" X 18") SIGNS SHOULD BE REMOVED. THESE SIGNS MAY BE COVERED IF RE-USE IS IMMINENT.
C. AFTER ALL VEHICLES HAVE RESUMED APPROXIMATELY NORMAL SPEED, THE CHANGABLE MESSAGE SIGNS TURNED OFF.
8. UNILLUMINATED SECTIONS OF HIGHWAYS SHOULD NOT BE CLOSED DURING HOURS OF DARKNESS EXCEPT FOR EMERGENCIES OR WITH THE APPROVAL OF THE ENGINEER. WHEN THE HIGHWAY MUST BE CLOSED DURING HOURS OF DARKNESS, A HIGH INTENSITY FLASHING BARRICADE WARNING LIGHT SHALL BE USED ON EACH W3-1a SIGN.
9. IF AN EXTRANCE RAMP IS LOCATED BETWEEN THE SECOND CMS AND R1-1 THE CMS, W3-1a (48" X 48") AND W3-1P (24" X 18") SIGNS SHOULD ALSO BE ERECTED ON THE RAMP SHOULDER.
10. THE ABOVE DURATION WILL APPLY TO EACH APPROACH TO THE CLOSURE.
11. 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, INCLUDING SECURING LAW ENFORCEMENT SERVICES.

STATE	PROJECT NO.
MISS.	



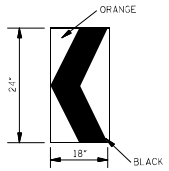
TYPE I TYPE II



TYPE III

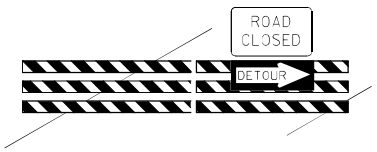
STANDARD BARRICADES

1. THE MARKING FOR BARRICADE RAILS SHALL BE ORANGE AND WHITE (SLOPING DOWNWARD AT AN ANGLE OF 45° IN THE DIRECTION TRAFFIC IS TO PASS).
2. RAIL STRIPE SHALL BE 6 INCHES, EXCEPT THAT 4-INCH WIDE STRIPES MAY BE USED IF RAIL LENGTHS ARE LESS THAN 36 INCHES.
3. DO NOT PLACE SANDBAGS OR OTHER DEVICES TO PROVIDE MASS ON THE BOTTOM RAIL THAT WILL BLOCK VIEW OR RAIL FACE.
4. FOR ADDITIONAL INFORMATION OR DETAILS, SEE MUTCD, LATEST EDITION.
5. BARRICADES ARE CLASSIFIED BY FHWA AS CATEGORY II WORK ZONE DEVICES WHICH REQUIRE CRASHWORTHINESS ACCEPTANCE LETTERS. TO DATE, 2-IN. THICK TIMBER RAILS HAVE NOT BEEN SUCCESSFULLY CRASH TESTED. A LIST OF CRASHWORTHY BARRICADES AND OTHER CATAGORY II DEVICES CAN BE FOUND ON FHWA'S WEBSITE: http://safety.fhwa.dot.gov/roadway_dept/policy.guide/road_hardware/cat2.cfm



CHEVRON SIGN DETAIL

1. A CHEVRON SIGN CONSISTS OF A BLACK CHEVRON TYPE MARKING ON AN ORANGE BACKGROUND AND SHALL POINT IN THE DIRECTION OF TRAFFIC FLOW.
2. THE CHEVRON SIGN SHALL BE MOUNTED ON CRASHWORTHY SUPPORT.
3. 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.



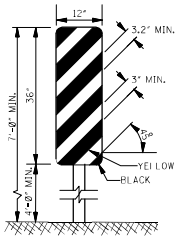
BARRICADE CLOSING A ROAD

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 6 IF FACING TRAFFIC IN TWO DIRECTIONS

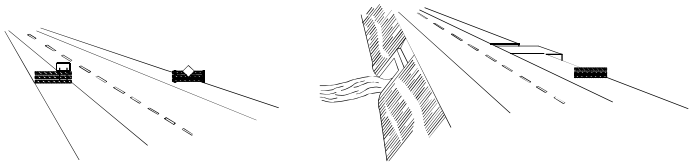
* 1. FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED.

** 2. BARRICADES INTENDED FOR USE ON EXPRESSWAYS, FREEWAYS AND OTHER HIGH SPEED ROADWAYS, SHALL HAVE A MINIMUM OF 270 in² OF REFLECTIVE AREA FACING TRAFFIC.



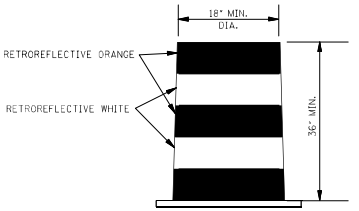
TYPE 3 OBJECT MARKER (OM-3R)

1. TYPE 3 OBJECT MARKERS SHALL BE USED AT ALL EXPOSED BRIDGE ABUTMENTS AND AT OTHER LOCATIONS AS DEEMED NECESSARY BY THE ENGINEER.
2. THE 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.
3. THE INSIDE EDGE OF THE MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION.



WING BARRICADES

1. WING BARRICADES ARE TYPE III BARRICADES ERECTED ON THE SHOULDER ON ONE OR BOTH SIDES OF THE PAVEMENT TO GIVE THE SENSATION OF A NARROWING OR RESTRICTED ROADWAY. WING BARRICADES MAY BE USED AS A MOUNTING FOR THE ADVANCE WARNING SIGNS OR FLASHERS.
2. WING BARRICADES SHOULD BE USED:
   A. IN ADVANCE OF A CONSTRUCTION PROJECT EVEN WHEN NO PART OF THE ROADWAY IS ACTUALLY CLOSED.
   B. IN ADVANCE OF ALL BRIDGE OR CULVERT WIDENING OPERATIONS.



PLASTIC DRUM STRIPING DETAIL

1. 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 FOR BARRICADE. THE PREDOMINANT COLOR ON DRUMS SHALL BE ORANGE WITH FOUR (4) RETROREFLECTIVE, HORIZONTAL, CIRCUMFERENTIAL STRIPES (2 ORANGE & 2 WHITE) 6" WIDE.
2. DRUMS SHOULD NEVER BE PLACED IN THE ROADWAY WITHOUT WARNING SIGNS.
3. WHERE PRACTICAL PLASTIC DRUMS SHOULD BE PLACED NO CLOSER THAN 3'-0" FROM THE EDGE OF TRAVELED LANE.

BY | REVISION | DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

HIGHWAY SIGN AND BARRICADE DETAILS FOR CONSTRUCTION PROJECTS

MDOT

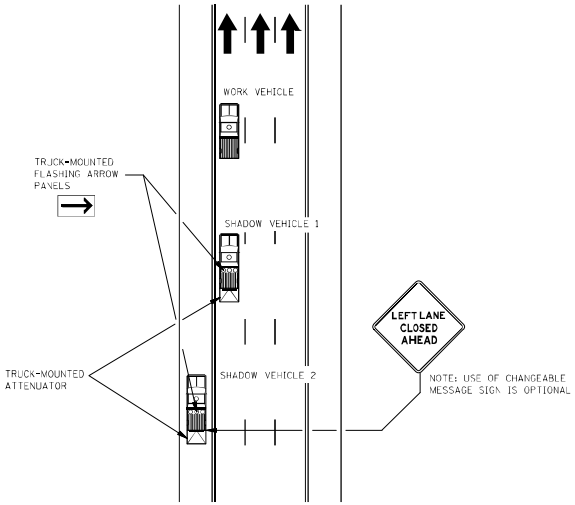
WORKING NUMBER TCP-8

ISSUE DATE: MAY 31, 2017

SHEET NUMBER 6358

STATE	PROJECT NO.
MISS.	

MOBILE OPERATIONS ON MULTILANE ROAD

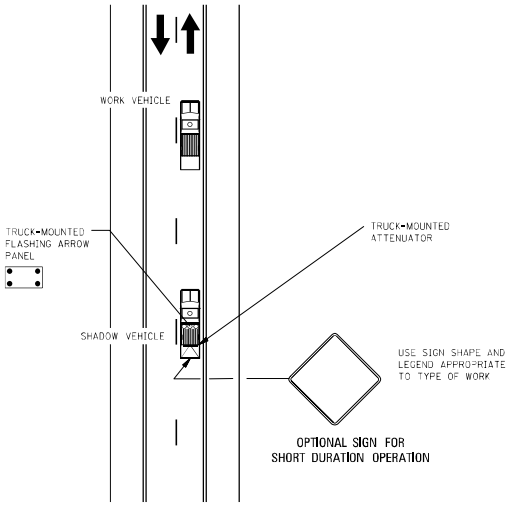


MOBILE OPERATIONS ON MULTILANE ROAD

NOTES FOR MULTILANE LANE OPERATION:

1. VEHICLES USED FOR THESE OPERATIONS SHOULD BE MADE HIGHLY VISIBLE WITH APPROPRIATE EQUIPMENT, SUCH AS FLASHING LIGHTS, ROTATING BEACONS, FLAGS, SIGNS, OR ARROW PANELS.
2. SHADOW VEHICLE 2 SHOULD BE EQUIPPED WITH AN ARROW PANEL AND TRUCK MOUNTED ATTENUATOR (TMA). AN APPROPRIATE LANE CLOSURE SIGN SHOULD BE PLACED ON SHADOW VEHICLE 2 SO AS NOT TO OBSCURE THE ARROW PANEL.
3. SHADOW VEHICLE 1 SHOULD BE EQUIPPED WITH AN ARROW PANEL AND TRUCK-MOUNTED ATTENUATOR (TMA).
4. 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.
5. WHEN ADEQUATE SHOULDER WIDTH IS NOT AVAILABLE, SHADOW VEHICLE 2 SHOULD BE ELIMINATED.
6. ON HIGH-SPEED ROADWAYS, A THIRD SHADOW VEHICLE SHOULD BE USED (i.e., VEHICLE 3 ON THE SHOULDER (IF PRACTICAL), VEHICLE 2 IN THE CLOSED LANE, AND VEHICLE 1 IN THE CLOSED LANE).
7. ARROW PANELS SHALL BE AS A MINIMUM TYPE B, 60" X 30" IN ACCORDANCE WITH THE CRITERIA PRESENTED IN THE MUTCD.
8. WORK SHOULD NORMALLY BE DONE DURING OFF-PEAK HOURS.
9. 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 OBSCURED BY EQUIPMENT OR SUPPLIES. SIGN LEGENDS SHALL BE COVERED OR TURNED FROM VIEW WHEN WORK IS NOT IN PROGRESS.
10. 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.

MOBILE OPERATIONS ON TWO–LANE ROAD



MOBILE OPERATIONS ON TWO–LANE ROAD

NOTES FOR TWO-LANE OPERATION:

1. 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.
2. 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 STOPPING SIGHT DISTANCE EXISTS TO THE REAR, THE SHADOW VEHICLE 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.
3. 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.
4. A TRUCK-MOUNTED ATTENUATOR (TMA) SHOULD BE USED ON THE SHADOW VEHICLE AND MAY BE USED ON THE WORK VEHICLE.
5. THE WORK VEHICLE SHALL BE EQUIPPED WITH BEACONS, AND THE SHADOW VEHICLES SHALL BE EQUIPPED WITH TWO HIGH-INTENSITY FLASHING 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.
6. 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 OBSCURED BY EQUIPMENT OR SUPPLIES. SIGN LEGENDS SHALL BE COVERED OR TURNED FROM VIEW WHEN WORK IS NOT IN PROGRESS.
7. ARROW BOARD TO BE USED IN CAUTION MODE.
8. 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.

DATE	REVISION	BY

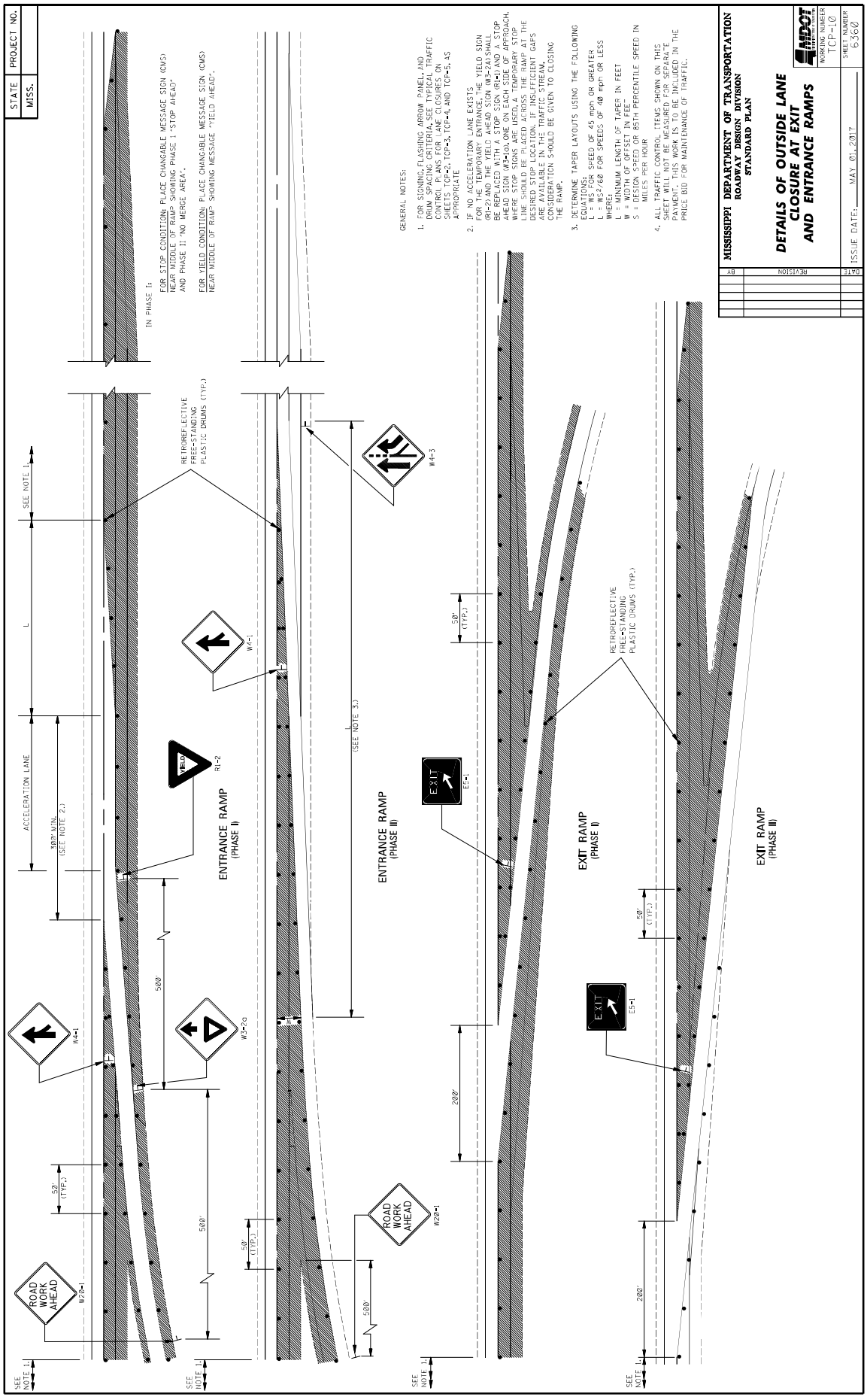
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

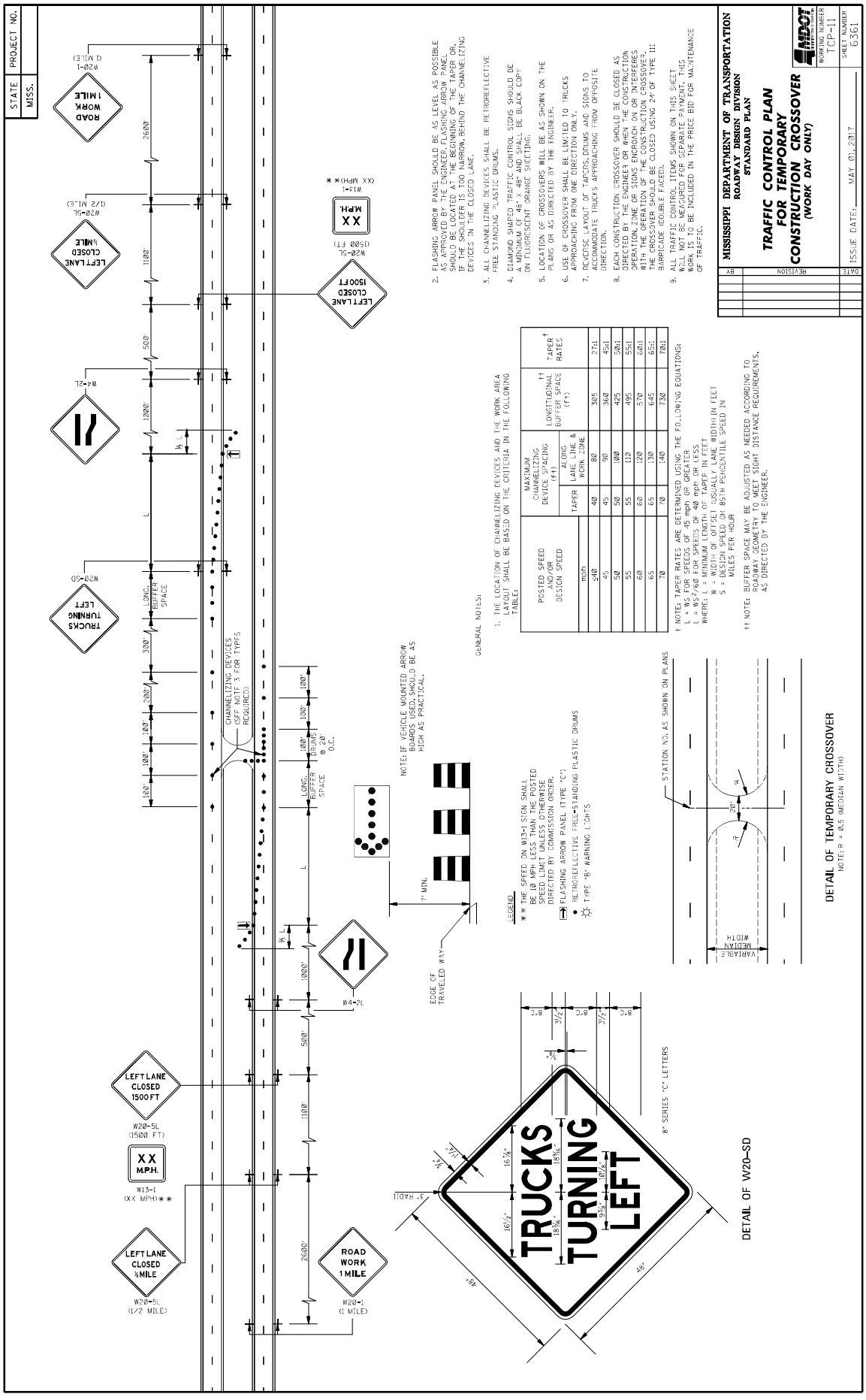
TRAFFIC CONTROL PLAN MOBILE OPERATIONS MULTILANE ROADS AND TWO–LANE ROADS

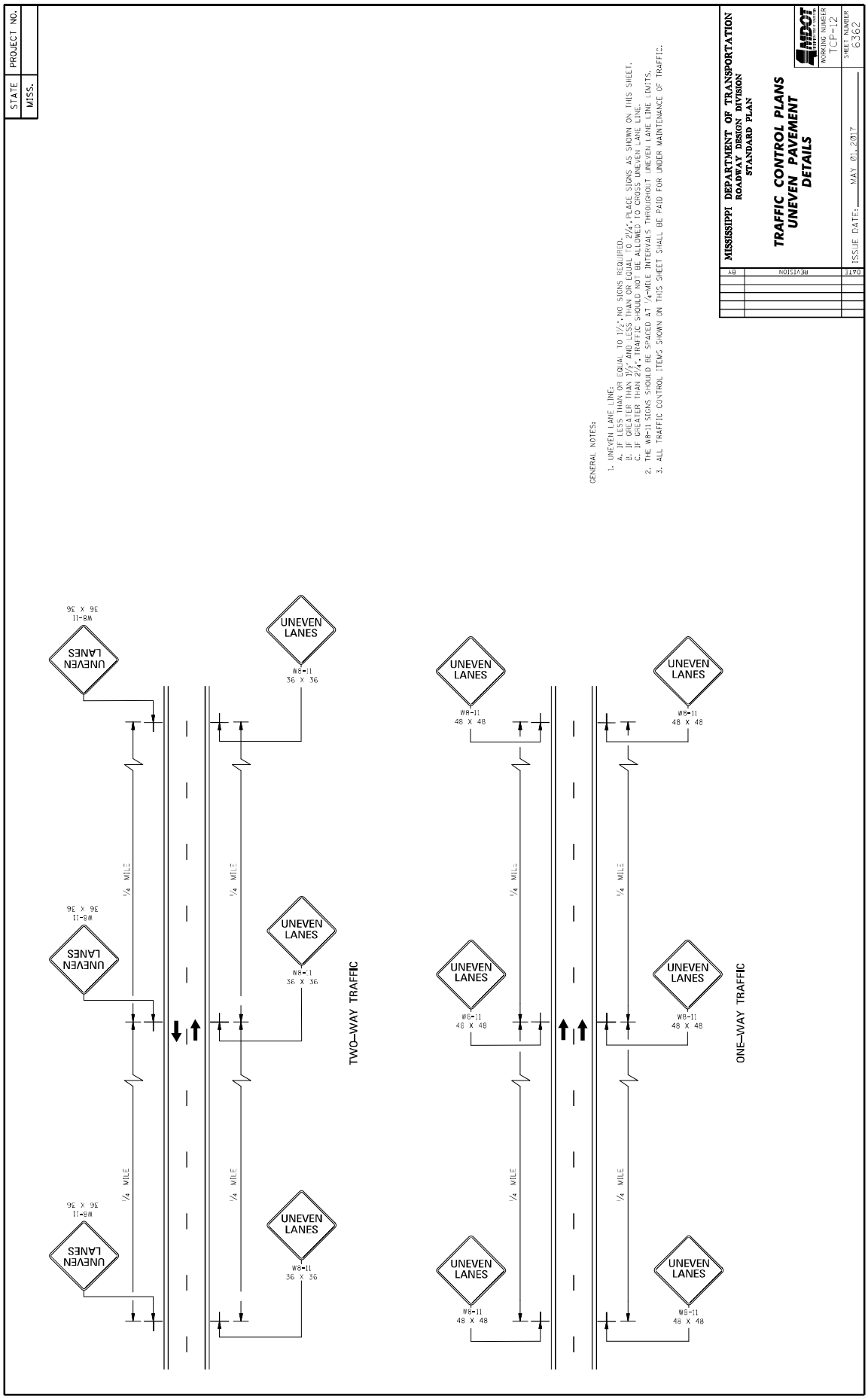
ISSUE DATE: MAY 01, 2017

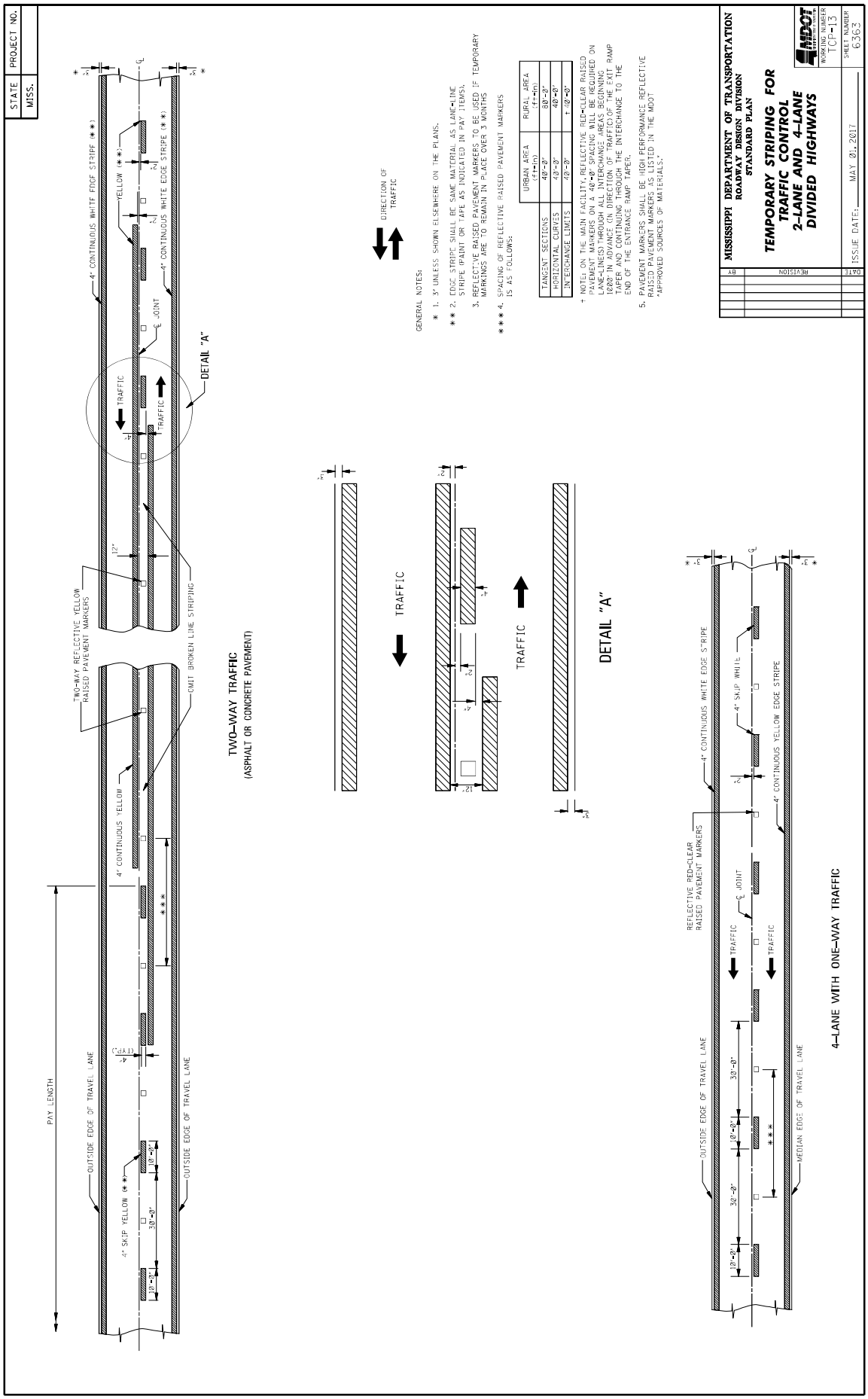
WORKING NUMBER: TCP-9

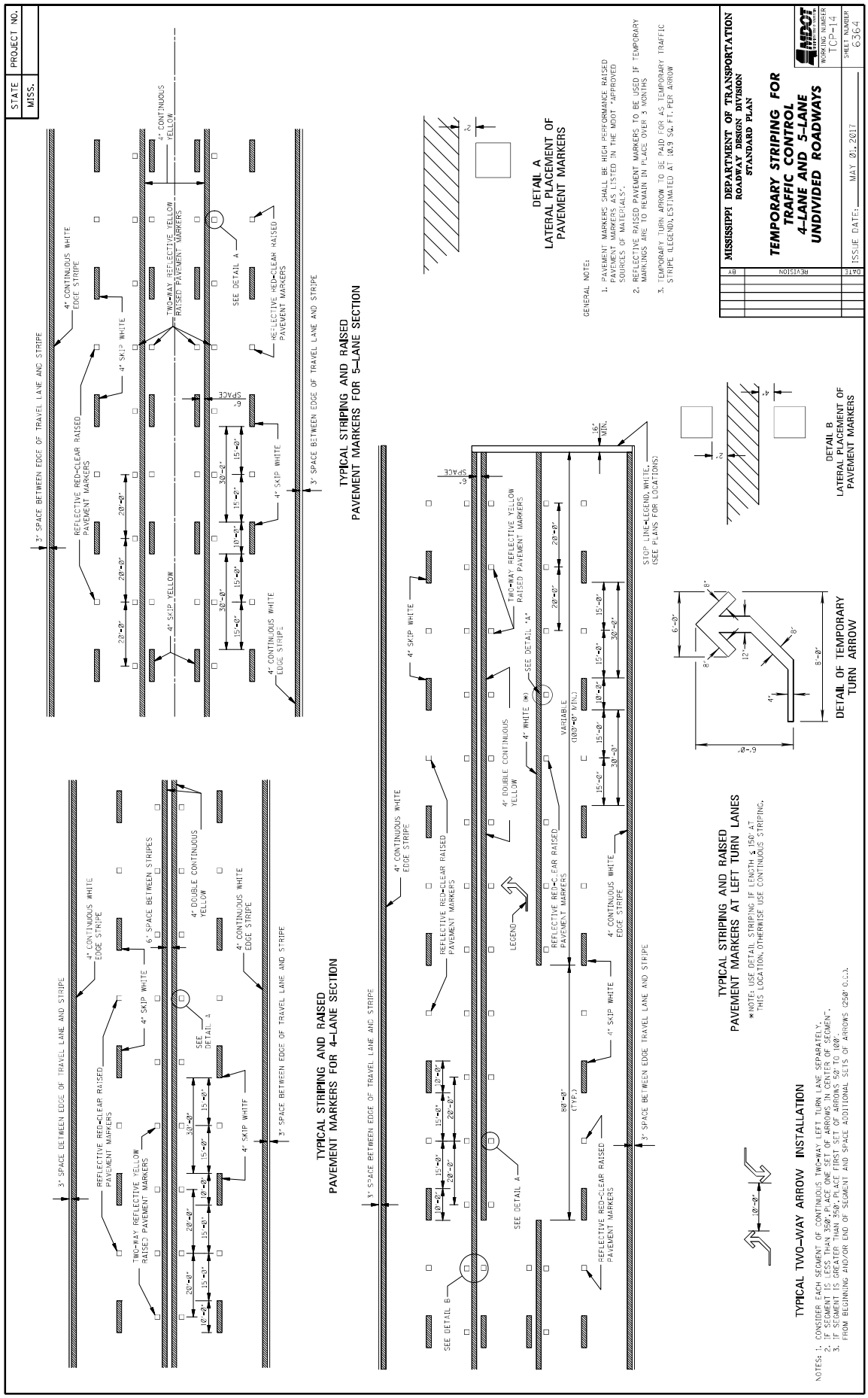
SHEET NUMBER: 6359

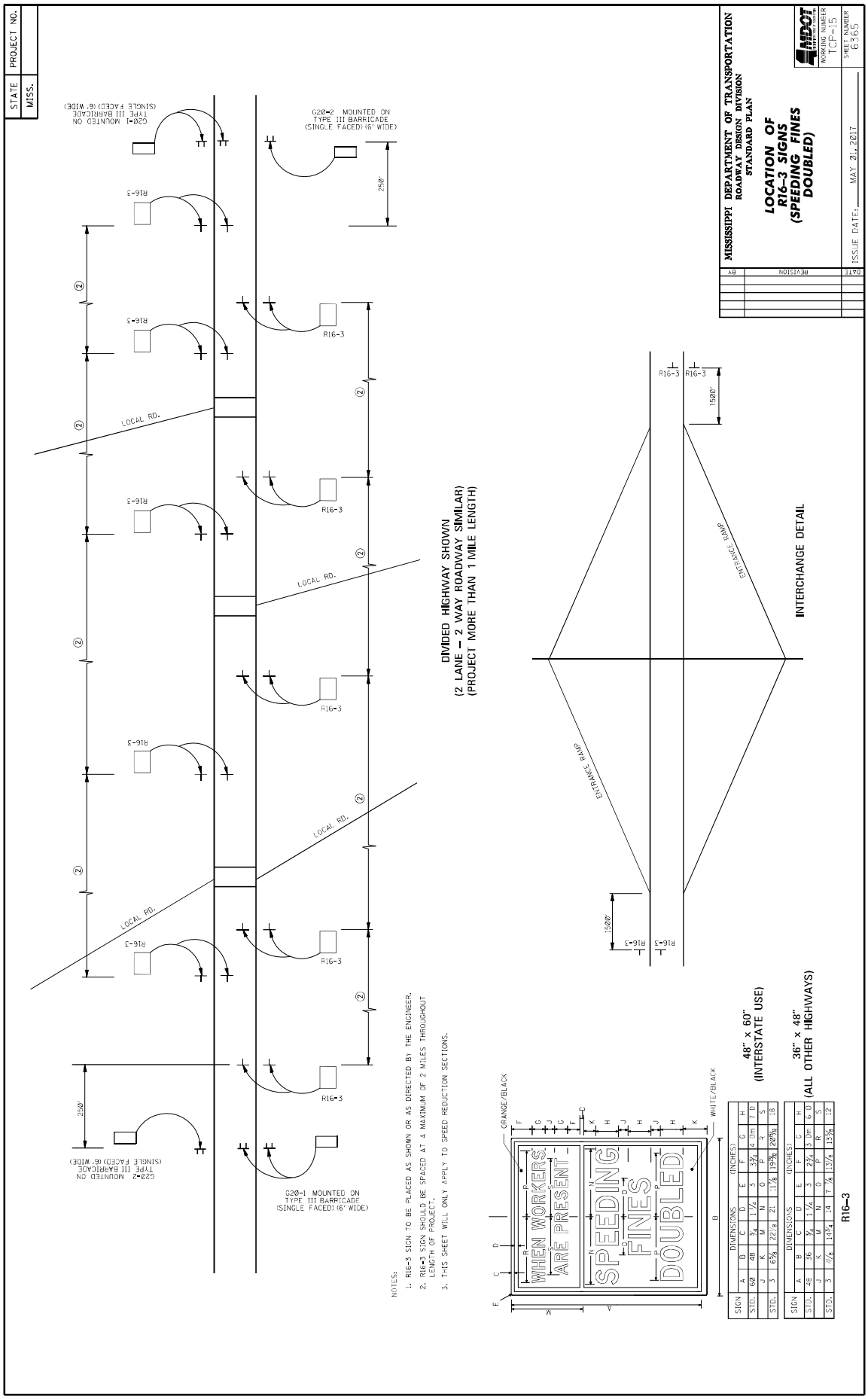

STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
DETAILS OF OUTSIDE LANE CLOSURE AT EXIT AND ENTRANCE RAMPS
WORKING NUMBER TCP-10
SHEET NUMBER 6360
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
GENERAL NOTES:
1. FOR SIGNING, FLASHING ARROW PANEL AND DRUM SPACING CRITERIA, SEE TYPICAL TRAFFIC CONTROL PLANS FOR LANE CLOSURES ON SHEETS TCP-2, TCP-3, TCP-4, AND TCP-5, AS APPROPRIATE
2. IF NO ACCELERATION LANE EXISTS FOR THE TEMPORARY ENTRANCE, THE YIELD SIGN (R1-2) AND THE YIELD AHEAD SIGN (W3-2A) SHALL BE REPLACED WITH A STOP SIGN (R1-1) AND A STOP AHEAD SIGN (W3-1), ONE ON EACH SIDE OF APPROACH. WHERE STOP SIGNS ARE USED, A STANDARD STOP BAR LINE SHOULD BE PLACED ACROSS THE RAMP AT THE DESIRED STOP LOCATION. IF INSUFFICIENT GAPS ARE AVAILABLE IN THE TRAFFIC STREAM, CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP.
3. DETERMINE TAPER LAYOUTS USING THE FOLLOWING EQUATIONS:
L = WS FOR SPEED OF 45 mph OR GREATER
L = WS²/60 FOR SPEEDS OF 40 mph OR LESS
WHERE:
L = MINIMUM LENGTH OF TAPER IN FEET
W = WIDTH OF OFFSET IN FEET
S = DESIGN SPEED OR 85TH PERCENTILE SPEED IN MILES PER HOUR
4. 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.
IN PHASE I:
FOR STOP CONDITION: PLACE CHANGABLE MESSAGE SIGN (CMS) NEAR MIDDLE OF RAMP SHOWING PHASE 1 "STOP AHEAD" AND PHASE II "NO MERGE AREA".
FOR YIELD CONDITION: PLACE CHANGABLE MESSAGE SIGN (CMS) NEAR MIDDLE OF RAMP SHOWING MESSAGE "YIELD AHEAD".
ACCELERATION LANE
L
300' MIN. (SEE NOTE 2.)
SEE NOTE 1.
RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS (TYP.)
W4-1
W4-3
R1-2
W3-2a
W20-1
ROAD WORK AHEAD
50' (TYP.)
500'
200'
ENTRANCE RAMP (PHASE I)
ENTRANCE RAMP (PHASE II)
(SEE NOTE 3.)
EXIT
E5-1
EXIT RAMP (PHASE I)
EXIT RAMP (PHASE II)


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TRAFFIC CONTROL PLAN FOR TEMPORARY CONSTRUCTION CROSSOVER
(WORK DAY ONLY)
WORKING NUMBER TCP-11
SHEET NUMBER 6361
ISSUE DATE: MAY 01, 2017
DATE REVISION BY
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
MAXIMUM CHANNELIZING DEVICES SPACING (ft)
TAPER
ALONG LANE LINE & WORK ZONE
LONGITUDINAL BUFFER SPACE (ft)
TAPER RATES
mph
2. 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, IF NO TAPER IS USED, THE ARROW 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 A MINIMUM OF 48" X 48" AND SHALL BE BLACK COPY ON FLUORESCENT ORANGE SHEETING.
5. LOCATION OF CROSSOVERS WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. USE OF CROSSOVER 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 DIRECTED BY THE ENGINEER OR WHEN THE CONSTRUCTION OPERATION, ZONE OR SIGNS ENCROACH ON OR INTERFERES WITH THE OPERATION OF THE CONSTRUCTION CROSSOVER. THE CROSSOVER SHOULD BE CLOSED USING 24" OF TYPE III BARRICADE DOUBLE FACED.
9. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET ARE NOT INCLUDED 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 = WS FOR SPEEDS OF 45 mph OR GREATER
L = WS²/60 FOR SPEEDS OF 40 mph OR LESS
WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
W = WIDTH OF OFFSET USUAL 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, OBJECT, SIGHT DISTANCE REQUIREMENTS, AS DIRECTED BY THE ENGINEER.
LEGEND
** THE SPEED ON W13-1 SIGN SHALL 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
NOTE: IF VEHICLE MOUNTED ARROW BOARDS USED, SHOULD BE AS HIGH AS PRACTICAL.
7' MIN.
EDGE OF TRAVELED WAY
CHANNELIZING DEVICES (SEE NOTE 3 FOR TYPES REQUIRED)
LONG. BUFFER SPACE
TRUCKS LEFT
W20-5D
W4-2L
LEFT LANE CLOSED 1500 FT
W20-5L (1500 FT)
XX M.P.H.
W13-1 (XX MPH)**
LEFT LANE CLOSED ½ MILE
W20-5L (1/2 MILE)
ROAD WORK 1 MILE
W20-1 (1 MILE)
W20-5L (1500 FT)
LEFT LANE CLOSED 1500 FT
W13-1 (XX MPH)**
LEFT LANE CLOSED ½ MILE
W20-5L (1/2 MILE)
ROAD WORK 1 MILE
W20-1 (1 MILE)
STATION NO. AS SHOWN ON PLANS
VARIABLE MEDIAN WIDTH
DETAIL OF TEMPORARY CROSSOVER
NOTE: R = 0.5 MEDIAN WIDTH
8" SERIES "C" LETTERS
TRUCKS TURNING LEFT
DETAIL OF W20-5D


STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TRAFFIC CONTROL PLANS
UNEVEN PAVEMENT
DETAILS
WORKING NUMBER
TCP-12
SHEET NUMBER
6362
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
GENERAL NOTES:
1. UNEVEN LANE LINE:
A. IF LESS THAN OR EQUAL TO 1½", NO SIGNS REQUIRED.
B. IF GREATER THAN 1½" AND LESS THAN OR EQUAL TO 2¼", PLACE SIGNS AS SHOWN ON THIS SHEET.
C. IF GREATER THAN 2¼", TRAFFIC SHOULD NOT BE ALLOWED TO CROSS UNEVEN LANE LINE.
2. THE W8-11 SIGNS SHOULD BE SPACED AT ¼-MILE INTERVALS THROUGHOUT UNEVEN LANE LINE LIMITS.
3. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER MAINTENANCE OF TRAFFIC.
UNEVEN LANES
W8-11
36 X 36
¼ MILE
TWO-WAY TRAFFIC
ONE-WAY TRAFFIC
48 X 48

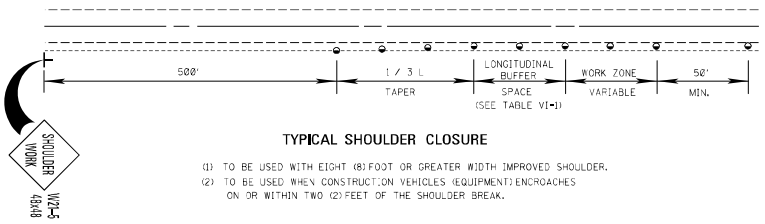

STATE
MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TEMPORARY STRIPING FOR TRAFFIC CONTROL 2-LANE AND 4-LANE DIVIDED HIGHWAYS
WORKING NUMBER TCP-13
SHEET NUMBER 6363
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
GENERAL NOTES:
* 1. 3" UNLESS SHOWN ELSEWHERE ON THE PLANS.
** 2. EDGE STRIPE SHALL BE SAME MATERIAL AS LANE-LINE STRIPE (PAINT OR TAPE AS INDICATED IN "PAY" ITEMS).
3. REFLECTIVE RAISED PAVEMENT MARKERS TO BE USED IF TEMPORARY MARKINGS ARE TO REMAIN IN PLACE OVER 3 MONTHS
*** 4. SPACING OF REFLECTIVE RAISED PAVEMENT MARKERS IS AS FOLLOWS:
URBAN AREA (FT-IN) | RURAL AREA (FT-IN)
TANGENT SECTIONS 40'-0" 80'-0"
HORIZONTAL CURVES 40'-0" 40'-0"
INTERCHANGE LIMITS 40'-0" † 40'-0"
† NOTE: ON THE MAIN FACILITY, REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS ON A 40'-0" SPACING WILL BE REQUIRED ON LANE-LINE(S) THROUGH ALL INTERCHANGE AREAS BEGINNING 100'-0" IN ADVANCE OF THE BEGINNING OF THE EXIT RAMP TAPER AND CONTINUING THROUGH THE INTERCHANGE TO THE END OF THE ENTRANCE RAMP TAPER.
5. PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE REFLECTIVE RAISED PAVEMENT MARKERS AS LISTED IN THE MDOT "APPROVED SOURCES OF MATERIALS."
DIRECTION OF TRAFFIC
TRAFFIC
DETAIL "A"
TWO-WAY TRAFFIC
(ASPHALT OR CONCRETE PAVEMENT)
TWO-WAY REFLECTIVE YELLOW RAISED PAVEMENT MARKERS
4" CONTINUOUS YELLOW
4" SKIP YELLOW (**)
4" CONTINUOUS WHITE EDGE STRIPE (**)
OMIT BROKEN LINE STRIPING
OUTSIDE EDGE OF TRAVEL LANE
PAY LENGTH
4-LANE WITH ONE-WAY TRAFFIC
REFLECTIVE RED-CLEAR RAISED PAVEMENT MARKERS
4" SKIP WHITE
4" CONTINUOUS YELLOW EDGE STRIPE
MEDIAN EDGE OF TRAVEL LANE


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
TEMPORARY STRIPING FOR TRAFFIC CONTROL 4-LANE AND 5-LANE UNDIVIDED ROADWAYS
WORKING NUMBER TCP-14
SHEET NUMBER 6364
ISSUE DATE: MAY 01, 2017
DATE
REVISION
BY
TYPICAL STRIPING AND RAISED PAVEMENT MARKERS FOR 4-LANE SECTION
TYPICAL STRIPING AND RAISED PAVEMENT MARKERS FOR 5-LANE SECTION
TYPICAL STRIPING AND RAISED PAVEMENT MARKERS AT LEFT TURN LANES
* NOTE: USE DETAIL STRIPING IF LENGTH ≤ 150' AT THIS LOCATION, OTHERWISE USE CONTINUOUS STRIPING.
TYPICAL TWO-WAY ARROW INSTALLATION
NOTES: 1. CONSIDER EACH SEGMENT OF CONTINUOUS TWO-WAY LEFT TURN LANE SEPARATELY.
2. IF SEGMENT IS LESS THAN 350', PLACE ONE SET OF ARROWS IN CENTER OF SEGMENT.
3. IF SEGMENT IS GREATER THAN 350', PLACE FIRST SET OF ARROWS 50' TO 100' FROM BEGINNING AND/OR END OF SEGMENT AND SPACE ADDITIONAL SETS OF ARROWS @250' O.C.
DETAIL A LATERAL PLACEMENT OF PAVEMENT MARKERS
DETAIL B LATERAL PLACEMENT OF PAVEMENT MARKERS
DETAIL OF TEMPORARY TURN ARROW
GENERAL NOTE:
1. PAVEMENT MARKERS SHALL BE HIGH PERFORMANCE RAISED PAVEMENT MARKERS AS LISTED IN THE MDOT "APPROVED SOURCES OF MATERIALS".
2. REFLECTIVE RAISED PAVEMENT MARKERS TO BE USED IF TEMPORARY MARKINGS ARE TO REMAIN IN PLACE OVER 3 MONTHS
3. TEMPORARY TURN ARROW TO BE PAID FOR AS TEMPORARY TRAFFIC STRIPE (LEGEND), ESTIMATED AT 10.9 SQ. FT. PER ARROW


STATE MISS.
PROJECT NO.
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
LOCATION OF R16-3 SIGNS (SPEEDING FINES DOUBLED)
WORKING NUMBER TCP-15
SHEET NUMBER 6365
ISSUE DATE: MAY 01, 2017
DATE BY REVISION
G20-1 MOUNTED ON TYPE III BARRICADE (SINGLE FACED) (6' WIDE)
G20-2 MOUNTED ON TYPE III BARRICADE (SINGLE FACED) (6' WIDE)
R16-3
LOCAL RD.
250'
G20-2 MOUNTED ON TYPE III BARRICADE (SINGLE FACED) (6' WIDE)
G20-1 MOUNTED ON TYPE III BARRICADE (SINGLE FACED) (6' WIDE)
DIVIDED HIGHWAY SHOWN
(2 LANE – 2 WAY ROADWAY SIMILAR)
(PROJECT MORE THAN 1 MILE LENGTH)
1500'
EXCHANGE RAMP
INTERCHANGE DETAIL
NOTES:
1. R16-3 SIGN TO BE PLACED AS SHOWN OR AS DIRECTED BY THE ENGINEER.
2. R16-3 SIGN SHOULD BE SPACED AT A MAXIMUM OF 2 MILES THROUGHOUT LENGTH OF PROJECT.
3. THIS SHEET WILL ONLY APPLY TO SPEED REDUCTION SECTIONS.
ORANGE/BLACK
WHITE/BLACK
WHEN WORKERS ARE PRESENT
SPEEDING FINES DOUBLED
48" x 60" (INTERSTATE USE)
36" x 48" (ALL OTHER HIGHWAYS)
R16-3

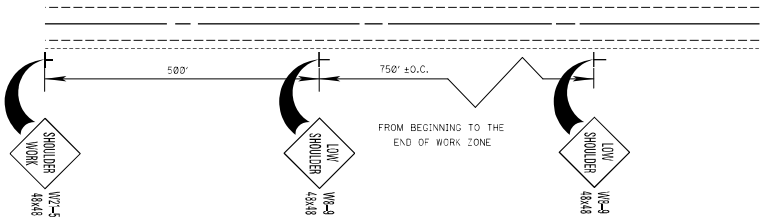
STATE	PROJECT NO.
MISS.	

PLASTIC DRUMS
(SEE NOTE FOR SPACING)



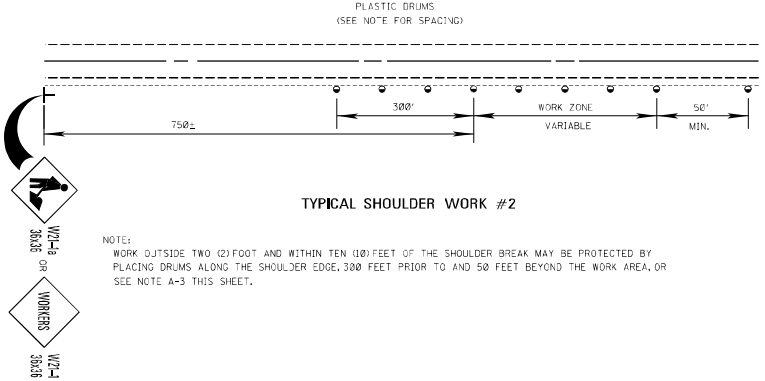
TYPICAL SHOULDER CLOSURE

(1) TO BE USED WITH EIGHT (8) FOOT OR GREATER WIDTH IMPROVED SHOULDER.
(2) TO BE USED WHEN CONSTRUCTION VEHICLES (EQUIPMENT) ENCROACHES ON OR WITHIN TWO (2) FEET OF THE SHOULDER BREAK.



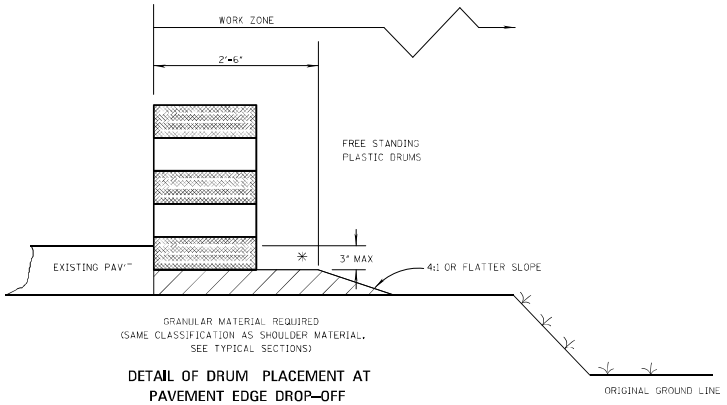
TYPICAL SHOULDER WORK #1
(SEE NOTE A–1 THIS SHEET)

PLASTIC DRUMS
(SEE NOTE FOR SPACING)



TYPICAL SHOULDER WORK #2

NOTE:
WORK OUTSIDE TWO (2) FOOT AND WITHIN TEN (10) FEET OF THE SHOULDER BREAK MAY BE PROTECTED BY PLACING DRUMS ALONG THE SHOULDER EDGE, 300 FEET PRIOR TO AND 50 FEET BEYOND THE WORK AREA, OR SEE NOTE A-3 THIS SHEET.



DETAIL OF DRUM PLACEMENT AT PAVEMENT EDGE DROP–OFF

NOTES:

✳ A. PAVEMENT EDGE DROP-OFF

1. IF LESS THAN TWO AND ONE QUARTER (2.25) INCHES-NO PROTECTION REQUIRED. PLACE A SHOULDER WORK SIGN (W21-5) 500 FEET IN ADVANCE OF WORK ZONE SHOULDER AND A LOW SHOULDER SIGN (W8-9) AT THE BEGINNING AND THROUGHOUT THE WORK ZONE @ (750'+C.C.).
2. TWO AND ONE QUARTER TO THREE INCHES-PLACE DRUMS, VERTICAL PANELS OR BARRICADES EVERY 100 FEET ON TANGENT SECTIONS FOR SPEEDS OF 50 MILES PER HOUR OR GREATER. CONES MAY BE USED IN PLACE OF DRUMS, PANELS, AND BARRICADES DURING DAYLIGHT HOURS. FOR TANGENT SECTIONS WITH SPEEDS LESS THAN 50 MILES PER HOUR AND FOR CURVES, DEVICES SHOULD BE PLACED EVERY 50 FEET. SPACING FOR TAPERS SHOULD BE IN ACCORDANCE WITH THE M.U.T.C.D. (1 / 3 L, WHERE L IS THE TAPER LENGTH IN FEET.)
3. GREATER THAN THREE (3) INCHES-POSITIVE SEPARATION OR WEDGE WITH 4:1 OR FLATTER SLOPE NEEDED. IF THERE IS EIGHT (8) FEET OR MORE DISTANCE BETWEEN THE EDGE OF TRAVEL LANE AND DROP-OFF, THEN DRUMS, PANELS OR BARRICADES MAY BE USED.
4. FOR TEMPORARY CONDITIONS, DROP-OFFS GREATER THAN THREE (3) INCHES MAY BE PROTECTED WITH DRUMS, VERTICAL PANELS OR BARRICADES FOR SHORT DISTANCES DURING DAYLIGHT HOURS WHILE WORK IS BEING DONE IN THE DROP-OFF AREA.
5. LESSER TREATMENTS THAN THOSE DESCRIBED ABOVE MAY BE CONSIDERED FOR LOW-VOLUME LOCAL STREETS.

B. DRUM SPACING

1. TANGENTS = 2 X S
2. TAPERS = L / 3
   WHERE L = S X W
   L = TAPER LENGTH IN FEET
   S = SPEED IN MPH (POSTED OR 85 PERCENTILE)
   W = WIDTH OF OFFSET IN FEET

C. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER MAINTENANCE OF TRAFFIC.

TABLE VI-1. GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE

✳✳ SPEED (MPH)	LENGTH (FEET)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485

✳✳ POSTED SPEED, OFF-PEAK 85 PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH.

BY | REVISION | DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

TRAFFIC CONTROL DETAILS DRUM PLACEMENT AND SHOULDER CLOSURE

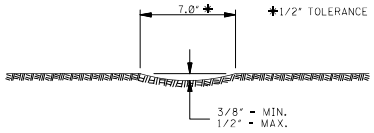
MDOT

WORKING NUMBER
TCP-16

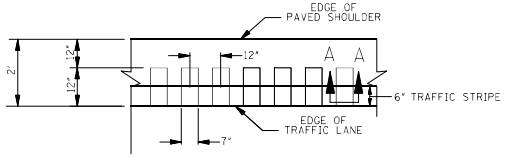
ISSUE DATE: MAY 31, 2017

SHEET NUMBER
6366

STATE	PROJECT NO.
MISS.	



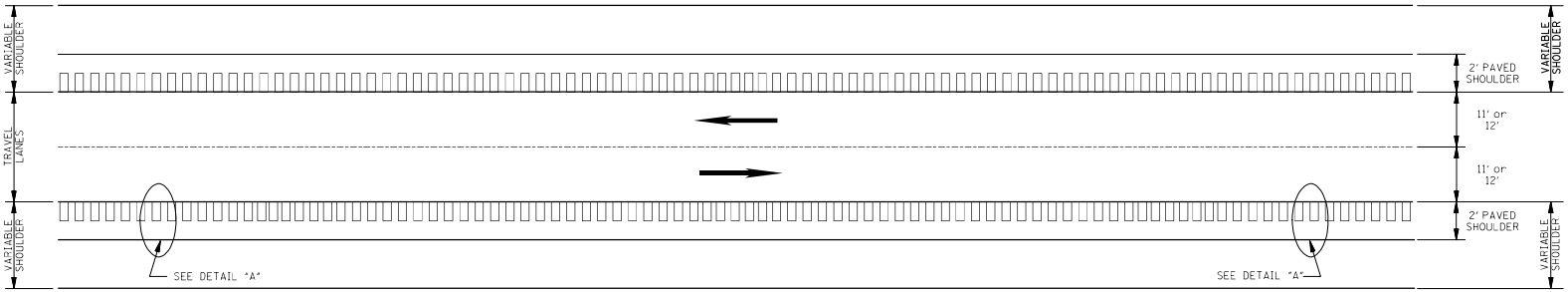
SECTION "A–A"



DETAIL "A"

GENERAL NOTES

1. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED ON LEFT AND RIGHT SHOULDERS OF ALL PAVED SHOULDERS ON THIS PROJECT
2. GROUND-IN RUMBLE STRIPES SHALL BE OMITTED ACROSS PUBLIC INTERSECTING ROADWAYS OR OTHER INTERRUPTIONS 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 OVERLAID 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.



PLAN

NOT TO SCALE

DATE	REVISION	BY
2/8/21	REVISED STRIPE LOCATION	DSP

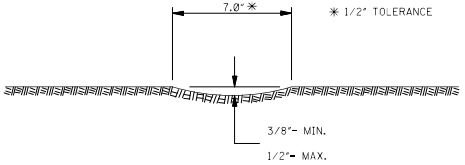
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

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

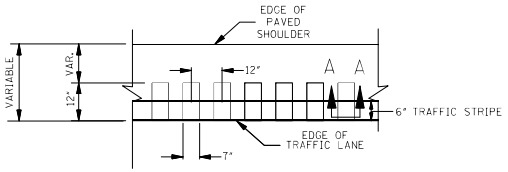
ISSUE DATE: AUGUST 01, 2017

MDOT
DRAWING NUMBER
RS-1
SHEET NUMBER
6064

STATE	PROJECT NO.
MISS.	



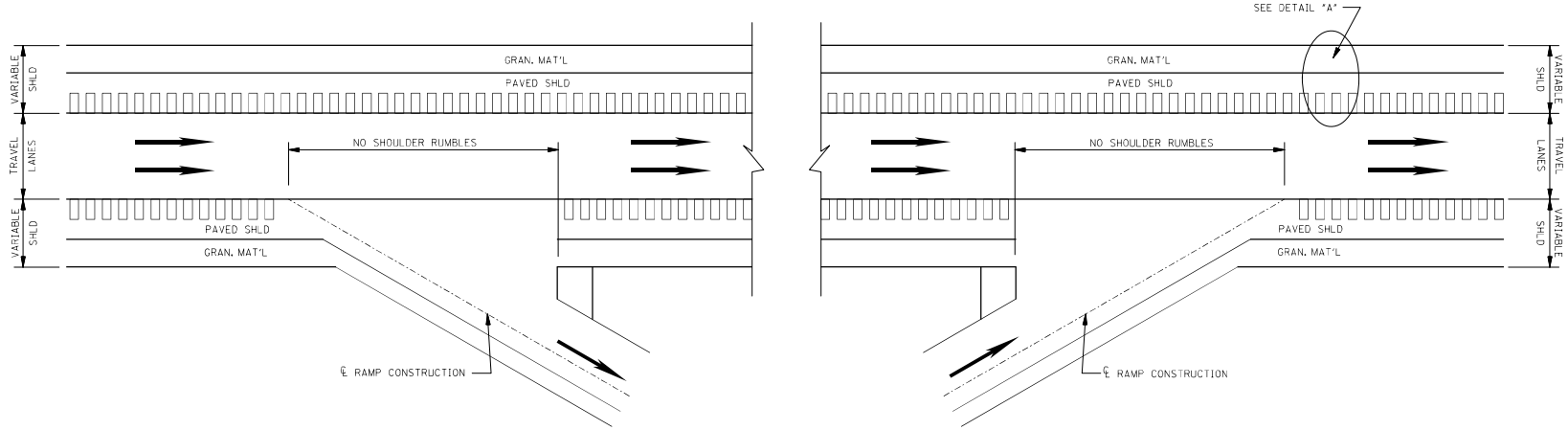
SECTION "A–A"



DETAIL "A"

GENERAL NOTES

1. GROUND-IN RUMBLE STRIPES SHALL BE APPLIED ON LEFT AND RIGHT SHOULDERS OF ALL PAVED SHOULDERS ON THIS PROJECT
2. GROUND-IN RUMBLE STRIPES SHALL BE OMITTED ACROSS PUBLIC INTERSECTING ROADWAYS OR OTHER INTERRUPTIONS 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 OVERLAID OR RECONSTRUCTED BEYOND NORMAL MAINLINE R.O.W.
   - C. ANY ROADWAY WITH EXISTING RUMBLE STRIPES PRIOR TO CONSTRUCTION.



PLAN

NOT TO SCALE

DETAILS OF
RUMBLE STRIPS

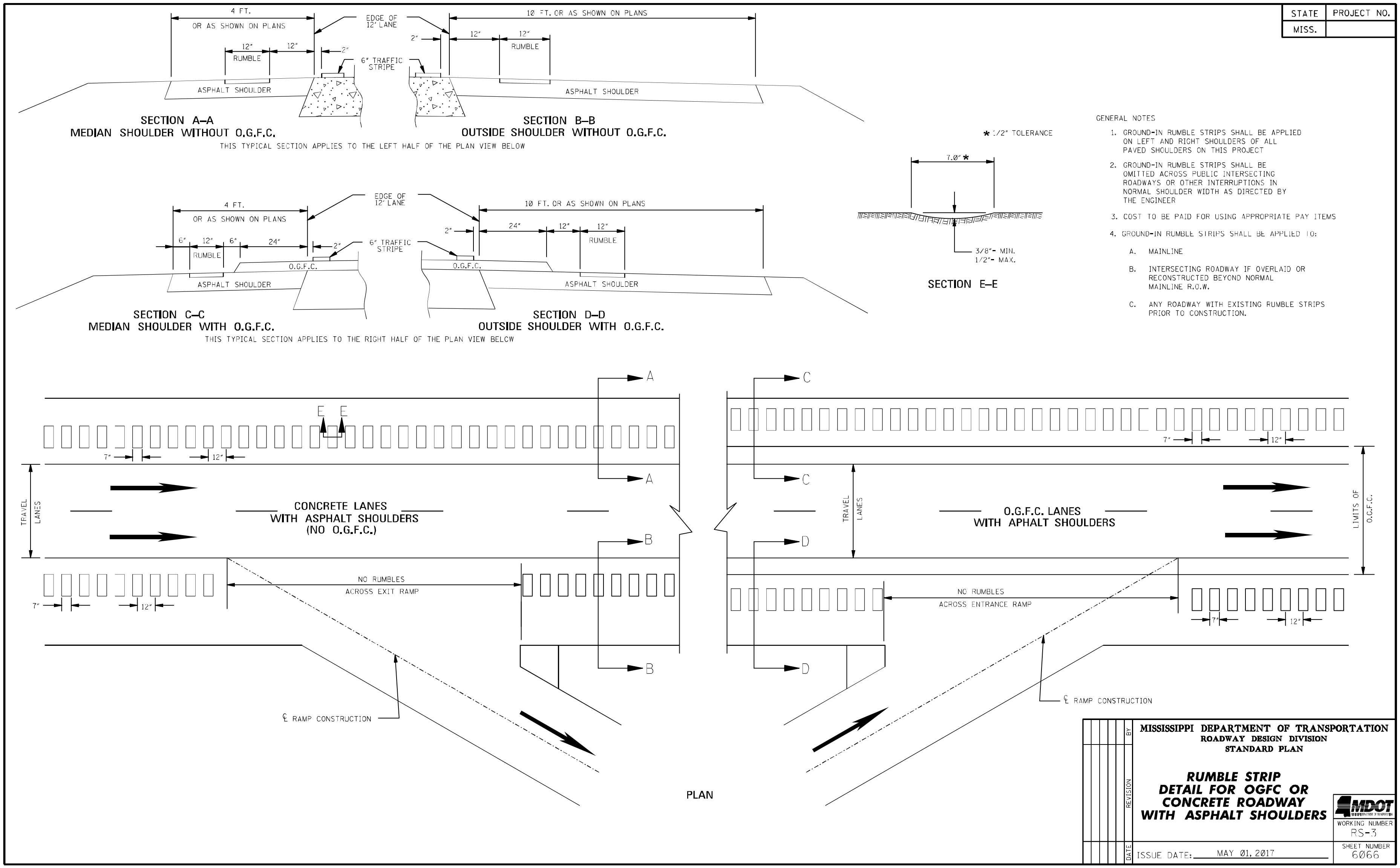
DATE	REVISION	BY
2/8/21	REVISED STRIPE LOCATION	DSP

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

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

ISSUE DATE: AUGUST 01, 2017

MDOT
DRAWING NUMBER
RRS-2
SHEET NUMBER
6065


STATE
PROJECT NO.
MISS.
4 FT.
OR AS SHOWN ON PLANS
EDGE OF 12' LANE
6" TRAFFIC STRIPE
12" RUMBLE
ASPHALT SHOULDER
10 FT. OR AS SHOWN ON PLANS
SECTION A–A
MEDIAN SHOULDER WITHOUT O.G.F.C.
SECTION B–B
OUTSIDE SHOULDER WITHOUT O.G.F.C.
THIS TYPICAL SECTION APPLIES TO THE LEFT HALF OF THE PLAN VIEW BELOW
O.G.F.C.
SECTION C–C
MEDIAN SHOULDER WITH O.G.F.C.
SECTION D–D
OUTSIDE SHOULDER WITH O.G.F.C.
THIS TYPICAL SECTION APPLIES TO THE RIGHT HALF OF THE PLAN VIEW BELOW
* 1/2" TOLERANCE
7.0" *
3/8" - MIN.
1/2" - MAX.
SECTION E–E
GENERAL NOTES
1. GROUND-IN RUMBLE STRIPS SHALL BE APPLIED ON LEFT AND RIGHT SHOULDERS OF ALL PAVED SHOULDERS ON THIS PROJECT
2. GROUND-IN RUMBLE STRIPS SHALL BE OMITTED ACROSS PUBLIC INTERSECTING ROADWAYS OR OTHER INTERRUPTIONS IN NORMAL SHOULDER WIDTH AS DIRECTED BY THE ENGINEER
3. COST TO BE PAID FOR USING APPROPRIATE PAY ITEMS
4. GROUND-IN RUMBLE STRIPS SHALL BE APPLIED TO:
A. MAINLINE
B. INTERSECTING ROADWAY IF OVERLAID OR RECONSTRUCTED BEYOND NORMAL MAINLINE R.O.W.
C. ANY ROADWAY WITH EXISTING RUMBLE STRIPS PRIOR TO CONSTRUCTION.
TRAVEL LANES
CONCRETE LANES
WITH ASPHALT SHOULDERS
(NO O.G.F.C.)
O.G.F.C. LANES
WITH APHALT SHOULDERS
LIMITS OF O.G.F.C.
NO RUMBLES
ACROSS EXIT RAMP
NO RUMBLES
ACROSS ENTRANCE RAMP
℄ RAMP CONSTRUCTION
PLAN
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN
RUMBLE STRIP
DETAIL FOR OGFC OR
CONCRETE ROADWAY
WITH ASPHALT SHOULDERS
DATE
REVISION
BY
ISSUE DATE: MAY 01, 2017
WORKING NUMBER
RS-3
SHEET NUMBER
6066

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3676 **CODE: (SP)**

DATE: 09/21/2021

SUBJECT: Asphalt Gyratory Compactor Internal Angle Calibration

Bidders are advised that by March 1, 2022, all asphalt gyratory compactors shall be calibrated to an internal angle of 1.16° ±0.02°. This requirement will be reflected in updates made to MT-78, MT-80, and MT-83. This calibration requirement also extends to all QC/QA testing.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 3875 **CODE: (IS)**

DATE: 12/15/2021

SUBJECT: ITS General Requirements

For this Notice to Bidders, the "Engineer" shall mean the Project Engineer and/or their designee(s) throughout the rest of this NTB, unless stated otherwise.

Submittals
All submittals covered under this section shall be made electronically to the Project Engineer and to the ITS Engineer, shall clearly state the project name and project number, and should be in as few separate submittals as possible.

All products selected for use on this project shall be in compliance with 2 CFR 200.216, in addition to all other contract requirements as outlined throughout the specifications, special provisions and plans. No telecommunication and video surveillance equipment or services shall be manufactured by the following companies: Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, Dahua Technology Company, and any subsidiary or affiliate of these entities.

Product Data. Manufacturers' product data including specifications/cut-sheets, design guides, installation manuals, operating manuals, and maintenance/service manuals shall be submitted by the Contractor for each component of the ITS system, including but not limited to cabinets, controllers, sensors, conduit, pull boxes, hardware, and all other parts of the system selected for installation.

The complete information for the original product data submittal shall be contained in as few submittals as possible and be in an organized fashion.

The product data submittal shall be accompanied by a specification checklist. At a minimum, this checklist shall clearly state the following:

1) The project name and project number
2) The date of the submittal
3) The pay item number and description
4) The part and/or model number, matching the cut-sheet
5) The manufacturer
6) A Certification Statement that the referenced product is not manufactured by any of the following: Huawei Technologies Company, ZTE Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, Dahua Technology Company, and any subsidiary or affiliate of these entities. (as per 2 CFR 200.216)
7) Every material requirement as stated in in this Notice to Bidders and as outlined elsewhere within this contract.

8) A statement of whether the product complies with the requirements set forth in the specifications, special provisions, plans and NTB. If product is not compliant, an explanation of non-compliance shall be provided.

All subsections of a particular section may be omitted if the section heading is included, is indicated to be not applicable, and that it is evident that all subsections being omitted are also not applicable.

It shall be the responsibility of the Contractor to guarantee the accuracy of the checklist.

Other Submittals. The following submittals shall be required:

1) Shop Drawings
2) Cabinet wiring diagrams with system labeling schedule.
3) Site wiring/connection drawings.
4) Rack diagrams showing rack mounted equipment.
5) All documentation as described in the Project Testing Plan Requirements section below.
6) Project Record Drawings:
    a. The purpose of Project Record Drawings is to provide factual information regarding all aspects of the Work, to enable future service, modifications, and additions to the Work.
    b. Project Record Drawings are an important element of this Work. Contractor shall accurately maintain Project Record Drawings throughout the course of this project.
    c. Project Record Drawings shall include documentation of all Work, including the conduit locations, pull box locations, equipment locations, foundation details, setup parameters and wiring and block diagrams.
    d. Project Record Drawings shall accurately show the physical placement of the following:
        i. Cabinets, sensors, pull boxes, and other materials installed at each site.
        ii. Conduit runs and splicing information.
    e. Project Record Drawings shall show the physical placement of each system component installed during the project at each site. Where the plan details do not depict actual field conditions, the Contractor shall amend the construction plan as required.
7) Upon completion of Work, and prior to Final Acceptance, the Contractor shall prepare and submit the final record set of Project Record Drawings. This set shall reflect the installed Work.
8) Closeout Submittals - A set of Project Record Drawings shall be provided to the Project Engineer and ITS Engineer for any items that changed or were not previously submitted, including:
    a. Project Record Drawings
    b. Product Data
    c. Installation Manuals
    d. Operating Manuals
    e. Maintenance/Service Manuals

As-Built Plans. The Contractor shall provide GPS locations of all pull boxes, splices,

termination equipment cabinets, ITS field locations and all pole locations. The Contractor shall record and submit the sequential footage markers from the fiber optic trunk and drop cables for each GPS location. The Contractor shall provide scanned PDF files of all plan sheets with pen and ink markups. The Contractor shall provide a site location inventory of ITS devices to include manufacturer model, serial numbers, MAC addresses, and IP addresses (as applicable) for all installed devices. All documentation will be due to the Department a minimum of thirty (30) calendar days after the installation.

Additional Quality Assurance Measures

The project shall be constructed in such a manner as to comply with environmental regulations and erosion control as specified in the plans and elsewhere in MDOT standard specifications.

At the completion of the Work, the site shall be cleaned, restored, grassed and otherwise stabilized to a condition consistent with conditions before work began. This work shall be paid for under other items of work.

All disturbed signs, guardrail, markers, fencing, and other roadway appurtenances shall be restored. Disturbed roadway appurtenances that require complete removal and replacement will be identified within the contract and will have separate pay items and quantities set forth for such work.

The Contractor shall clean-up debris caused by Contractor's activities on a daily basis as the work progresses. This work shall be paid for under other items of work.

All work-related accidents shall be reported immediately to the Project Engineer or his/her representative.

Maintenance and Technical Support. The supplier must provide and have a parts support system capable of providing parts for the length of the warranty period.

Project Testing Plan Requirements

The Contractor shall conduct a Project Testing Plan as required below in addition to all other project testing and acceptance procedures required elsewhere in the specifications and Plans. Some specifications contain details regarding the testing for individual device types or attributes, but this section outlines the overall testing plans for the entire project as a whole. The Project Testing Plan shall include a series of tests on all project materials occurring at various stages in the project. All costs associated with the Project Testing Plan shall be absorbed in contract pay items; no separate payment will be made for any testing.

General Requirements. The Contractor is responsible for planning, coordinating, conducting and documenting all aspects of the Project Testing Plan as detailed below and providing all required equipment for the tests. The Engineer reserves the right to attend and observe all tests.

Each test shall be an individual and separate event for each type of test and for each type of equipment as defined elsewhere within this NTB. The Contractor shall follow the testing sequence as described in this NTB and shall perform the required tests on all applicable

devices and infrastructure.

Test procedures shall be submitted and approved for each test as part of the project submittals programs. Test procedures shall include every action necessary to fully demonstrate that the material under test is clearly and definitively in full compliance with all project requirements. Test procedure actions shall cross-reference to the specifications or Plans requirement that is the subject of the test action. Test procedure actions shall cross-reference the applicable sections of the final approved Project Submittal Compliance Form and the submittal materials for the subject of the test action. Test procedures shall contain test setup and block/wiring diagrams showing all materials being tested and all test and measurement equipment, with calibration documentation, and shall contain documentation regarding the equipment configurations and programming. Test procedures shall include checkoff blanks for each project requirement included in that test and shall include forms for the documentation of all measured test results.

No testing shall be scheduled until approval of all project submittals for all materials covered under a given test and approval of the test procedures for the given test has been granted.

Unless otherwise required herein, the Contractor shall request in writing the Engineer's approval for each test occurrence a minimum of 14 days prior to the requested test date. Test requests shall include the test to be performed and the material to be tested. The Engineer reserves the right to reschedule tests if needed.

For any series of tests on different installations of a given material (e.g., different sections of cable), the Contractor shall request in writing the Engineer's approval for the first test occurrence of the series a minimum of 14 days prior to the requested test date, regardless of the notification requirements for subsequent test occurrences.

The Contractor shall provide all ancillary equipment, materials, diagnostic and test software, and computers as required in the approved test procedures.

All test results shall be documented in writing by the Contractor in accordance with the test procedure and submitted to the Engineer within seven (7) days of the completion of the test. Any given test session is considered incomplete until the Engineer has approved the documentation for that test session.

The Contractor shall provide test results documentation in electronic format and printed format (3 copies). Electronic formats shall be provided in both PDF and Microsoft Excel or other approved application. Printed copies shall be bound and organized by test, equipment type, and individual unit.

- Two sets are for the Traffic Engineering ITS Department
- One set is for the Engineer

All test results shall be provided in English units of measure.

All test results deemed by the Engineer to be unsatisfactorily completed shall be repeated by the Contractor, following all test requirements as defined elsewhere in this NTB and contract specifications. This shall include a request in writing for the Engineer's approval for the repeated test a minimum of 14 days prior to the requested test date, unless this requirement is waived by the Engineer. In the written request for each test occurrence that is a repeat of a previous test, the Contractor shall summarize the diagnosis and correction of each aspect of the previous test that was deemed unsatisfactory. Any revisions to the test procedures for a repeated test occurrence shall meet all requirements for the original test procedures, including review and approval by the Engineer.

The satisfactory completion of any test shall not relieve the Contractor of his responsibility to provide a completely acceptable and operating system that meets all requirements of this project.

It is possible for the Contractor to schedule multiple test dates and revise the actual test being performed on a particular day if; 1) the Engineer approves of the change, 2) all test scheduling requirements above have still been met for the actual test to be performed on the date, and 3) there is not an unreasonable change of location, time, duration, or requirement of the Engineer.

Factory Acceptance Test (FAT). FATs shall be conducted at the Manufacturer or Contractor's facility or at a facility acceptable to all parties prior to shipping from the factory. The goal of the FAT is to verify that the equipment meets the requirements of the specifications. All equipment to be utilized for this project shall be subject to tests that demonstrate the suitability of the design and manufacturing procedures and compliance with the contract requirements, unless an exception for a specific equipment item is granted by the Engineer. The tests shall be performed on production units identified to be delivered under this Contract. As a minimum, a FAT is required for each of the following project materials:

- Dynamic Message Signs

The FAT testing procedures and results for specifically identified materials shall demonstrate that all testing requirements as outlined within the contract (standard specifications, plans, special provisions, and notice to bidders) are met, including, but not limited to: functional/system performance requirements, electrical requirements, data transmission/communication requirements, safety/password requirements, environmental requirements, and interface requirements with other components of the project system.

The Engineer reserves the right to waive FATs which are deemed to be unnecessary and reserves the right to witness all FATs that are determined to be critical to the project. At the Engineer's discretion, the Engineer may be in attendance at the FAT for any units tested. The FAT for the first three (3) units shall be conducted during the same time period and shall be completed before additional units are produced.

The Engineer shall be notified a minimum of 45 calendar days in advance of such tests. Salary and travel expenses of the Engineer and his/her representatives will be the responsibility of the Department. In case of equipment or other failures that make a retest necessary, travel expenses associated with retests for the Engineer and his/her representatives shall be the responsibility of

the Contractor. The travel expenses shall include all costs associated with having a two-person Engineer review team on site, including but not limited to airfare, automobile rental, lodging, and per diem. These costs, excluding airfare, shall not exceed $500.00 per representative, per day. These costs shall be deducted from the payments due or charged to the withholding account of the Contractor when the project is terminated.

The vendor must complete the FAT on all remaining units on their own and submit documentation to the Engineer that the FATs were completed. The Engineer reserves the right to randomly attend those FAT tests.

No equipment for which a FAT is required shall be shipped to the project site without successful completion of factory acceptance testing as approved by the Engineer and the Engineer's approval to ship.

Bench Test Components (BTC). The Contractor shall perform a complete BTC on the lesser of the full contract quantity of units of equipment and materials or the number of units required as specified in this subsection below. The quantity listed in the subsection below is a "minimum" quantity and the Engineer reserves the right to require testing of additional quantities if the initial testing is not deemed adequate. The Contractor shall provide the testing location and facility, which shall be in Mississippi and within a 25-mile radius of the project limits. The test location must be approved by the Engineer as part of the BTC test procedure submittal.

The BTC shall demonstrate that all equipment and materials are in full compliance with all project requirements and works "out of the box" by visual inspection, setup and operation "on the bench", functional testing of the component including manufacturer's recommended startup diagnostics, and testing prior to any field installation of that equipment or material. Test results documentation shall be provided for each equipment item and material in the full contract quantity; test results documentation shall include the manufacturer's serial number and the project location ID for each item.

As a minimum, a BTC is required for each of the following project materials for quantities as shown.

- Closed Circuit Television Equipment, 4 PTZ units & 6 fixed units
- Dynamic Message Sign, 2 complete units of each type
- Travel Time Signs, 2 compete units
- Network Switches Type A, 4 units
- Network Switches Type B & F, 2 units each
- Network Switches, Type C, D, & E, 1 unit each
- ITS Radar Vehicle Detection Sensors, 6 units
- Highway Advisory Radios, 2 units
- Radio Interconnect System, 4 units of each type
- Bluetooth Detection System, 6 units
- DSRC devices, 6 units
- Roadway Weather Information System, 2 complete units
- Traveler Information Video Kiosk, 2 complete units

- Smart Work Zone System
  - Portable CCTV station, 2 complete units
  - Non-Intrusive Vehicle Detection Devices / Portable Traffic Sensors, 4 complete units
  - Highway Advisory Radio, 2 complete units
  - Portable Changeable Message Signs, 2 complete units
  - Portable Traffic Signal, 2 complete units
- Off-the-shelf and Vendor Software, all necessary
- Equipment Cabinet (Type A), 2 cabinets
- Equipment Cabinet (Type B), 4 cabinets
- Equipment Cabinet (Type C), 2 cabinets

Pre-Installation Tests (PIT). The Contractor shall perform Pre-Installation Tests (PIT) on all device quantities that are not included in the BTC. The Contractor shall provide the testing location and facility, which shall be within a 25-mile radius of the project limits or as approved by the Engineer. The test location must be approved by the Engineer as part of the PIT test procedure submittal. The PIT shall be a shortened version of the BTC to ensure the equipment will power up, operate, and was not damaged during shipment. The Engineer reserves the right to attend any PIT as desired; however, the contractor shall submit documentation of the PITs whether the Engineer is present or not. In addition to these requirements, see the DMS, TTS, and Fiber Optic Cable Special Provisions for more details.

Stand Alone Site Tests (SAT). The Contractor shall perform a complete SAT on all equipment and materials associated with the field device site, including but not limited to electrical service, conduit, pull boxes, communication links infrastructure (fiber, leased copper, wireless), cable, poles, camera lowering devices, device communication cables, cabinet apparatus, etc. The goal of the SAT is to verify that the equipment has been properly installed and commissioned according to the manufacturer requirements. A SAT shall be conducted at every field device site including communications hubs. A SAT shall be conducted for a fully installed and completed control center in the TMC as described in the TMC modification NTB. A SAT shall be conducted for all fiber optic infrastructure.

The SAT shall demonstrate that all equipment and materials are in full compliance with all project requirements, are fully functional as installed, and are in their final configuration. As part of this demonstration, SATs shall include but are not limited to the following:

- A visual inspection of the cabinet and all construction elements at the site to ensure they are compliant with the Specifications and have no physical damage or deformities.
- The inspection of the cabinet at each site shall include the functional test of all cabinet equipment, including circuit breaker, receptacles, fan and thermostat, lights, and door switches.
- Verify that manufacturer documentation for each device is present.
- A measurement of the DC power supply shall be made at the cabinet when it is operating under full load.
- Verify that all equipment has proper power, surge protector, and grounding connections.
- Inspect the integrity of all cable connections and terminations and verify that the cables are

connected and terminated as specified in the Plans.

The SATs for each site type shall include but are not limited to the following:

- *CCTV Stand Alone Site Test*: Shall be conducted at the CCTV Cabinet and shall demonstrate the complete operation of the CCTV, Network Switch, and the link(s) to any devices that are connected to the Power Supply in the CCTV Cabinet. The SAT shall include a 5-minute recording of each PTZ and Fixed camera showing the field of view and video quality. Two copies of the recording shall be provided to the Engineer on USB flash drives. The recording will start at the preset default position(s) and will demonstrate the full zoom capabilities of the cameras, as well as the full range of the pan and tilt functions of PTZ cameras. This recording shall be in a format playable with Windows Media Player or pre-approved by the Engineer.
- *ITS Communications HUT Stand Alone Site Test:* Shall be conducted at the HUT and shall demonstrate the complete operation of all equipment inside the HUT including Network Switches. This also includes visual inspection of the Site elements associated with the HUT.
- *ITS Termination Cabinet Stand Alone Site Test:* Shall be conducted at the termination cabinet and shall demonstrate the complete operation of all equipment inside the cabinet including Network Switches. This also includes visual inspection of the Site elements associated with the termination cabinet.
- *Radio Interconnect System Stand Alone Site Test:* Shall be conducted from the cabinets at both ends of the communications link (even if one end consists of existing equipment) and shall demonstrate that the radios, the antennas, the entire link, the Network Switch, and the transmission of video and/or data are fully operational. See Radio Interconnect Special Provision for more details.
- *Highway Advisory Radio Site Test:* Shall be conducted at the HAR cabinet, antenna, and advisory signs and shall demonstrate complete operation of recordings, transmissions, and remote flashing beacon unit(s). See HAR Special Provision for more details.
- *Fiber Optic Cable Stand Alone Site Test*: Shall be conducted at each Cabinet and at each HUB and shall include both power meter tests and OTDR tests. See Fiber Optic Special Provision for more details.
- *Conduit Detection Wire Stand Alone Site Test*: Shall be conducted at each pull box and shall demonstrate that a continuous run of conduit detection wire was installed between pull boxes, vaults, cabinets, and structures as required.
- *ITS Radar Vehicle Detection Stand Alone Site Test*: Shall be conducted at the IRVD Cabinet and shall demonstrate the complete operation, proper configuration, and verification of detection for each lane of traffic or zone of the IRVD unit(s).
- *BDS Stand Alone Site Test*: Shall be conducted at the Device Cabinet and shall demonstrate the complete operation and proper configuration of the unit(s), verify network connection to the BDS through ping and telnet sessions from a remote PC, and confirm that the system is fully functional by detecting Bluetooth devices at a sample rate approved by the Engineer.
- *RWIS Stand Alone Site Test*: Shall be conducted at the RWIS Cabinet and shall demonstrate the complete operation and proper configuration of the RWIS and shall verify that the remote flashing beacon unit(s) on the warning signs are activated properly as

specified and will de-activate automatically without renewal at preset intervals.

- *SWZ Stand Alone Site Test*: Shall be conducted at each device at its initial location and shall demonstrate the complete operation and proper configuration of the device as described in the Smart Work Zone Special Provision and NTB. At any subsequent locations, at a minimum, a document verifying that the device is configured for the new location shall be submitted to the Engineer.
- *Kiosk Stand Alone Site Test*: Shall be conducted at the device, verify all required video layouts and displays, demonstrate all required software features, and demonstrate the complete operation of the device and Network Switch. Refer to the Traveler Information Video Kiosk specification for more details.
  DMS & TTS Stand Alone Site Test: Shall be conducted at the Device Cabinet, verify that all pixels are operational, verify that the sign can be controlled locally through both the serial and Ethernet ports, and demonstrate the complete operation of the device and Network Switch. The signs shall be delivered with and tested using default fonts and sizes that are provided by the MDOT ATMS drivers.

The Contractor shall request in writing the Engineer's approval for each test occurrence a minimum of 14 days prior to the requested test date. The Contractor shall arrange, at no additional expense to the State, the attendance of a qualified technical representative of the equipment manufacturer to attend each test until a minimum of two (2) sites of that type are approved.

Sub-System Test (SST). The Contractor shall perform an SST on each DMS and TTS to verify and document that all remote TTS and DMS functions and alarms are operational from the TMC.

An SST is required for at least ten percent (10%) of each of the following devices being placed for the project, taken by a random sampling: BDS, Network Switch, IRVD, HAR, Radio, CCTV, Video Vehicle Detection, and RWIS including beacons. The SST will require the Contractor to demonstrate and document that all functions and alarms are operational from the TMC.

An SST is required for each Traveler Information Kiosk in the project and will require the Contractor to demonstrate and document the features demonstrated in the Kiosk SAT using remote access from the TMC.

An SST is required for each Smart Work Zone device in the project and will require the Contractor to demonstrate and document the connection between the device and the central data/video collection site. Once a Smart Work Zone device has been verified to be properly configured, working, and communicating at its current location, the device can be utilized without further testing. The Conditional System Acceptance Test, Burn-in period, Final Inspection, or Final System Acceptance is not required for a device being solely utilized as part of the temporary Smart Work Zone System. Devices moved to a new location do require verification that they are still working as intended in the new location.

The Contractor shall coordinate the SST to be performed with the Project Engineer or designee present. The Contractor shall provide an SST plan to the Project Engineer for review and approval a minimum of two weeks in advance of tests being performed.

Conditional System Acceptance Test. The Contractor shall perform a complete conditional system acceptance test on all equipment and materials in the project. The Contractor shall not request the conditional system acceptance test until the SATs have been satisfactorily completed, all as-built documentation has been submitted and approved, and all other project work has been completed to the satisfaction of the Engineer. Prior to a Conditional System Acceptance Test, the Contractor shall provide advance notice of and written test results documenting that the Contractor has performed a dry-run of the conditional system acceptance test. The Engineer reserves the right to attend a dry-run test session.

The Contractor shall coordinate the CSAT with the Engineer. The Contractor shall provide a CSAT plan to the Engineer and be approved a minimum of fourteen (14) calendar days in advance of tests being performed. The CSAT plan shall be inclusive of steps and procedures to be performed and scheduled times to perform test procedures.

The Contractor shall test all project systems simultaneously from the State TMC in a manner equivalent to the normal day-to-day operation of the system. The Conditional System Acceptance Test shall demonstrate that all equipment and materials in the network are in full compliance with all project requirements and fully functional as installed and in final configuration, communicating with and being controlled through the control center at the State TMC. If pre-processing systems (e.g., edge computing) or post-processing systems (e.g., video image processing and analytics, detection in one device triggering an alarm or event in another device, etc.) are present, these shall be tested, verified, and documented as working as intended during the CSAT. Edge computing is where data-handling activities, such as analysis and event-triggering, takes place near the physical location that the data is collected.

The Engineer reserves the right to require, at no additional expense to the State, the attendance of a qualified technical representative of the equipment and/or software manufacturers to attend any given Conditional System Acceptance Test.

Upon completion and full approval of the Conditional System Acceptance Test for all equipment in all phases, Conditional System Acceptance will be given and the Burn-in Period will begin.

Burn-In Period. Following the Engineer's written notice of successful completion of the Conditional System Acceptance Test, the entire newly installed system must operate successfully for a thirty (30) day burn-in period. The Contractor shall be responsible for the full maintenance of the newly installed equipment during the burn-in period. This maintenance includes all troubleshooting and repairs as well as providing preventive maintenance that meets the equipment manufacturer's recommendations. However, no separate payment will be made during the burn-in period. Successful completion of the burn-in period will occur at the end of thirty (30) complete days of operation without a system failure attributable to hardware, software or communications components. Each system failure during the burn-in period will require an additional thirty (30) days of successful operation prior to being eligible for Final Acceptance (i.e., if the initial burn-in period is thirty (30) days and there are two (2) system failures during this time, the burn-in period would be increased to ninety (90) days).

Burn-In General Requirements:

- Determination of a system failure shall be at the sole discretion of the Engineer.
- System failure is defined as a condition under which the system is unable to function as a whole or in significant part to provide the services as designed. While a single component failure will not constitute a system failure, chronic failure of that component or component type may be sufficient to be considered a system failure. Chronic failure of a component or component type is defined as three (3) or more failures for the same component during the burn-in period.
- Components are defined as contract items or major material elements in a contract item. For electrical and electronic contract items, components are defined as the complete assembly of materials that makes up the contract item.
- Specifically exempted as system failures are failures caused by accident, acts of God, or other external forces that are beyond the control of the Contractor. However, failure of the contractor to respond to the repair request for that failure within 24 hours may be considered a system failure.
- The Department will advise the Contractor in writing when it considers that a system failure has occurred or chronic failure exists.
- If multiple system and/or chronic failures continue to occur throughout the burn-in period due to a single component type, the Contractor may be required to replace all units of that component type with a different model or manufacturer.
- The Contractor shall document all failures and subsequent diagnosis and repair. The repair documentation shall include as a minimum:
    - Description of the problem
    - Troubleshooting and diagnosis steps
    - Repairs made
    - List of all equipment and materials changed including serial numbers.
    - Update of the equipment inventory where needed.
    - The Contractor shall provide the repair documentation to the Engineer within two (2) days of completing the repair; failure to provide acceptable documentation as required shall be reason to not approve the repair as complete. The Engineer will provide acceptance or rejection of the repair and documentation within seven (7) days of receiving the repair documentation.
    - The Engineer reserves the right to require, at no additional expense to the State, the presence of a qualified technical representative of the equipment and/or software manufacturers as related to the diagnosis and/or repair of any system failure.
- During the burn-in period, the Contractor shall perform incidental work such as touching up, cleaning of exposed surfaces, leveling and repair of sites, sodding/grassing and other maintenance work as may be deemed necessary by the Engineer to ensure the effectiveness and neat appearance of the work sites.
- During the burn-in period, the Engineer shall maintain a "burn-in period punch list" that contains required Contractor actions but that the Engineer does not define as a system failure. Each burn-in period punch list action item shall be completed by the Contractor to the Engineer's satisfaction within seven (7) days of Contractor notification of the action item.
- During the burn-in period, the Contractor is required to meet the following response times

once notified there is a problem. A response is defined as being on-site to begin diagnosing the problem.
    - Monday thru Friday: The Contractor shall respond no later than 9:00 a.m. the following morning after being notified.
    - Weekends: If the Contractor is notified on Friday afternoon or during the weekend, the Contractor shall respond by 9:00 a.m. on Monday morning.
- During the burn-in period, the Contractor shall provide all labor, materials, equipment and replacement parts to completely maintain, troubleshoot and repair all items installed under this contract. No separate payment will be made for any labor, materials, equipment, or replacement parts needed during the burn-in period.
- The overall burn-in period will be considered complete upon the successful completion of the burn-in time periods, the Engineer's acceptance of all repairs and repair documentation, completion of all burn-in period punch list actions, and a final inspection as described below.

Contract time will not cease during the burn-in period(s). Contract time for the burn-in period was considered when determining the original contract time.

Final Inspection. Upon successful completion of the burn-in period, the entire project shall be eligible for Final Inspection. The Final Inspection will be conducted provided the burn-in period has demonstrated the entire system is operating successfully. The Final Inspection shall include but is not limited to:

1. monitoring of all system functions at the State TMC to demonstrate the overall system is operational
2. a field visit to each site to ensure all field components are in their correct final configuration
3. verification that all burn-in punch list items have been completed
4. verification that all final cleanup requirements have been completed
5. approval of final as-built documentation

Prior to conducting the Final Inspection, the burn-in period shall demonstrate that all requirements defined in the specifications have been met, including, but not limited to: functional/system performance requirements, electrical requirements, data transmission/communication requirements, safety/password requirements, environmental requirements, and interface requirements with other components of the system.

The Contractor shall request in writing the Engineer's approval to start the Final Inspection a minimum of 14 days prior to the requested start date. The Engineer reserves the right to reschedule the start date if needed. The start date for the Final Inspection cannot be prior to the successful completion of the overall burn-in period.

An unsuccessful or incomplete Final Inspection shall require a new Final Inspection after the Contractor has made the necessary corrections. Up to 14 days shall be allowed for the Engineer to conduct a Final Inspection. The presence of the MDOT ITS Engineer or his/her designee is required during the final inspection.

The Engineer reserves the right to require, at no additional expense to the State, the attendance of a qualified technical representative of the equipment and/or software manufacturers to attend a portion of a Final Inspection.

The Contractor shall be responsible for the full maintenance of all project equipment and materials during the entire time period from the successful completion of the burn-in period until Final System Acceptance is granted.

Final System Acceptance. Upon successful completion of the Final Inspection and all other items of work on the project, the Engineer will grant Final System Acceptance in accordance with Subsection 105.20 of the Standard Specifications.

Beneficial Use of Dynamic Message Signs During Construction. Each DMS shall be roadside controllable (by sign vendor software) within 30 days of attachment to structures (visible to motorists). The Contractor's construction schedule shall clearly identify when installation of the signs over the roadway shall occur, and when roadside control shall be established for each sign. The Contractor shall not install a DMS over the roadway until all ancillary and infrastructure elements, including cabinets, controllers, conduits, cabling, etc. necessary to operate the sign are in place and functional. Once roadside controllable, the Contractor shall display emergency, special event, construction, safety or traveler information messages approved by MDOT, only when requested by MDOT, at no additional cost to MDOT. Normal diagnostic messaging for the purpose of installation and testing shall be determined by the Contractor but shall not be allowed to the extent that excessive power consumption or distraction to motorists occurs as determined by the Engineer. Any beneficial use of the signs to MDOT and the public prior to Final Acceptance does not constitute MDOT acceptance or waive any Contractor testing requirements. The cost that may be incurred by the Contractor to display messages as described above during this construction contract shall be considered incidental and included in the cost of other items.

Warranties

The following components of the Project shall be warranted against manufacturing defects and workmanship for a period of at least one (1) year:

- Radio interconnect system components as listed under SP 907-662-2
- Layer 2, Type A; Layer 3, Type C, Type C4, Type E1, and Type E2 Network Switches; and Network Terminal Server & Network Cellular Modem as listed under SP 907-663-5
- Communication Node Hut & Hut Modifications under SP 907-664-4
- Video Communication Equipment components under SP 907-665-1
- Bluetooth Detection System components under SP 907-666-3
- Roadway Weather Information System & Warning Signs with Flashing Beacon under SP 907-670-3
- Kiosk Monitoring Camera under SP 907-671-1
- Travel Time Sign under SP 907-674-1
- ITS Radar Vehicle Detector under SP 907-641-2
- On Street Video Equipment under SP 907-650-4;
- Highway Advisory System components under SP 907-655-2;
- Dynamic Message Signs under SP 907-656-1.

The following components of the Project shall be warranted against manufacturing defects and workmanship for a period as listed below for each respective item from the date of Final Maintenance Release.

- *Fiber Optic Cable*: Ten (10) year warranty on materials and workmanship
- *Traveler Information Video Kiosk*: Two (2) year extended warranty on materials/hardware
- *TMC Modification*: Two (2) year warranty on hardware and one (1) year warranty on software
- *Type C1, C2, & C3 Network Switches*: Five (5) year warranty on hardware
- *Type D, E, & F Network Switches*: Five (5) year warranty on hardware

The Contractor shall supply the warranties in writing with the Final Maintenance Release date documented on them. These warranties shall cover complete replacement at no charge for the equipment. The Contractor will be responsible for all labor, shipping, insurance and other charges until Final System Acceptance. Equipment covered by the manufacturers' 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 or manufacturers supplying the components and providing the equipment warranties recognize MDOT as the original purchaser and owner/end user of the components from new.

During the warranty period, the supplier shall repair or replace with new material of equal or greater kind and quality and meeting all of the applicable specifications herein, at no additional cost to the State, any product containing a warranty defect, provided the product is returned postage-paid by the Department to the supplier's factory or authorized warranty site. Products repaired or replaced under warranty by the supplier shall be returned prepaid by the supplier. During the warranty period, technical support shall be available from the Contractor via telephone within four (4) hours of the time a call is made by the Department. If it is deemed necessary by the Engineer, technical support shall be available from factory certified personnel of the supplier via telephone within eight (8) hours of the time of the initial call made by the Department. During the warranty period, updates, patches, performance improvements, and corrections to all software and firmware used during the project shall be made available to the Department by the supplier at no additional cost.

Training

After the Stand Alone Site Tests have been conducted but prior to Conditional System Acceptance, the Contractor shall provide separate training sessions for each subsystem training pay item included in the project. The training sessions may require multiple classes as noted below) and shall accommodate from six (6) to twelve (12) personnel per class. Additional sessions for additional personnel may be required if the make and model of the subject component is not currently in the MDOT system.

The training must include formal classroom and "hands-on" operations training with a complete demonstration of the configuration, operation, and capabilities of each component in the system. The training should also consist of a hands-on demonstration of all software configuration and functionality where applicable. Each training day shall include a mixture of classroom style

training in equipment operations, hands-on operator training using the same models of equipment furnished for the project, and question and answer sessions.

During the burn-in period, the Contractor shall also provide two (2) identical non-consecutive training sessions on the maintenance of the overall system. The training shall be provided for at least ten (10) personnel with individual copies of all training materials provided to each participant. 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. Additional sessions for additional personnel may be required if the make and model of certain components are not currently in the MDOT system.

Prior to scheduling the training, the Contractor shall submit resume and references of the training instructor(s) to the Engineer for approval. The qualifications of the trainers must meet, at a minimum, the recommended qualifications of the equipment manufacturer with a minimum of four years of experience in training personnel. If qualified personnel are not on the Contractor's staff, a representative of the manufacturer shall provide the training.

The training shall be provided at an agreed upon location. If training requires travel on the part of training instructors, then the cost of travel shall be included.

The Contractor shall provide individual copies of documentation, training, and maintenance materials for each participant. These materials shall include detailed specifications and information pertaining to each device in the system. The documentation shall include details of the technical and operational aspects of the completed system. This shall include operational and maintenance manuals, system diagrams, cabling diagrams and mounting/positioning details. The Contractor shall supply emergency contact information and necessary procedures for obtaining vital replacement parts within a designated, agreed upon time frame.

The Contractor shall submit a detailed Training Plan including course agendas, detailed description of functions to be demonstrated, and a general schedule to the Engineer for approval within 90 days of Contract Notice-to-Proceed. The exact date of the training shall be submitted to the Engineer for approval at least four (4) weeks ahead of the date.

Grounding

The Contractor shall provide a grounding and lightning protection system to protect from electrical power surges caused by lightning or disruptions in the power supply system. Ground rods, ground conductor, lightning collectors and appurtenances shall be as detailed on the plans and as required by these specifications.

General. All non-current carrying metal parts of the site shall be grounded according to NEC specifications. In addition, all non-current carrying metal parts shall have a voltage potential of zero relative to reference ground. This reference ground shall be achieved via the equipment-grounding conductor.

Support cable, metallic cable sheaths, conduit, metal poles, pedestals, and communication building shall be made mechanically and electrically secure and grounded. Bonding and grounding jumpers

shall be properly sized according to the NEC and in no case shall they be smaller than a #6 AWG copper wire. Ground pole-mounted accessories to the pole. Equipment on wood poles shall be grounded.

Permanently ground the poles by bonding the No. 6 AWG solid copper wire to a separate ground rod.

Metal raceways, metal enclosures of electrical devices, lighting fixtures, panelboards, and other non-current carrying metallic parts of equipment shall be securely grounded.

Ground rods shall be installed according to plan details. A length of copper conductor shall be attached to the ground rod, utilizing the specified grounding methods, and connected to the grounding system. Do not ground to a permanent water system instead of the driven ground rod. Ensure that grounding devices conform to the requirements of the NEC and NEMA.

Cabinet Grounding. A single-point grounding system shall be constructed.

All grounds for the cabinet shall be installed on the side of the building that utilities, communication cables, and fiber enter. All earth grounds shall be connected to this point, including the grounding system for Surge Protection Devices (SPD). All connections to SPDs shall be made according to the manufacturer's recommendations.

A single ground bus bar shall be mounted on the side of the cabinet wall adjacent to the power panel for the connection of AC neutral wires and chassis ground wires.

The Contractor shall ensure that communication cables, AC power, emergency generator, and equipment frames are connected by the shortest practical route to the grounding system. The lead lengths from each device to the SPD shall be protected. Electrical continuity of all connections shall be verified. All non-conducting surface coatings shall be removed before each connection is made. Ground conductors shall be downward coursing, vertical, and as short and straight as possible. Sharp bends and multiple bends shall be avoided in grounding conductors.

Surge Suppressor

Surge protection device (SPD) shall be provided to protect electronics from lightning, transient voltage surges, and induced current. All SPDs shall be installed at the top and bottom of each pole to provide reliable lightning protection. SPDs shall be installed on all power, data, video and any other conductive circuit.

SPD for 120 Volt or 120/240 Volt Power. A SPD shall be installed at the utility disconnect to the cabinet. The SPD at the utility disconnect shall include L-N, L-G, and N-G protection. The SPD shall meet the requirements of UL 1449, Third Edition and be listed by a NRTL.

A SPD shall be provided where the supply circuit enters the cabinet. The SPD shall be located on the load side of the main disconnect and ahead of any and all electronic devices and connected in parallel with the AC supply. The SPD in the cabinet shall include L-N, L-G, and N-G protection. The SPD shall meet the requirements of UL 1449, Third Edition and be listed by a NRTL.

The SPD shall have a visual indication system that monitors the weakest link in each mode and shows normal operation or failure status and also provides one set of normally open (NO)/normally closed (NC) Form C contacts for remote alarm monitoring. The enclosure for a SPD shall have a NEMA 4 rating

SPDs for Low-Voltage Power, Control, Data and Signal Systems. A specialized SPD shall be installed on all conductive circuits including, but not limited to, data communication cables, coaxial video cables, and low-voltage power cables. These devices shall comply with recommendations from the device manufacturer.

SPD at Point of Use. A SPD shall be installed at the point the ITS devices receive 120 volt power and connected in series with the circuits. SPDs shall be selected and installed according to recommendation from the device manufacturer. The units shall be rated at 15 or 20 amps load and configured with receptacles. These units shall have internal fuse protection and provide common mode (L+N-G) protection.

SPDs shall meet the requirements of UL 497B or UL 497C, as applicable, and are listed by a NRTL.

Solar Power Systems

The Contractor shall provide a solar power system meeting the following requirements:

1. The supplier shall provide documentation specifying approximate daily power generation, power consumption, storage capacity, and charge rates representing an optimal power source to the satisfaction and approval of the Project Engineer.
2. Shall include a solar controller with automatic battery temperature compensation and automatic charging circuitry to prevent overcharging.
3. The battery back-up system chargers shall meet all specified requirements while operating between -40 °C to +74 °C (-40 °F to +165 °F), and 95% relative humidity.
4. Shall include metering for voltage and charging current.
5. Solar panels shall be Jet Propulsion Laboratory Block-5 tested and approved.
6. Solar panels shall be compliant with IEC 61215 and IEEE 1262.
7. Solar panels shall be break-resistant and sealed.
8. Battery shall be maintenance-free, sealed, gel-cell.
9. The Contractor shall test the battery for faulty irregularities and provide documentation to the Project Engineer stating the battery's voltage, and resistance. The battery voltage and resistance shall meet the manufacturer's specifications.

The Solar Power Systems for each site type shall include but are not limited to the following:

- *HAR Flashing Beacons*:
  1. A performance design study shall be conducted and submitted for approval for the proposed solar power system. The solar power system shall be designed on the performance design study.
  2. The solar system shall, at a minimum, operate the flashing beacons continuously at

full power for at least three (3) days with no sunlight. This must be accomplished without an auxiliary generator or AC power connection.
3. Solar panels shall have a power rating of 80-watts.
4. The Solar power system shall include a separate aluminum NEMA 3R enclosure to house the battery. This enclosure shall be designed to provide protection from rain, sleet, snow and corrosion.
    a. The enclosure shall be constructed from 0.125" thick aluminum alloy type 5052- H32.
    b. The enclosure shall be lockable.
    c. The enclosure door shall include a EDPM rubber or equivalent closed-cell gasket

- *Type A BDS*:
    1. All solar panels shall be in accordance with UL1703, or equivalent.
    2. The solar cell shall have a minimum power capacity of 30 watts.
    3. The battery shall provide sufficient power for all BDS component operation for a minimum of 168 hours (7 days).
    4. Should solar power be specified with the Type A BDS, the NEMA 4 enclosure shall be sized appropriately for the solar power components.

Performance Design Study. A performance design study shall be conducted where required before the installation of a Solar Power System. The performance design study shall include, but is not limited to:

1. The daily Solar Insulation data averaged on a monthly basis.
2. The correct Tilt Angle for the solar array.
3. The daily Array Output, in Amp-Hours, averaged on a monthly basis.
4. The total Daily Load requirement, in Amp Hours, averaged on a monthly basis.
5. A monthly Loss of Load Probability (LOLP) of the designed power supply.
6. The number of Battery Reserve Days, averaged on a monthly basis.
7. The monthly Average Battery State of Charge.
8. The statistical Interval to Loss of Load, in years.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 4702 **CODE: (SP)**

DATE: 11/22/2022

SUBJECT: App for Traffic Control Reports

Bidders are advised that the Department has created a smart phone App for completing and submitting traffic control reports (Form CSD-762) required on this project. The Contractor who monitors traffic control activities and completes traffic control reports will be required to download and use this App when completing and submitting traffic control reports. The reports will then be readily available to all persons who need access to the forms. The App is free and is available for downloading at the following location.

https://extacctmgmt.mdot.state.ms.us/

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 5086 **CODE: (SP)**

DATE: 05/02/2023

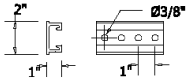
SUBJECT: Detail of Square Tube Sign Posts

Bidders are advised that the following drawings shall be used in the manufacture and installation of square tube sign posts, unless otherwise directed by the Engineer.

FMS CON:

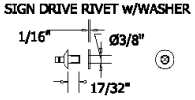
STATE	PROJECT NO.
MISS.	

FLAT PANEL SIGN BRACE



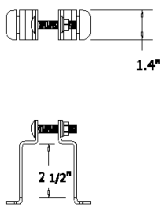
6061-T6 ALUMINUM ALLOY; 2" MOUNTING SURFACE x 7/8" DEPTH x 1/8" NOMINAL WALL THICKNESS. 3/8" HOLES ON 1" CENTERS, CENTERED ALONG ENTIRE LENGTH OF THE BRACE. A MINIMUM OF TWO HORIZONTAL BRACES MUST BE USED.

SIGN DRIVE RIVET w/WASHER



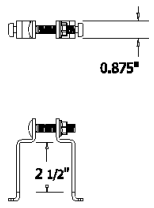
3/8" ALUMINUM SHELL / STEEL CORE RIVET WITH NYLON WASHER. MAXIMUM DISTANCE BETWEEN RIVETS SHOULD BE 12". WASHER MUST BE PRE-INSTALLED AND FIT INTO SIGN BRACE TO SECURE ALUMINUM SIGN PANEL. ALL EXTRUDED PANEL SIGNS SHALL USE 3/16"x3/8" GRIP RANGE ALUMINUM POP RIVITS (#66).

FLAT PANEL SIGN CLAMP



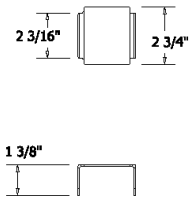
MATERIALS: 1.4" WIDE x 11ga. TYPE 304, #2B FINISHED STAINLESS STEEL BRACKET. INCLUDES STAINLESS STEEL 3/8"-16 x 2" CARRIAGE BOLT AND SERRATED FLANGED NUT. ONE CLAMP REQUIRED FOR EACH BRACE TO POST JUNCTION.

EXTRUDED PANEL SIGN CLAMP



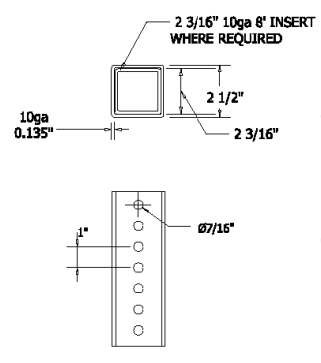
MATERIALS: 1.4" WIDE x 11ga. TYPE 304, #2B FINISHED STAINLESS STEEL BRACKET. INCLUDES STAINLESS STEEL 3/8"-16 x 2" CARRIAGE BOLT AND SERRATED FLANGED NUT. ONE CLAMP REQUIRED FOR EACH BRACE TO POST JUNCTION.

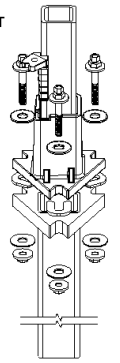
POST CAP



MADE OF 16GA PREGALVANIZED STEEL WITH AN ID CAPABLE OF FITTING INTO THE INSIDE OF A 2-1/2" SQUARE STEEL POST WITHOUT ANY FASTENERS. A CAST ALUMINUM FRICTION FIT CAP MAY ALSO BE USED.

SIGN POSTS



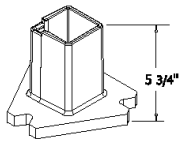


example slip base assembly (detailed below)

NOTES:

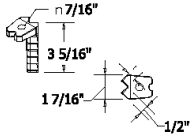
A. CONCRETE FOOTING MUST BE 12" DIAMETER x 36" DEEP.
B. BRASS SHIMS MAY BE USED BETWEEN SLIP PLATES TO LEVEL THE UPPER SLIP PLANE.
C. SLIP BASE IS FHWA ACCEPTED, MEETING CURRENT AASHTO & NCHRP 350 REQUIREMENTS.
D. SIGN BRACE CLAMPS ALLOW SIGN BRACE TO BE ADJUSTED UP, DOWN, LEFT OR RIGHT IN ORDER TO ACHIEVE PERFECT POSITION OF SIGN PANEL.
E. USE INSTALLATION INSTRUCTION RT280U-SQ1.
F. PRODUCT MUST MEET FHWA's MADE IN AMERICA CLAUSE.
G. PAID BY LENGTH OF POST, 36" STUB TO BE ABSORBED.

2-1/2" SQUARE POST RECEIVER



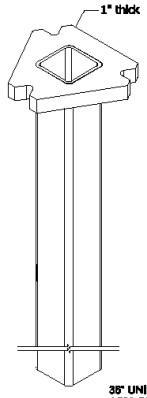
RECEIVER TO BE CAST FROM DUCTILE IRON ASTM A536 CLASS 65-45-12, GALVANIZED PER ASTM A153.

POST LOCKING WEDGE



LOCKING WEDGE FORGED FROM SAE 1035 STEEL AND GALVANIZED PER ASTM A153.

UNIBASE ANCHOR STUB



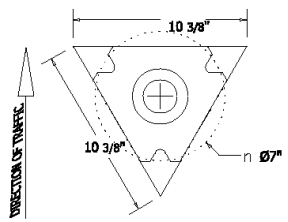
35" UNIBASE ANCHOR A500 GRADE B TUBE WELDED TO A572 SLIP PLATE. GALVANIZED PER ASTM A153.

SIGN CENTROID	2-1/2" x 10ga PSST	2-1/2" x 10ga & 2-3/16" x 10ga Inserted PSST	Sign Bracing**
16'	24.82	43.46	18" maximum distance between braces
15'	26.48	46.36	18" maximum distance between braces
14'	28.38	49.66	18" maximum distance between braces
13'	30.56	53.48	18" maximum distance between braces
12'	33.10	57.94	18" maximum distance between braces
11'	36.12	63.20	18" maximum distance between braces

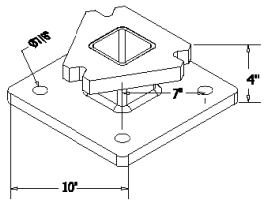
* based on two legs per sign
** Minimum of two braces per flat panel sign

NOTE: Sign area is in square feet.

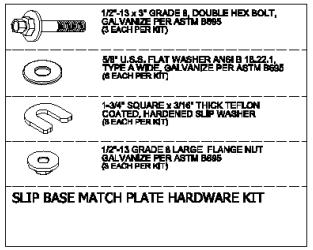
SLIP PLATE DIMENSION



SURFACE MOUNT BASE



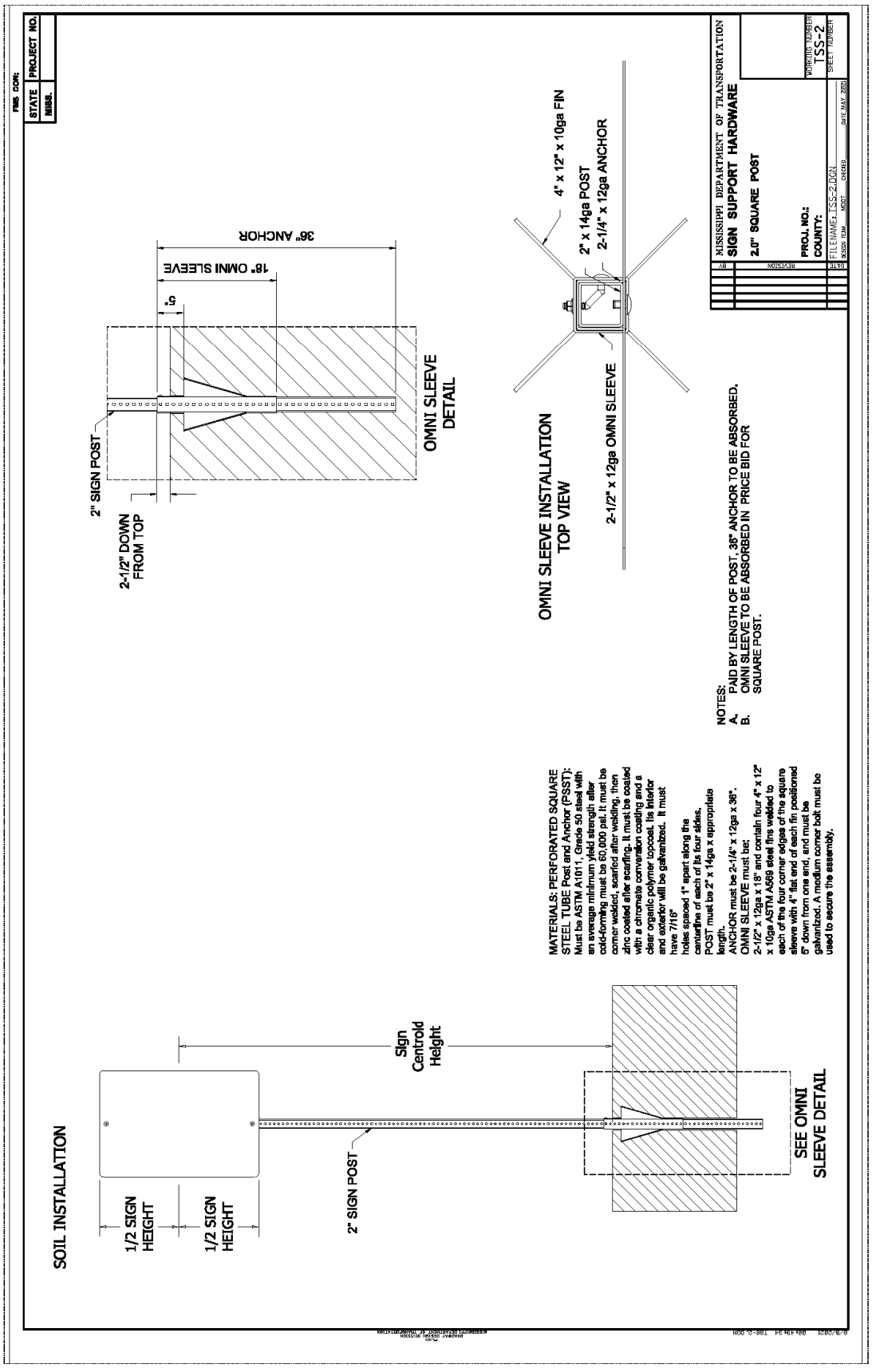
A572 SLIP PLATE WELDED TO A500 GRADE B TUBE WELDED TO A572 MOUNTING PLATE. GALVANIZED PER ASTM A153.

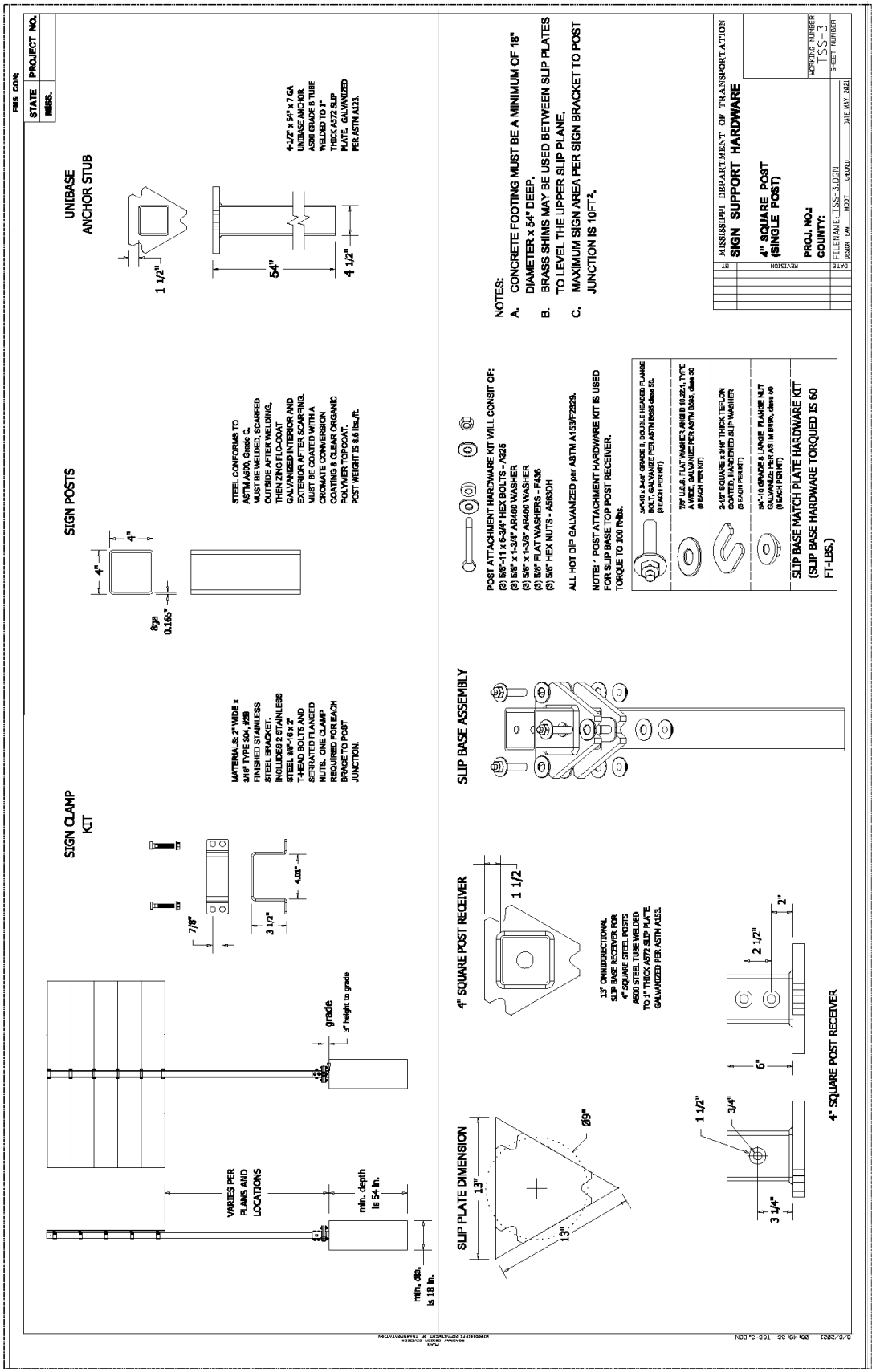


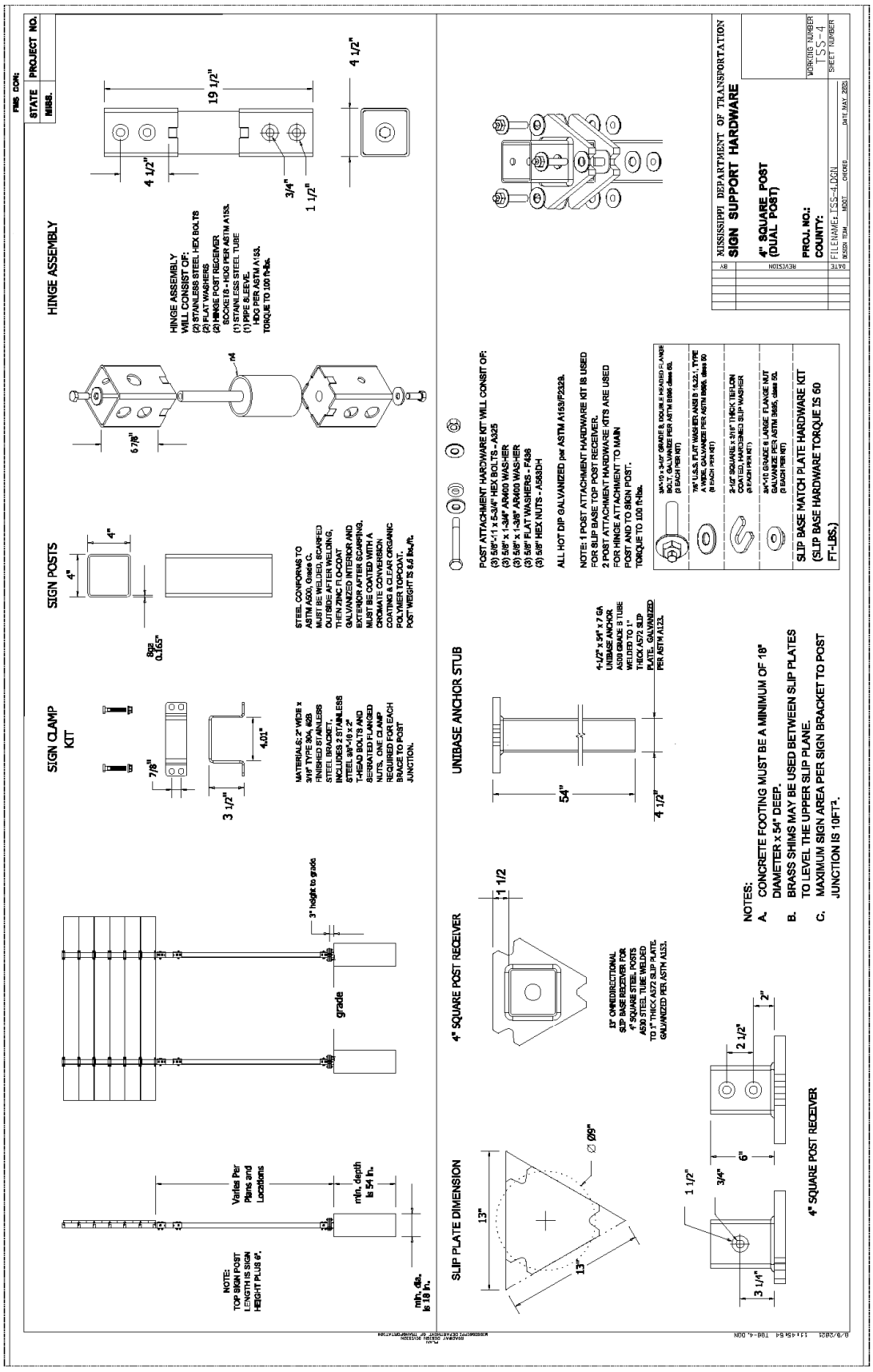
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
SIGN SUPPORT HARDWARE
2.5" SQUARE POST

PROJ. NO.:
COUNTY:
FILENAME: TSS-1.DGN
DESIGN TEAM: MDOT CHECKED: DATE: MAY 2021

WORKING NUMBER: TSS-1
SHEET NUMBER


FHWA CON:
STATE
MISS.
PROJECT NO.
SOIL INSTALLATION
1/2 SIGN HEIGHT
1/2 SIGN HEIGHT
2" SIGN POST
Sign Centroid Height
SEE OMNI SLEEVE DETAIL
MATERIALS: PERFORATED SQUARE STEEL TUBE Post and Anchor (PSST): Must be ASTM A1011, Grade 50 steel with an average minimum yield strength after cold-forming must be 60,000 psi. It must be corner welded, scarfed after welding, then zinc coated after scarfing. It must be coated with a chromate conversion coating and a clear organic polymer topcoat. Its interior and exterior will be galvanized. It must have 7/16" holes spaced 1" apart along the centerline of each of its four sides.
POST must be 2" x 14ga x appropriate length.
ANCHOR must be 2-1/4" x 12ga x 36".
OMNI SLEEVE must be: 2-1/2" x 12ga x 18" and contain four 4" x 12" x 10ga ASTM A569 steel fins welded to each of the four corner edges of the square sleeve with 4" flat end of each fin positioned 5" down from one end, and must be galvanized. A medium corner bolt must be used to secure the assembly.
NOTES:
A. PAID BY LENGTH OF POST. 36" ANCHOR TO BE ABSORBED.
B. OMNI SLEEVE TO BE ABSORBED IN PRICE BID FOR SQUARE POST.
OMNI SLEEVE INSTALLATION TOP VIEW
4" x 12" x 10ga FIN
2" x 14ga POST
2-1/4" x 12ga ANCHOR
2-1/2" x 12ga OMNI SLEEVE
OMNI SLEEVE DETAIL
2" SIGN POST
2-1/2" DOWN FROM TOP
5"
18" OMNI SLEEVE
36" ANCHOR
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
SIGN SUPPORT HARDWARE
2.0" SQUARE POST
REVISION
BY
DATE
PROJ. NO.:
COUNTY:
FILENAME: TSS-2.DGN
DESIGN ITEM
DRAWN
CHECKED
DATE: MAY 2005
WORKING NUMBER
TSS-2
SHEET NUMBER


FHWA CON:
STATE
MISS.
PROJECT NO.
UNIBASE
ANCHOR STUB
1 1/2"
54"
4 1/2"
4-1/2" x 5/8" x 7 GA UNIBASE ANCHOR, A500 GRADE B TUBE WELDED TO 1" THICK A572 SLIP PLATE, GALVANIZED PER ASTM A123.
SIGN POSTS
4"
4"
8ga 0.165"
STEEL CONFORMS TO ASTM A500, Grade C, MUST BE WELDED, SCARFED OUTSIDE AFTER WELDING, THEN ZINC FLO-COAT GALVANIZED INTERIOR AND EXTERIOR AFTER SCARFING. MUST BE COATED WITH A CROMATE CONVERSION COATING & CLEAR ORGANIC POLYMER TOPCOAT. POST WEIGHT IS 9.6 lbs./ft.
SIGN CLAMP
KIT
MATERIAL-2" WIDE x 3/16" TYPE 304 #2B FINISHED STAINLESS STEEL BRACKET. INCLUDES 2 STAINLESS STEEL 3/8"-16 x 2" T-HEAD BOLTS AND SERRATED FLANGED NUTS. ONE CLAMP REQUIRED FOR EACH BRACE TO POST JUNCTION.
7/8"
3 1/2"
4.01"
SLIP BASE ASSEMBLY
POST ATTACHMENT HARDWARE KIT WILL CONSIST OF:
(3) 5/8"-11 x 5-3/4" HEX BOLTS - A325
(3) 5/8" x 1-3/4" AR400 WASHER
(3) 5/8" x 1-3/8" AR400 WASHER
(3) 5/8" FLAT WASHERS - F436
(3) 5/8" HEX NUTS - A563DH
ALL HOT DIP GALVANIZED per ASTM A153/F2329.
NOTE: 1 POST ATTACHMENT HARDWARE KIT IS USED FOR SLIP BASE TOP POST RECEIVER. TORQUE TO 100 ft/lbs.
3/4"-10 x 3-1/2" GRADE B, DOUBLE HEXAGED FLANGE BOLT, GALVANIZED PER ASTM B695 class 55. (3 EACH PER KIT)
7/8" U.S.S. FLAT WASHER ANSI B 18.22.1, TYPE A WIDE, GALVANIZED PER ASTM B695 class 55 (3 EACH PER KIT)
2-1/8" SQUARE x 3/16" THICK TEFLON COATED, HARDENED SLIP WASHER (3 EACH PER KIT)
3/4"-10 GRADE A LARGE FLANGE NUT GALVANIZED PER ASTM B695, class 55 (3 EACH PER KIT)
SLIP BASE MATCH PLATE HARDWARE KIT
(SLIP BASE HARDWARE TORQUED IS 60 FT-LBS.)
NOTES:
A. CONCRETE FOOTING MUST BE A MINIMUM OF 18" DIAMETER x 54" DEEP.
B. BRASS SHIMS MAY BE USED BETWEEN SLIP PLATES TO LEVEL THE UPPER SLIP PLANE.
C. MAXIMUM SIGN AREA PER SIGN BRACKET TO POST JUNCTION IS 10FT².
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
SIGN SUPPORT HARDWARE
4" SQUARE POST (SINGLE POST)
PROJ. NO.:
COUNTY:
FILENAME: TSS-3.DGN
DESIGN TEAM
MOOT
CHECKED
DATE MAY 2021
WORKTAB NUMBER TSS-3
SHEET NUMBER
DATE
REVISION
BY
SLIP PLATE DIMENSION
13"
13"
69°
4" SQUARE POST RECEIVER
1 1/2"
13" OMNIDIRECTIONAL SLIP BASE RECEIVER FOR 4" SQUARE STEEL POSTS A500 STEEL TUBE WELDED TO 1" THICK A572 SLIP PLATE, GALVANIZED PER ASTM A123.
4" SQUARE POST RECEIVER
2 1/2"
2"
6"
1 1/2"
3/4"
3 1/4"
VARIES PER PLANS AND LOCATIONS
grade
3" height to grade
mtn. depth is 54 in.
mtn. dia. is 18 in.


HINGE ASSEMBLY
SIGN POSTS
SIGN CLAMP KIT
UNIBASE ANCHOR STUB
SLIP PLATE DIMENSION
4" SQUARE POST RECEIVER
4" SQUARE POST RECEIVER
NOTES:
A. CONCRETE FOOTING MUST BE A MINIMUM OF 18" DIAMETER x 54" DEEP.
B. BRASS SHIMS MAY BE USED BETWEEN SLIP PLATES TO LEVEL THE UPPER SLIP PLANE.
C. MAXIMUM SIGN AREA PER SIGN BRACKET TO POST JUNCTION IS 10FT².
SLIP BASE MATCH PLATE HARDWARE KIT (SLIP BASE HARDWARE TORQUE IS 60 FT-LBS.)
MISSISSIPPI DEPARTMENT OF TRANSPORTATION
SIGN SUPPORT HARDWARE
4" SQUARE POST (DUAL POST)
PROJ. NO.:
COUNTY:
WORKING NUMBER TSS-4
SHEET NUMBER
FILENAME: TSS-4.DGN
DESIGN TEAM: MDOT CHECKED
DATE: MAY, 2021

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 5551 **CODE: (IS)**

DATE: 12/06/2023

SUBJECT: Federal Bridge Formula

Bidders are hereby advised that the latest revision of Federal Highway Administration Publication No. FHWA-HOP-06-105, **BRIDGE FORMULA WEIGHTS**, dated August 2006, is made a part of this contract when applicable.

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

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

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

or

https://ops.fhwa.dot.gov/freight/publications/brdg_frm_wghts/

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 5750 **CODE: (SP)**

DATE: 03/19/2024

SUBJECT: Manual on Uniform Traffic Control Devices (MUTCD)

Bidders are advised that any reference to the current edition of the MUTCD or the latest edition of the MUTCD within plans, proposal, or standard specifications means the 2009 Edition and the 3 Revisions thereto.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 6767 **CODE: (SP)**

DATE: 03/14/2025

SUBJECT: Contract Time

PROJECT: SP-0019-01(022) / 109744301 -- Leflore 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 **May 13, 2025** and the date for Notice to Proceed / Beginning of Contract Time will be **June 12, 2025** .

Should the Contractor request a Notice to Proceed earlier than **June 12, 2025** and it is agreeable with the Department for an early Notice to Proceed, the requested date will become the new Notice to Proceed date. Regardless of whether or not an early Notice to Proceed is granted, contract time will start at the original Notice to Proceed date.

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

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 6768 **CODE: (SP)**

DATE: 02/18/2025

SUBJECT: Scope of Work

PROJECT: SP-0019-01(022) / 109744301 -- Leflore 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".

The work to be accomplished using the pay items and corresponding specifications set forth in this contract is for the milling and overlaying of MS Highway 7 beginning at US 82 (MP: 21.688/Sta. 5+55) and going northerly for approximately 1.3 miles to Grenada Boulevard Extended (MP:22.936/Sta. 72+30) in Leflore County.

It shall be the responsibility of the Contractor to protect the roadway and all existing structures, such as bridges and curb, from damage occurring as a result of the Contractor's operations. Damages to existing features caused by the Contractor's operations shall be repaired or replaced at no cost to the Department.

At bridge ends and at the end of workday, a taper of one vertical inch (1") for each three horizontal feet (3') shall be provided.

The Contractor shall make a utility location request to 811 prior to any excavation, except for trench widening or pavement removal/repair.

In order to expedite the safe movement of traffic and to protect each phase of the work as it is performed, a firm sequence of operations is essential. The work shall be begun and continually prosecuted.

Shoulders shall be maintained throughout the duration of the project to assure traffic safety.

The work shall consist of the following:

1. Remove all components related to the railroad crossing and overhead trusses at Sta. 34+58 (from right-of-way-to-right-of-way limit). The removal shall consist of all rails, ties, crossing surface, and ballast stone to the bottom of the cross ties. Payment for the removal of the crossing will be paid under 202-B: Removal of Railroad Crossing. Backfill the voids with 19-mm, ST asphalt according to the note in the repair of failed areas, along the existing mainline and backfill the shoulders with Granular Material, Class 5, Group D. The existing asphalt pavement shall be saw cut prior to removal of the crossing. The removal of the overhead trusses shall be taken down fully to the footing and the footing removed two feet

(2') below ground level. Backfill the void with Granular Material, Class 5, Group D. Payment for the removal of the overhead trusses will be paid under 202-B: Removal of Overhead Sign Assembly, Truss and Supports Only.

2. Failed areas on MS Highway 7 shall be repaired as needed using the following:

   - 202-B, Removal of Concrete Pavement w/Variable Depth Overlay
   - 203-G, Excess Excavation
   - 403-A, 19-mm, ST Asphalt Pavement
   - 503-C, Saw Cut Full Depth

Station	Length (ft)	Width (ft)	Area (SY)	Sawcuts (LF)
7+08	57	60	380	348

   NOTE: Failed areas are estimated as one (1) foot of depth and backfilled with one (1) foot (maximum 3½" lifts) of 19-mm, ST asphalt. The removal to one foot (1') is paid under the Removal of Asphalt Pavement. The asphalt shall be placed per the Project Engineer's instructions. Saw cuts will be required and will be paid for separately.

   NOTE: Any extra excavation below the 1-foot depth required, as determined by the Project Engineer, will be paid for as 203-G: Excess Excavation.

   NOTE: Failed areas shall be backfilled the same day as excavation.

3. The existing asphalt pavement shall be fine milled to a depth of one and one half inches (1½"). Milling operations shall be on the mainline, local roads, crossovers, and driveway pads. Fifty (50%) percent or a maximum of 10,000 tons of the milling material obtained shall become the property of the Department. The Contractor will deliver the milling material to the Leflore County Maintenance Shop located at 6771 US Highway 49E South, Greenwood. The Contractor shall provide all necessary equipment and qualified personnel to push material into a suitable stockpile.

Area	Quantity (SY)
SR 7 Mainline	42,747
Local Roads	7,627
Total	50,374

   NOTE: Payment for fine milling of pavement will be made under pay item 406-D per square yard, and shall include all cost associated with the milling operation.

   NOTE: Milled surfaces shall be covered with surface asphalt within five (5) calendar days of removal. The Contractor will be charged a fee of $5,000.00 for each full or partial day in which the milled surface is left uncovered after the 5-calendar day period.

NOTE: During this operation and prior to placement of the asphalt, due care shall be required to keep surface water from ponding on the roadway surface; continuous monitoring of the project may be required.

NOTE: During this operation and prior to placement of the asphalt, the Contractor shall repair and maintain all potholes.

4. The Contractor shall place the surface course on the previously milled surface.

Location	Type Mix	Area	Thickness	Asphalt
		SY	Inches	Tons
SR 7 Mainline	9.5-mm, MT	42,747	1.5	3,550
Local Roads	9.5-mm, ST	7,627	1.5	650

5. Granular material shall be placed on the shoulders as directed to raise the existing shoulders to the new surface course grade.

NOTE: Shoulders shall be bladed, shaped and compacted throughout the length of the project regardless of whether granular material is required.

NOTE: Granular material not required for the final shape of the shoulders may require removal under the pay item for excess excavation and may include small amounts of asphalt.

NOTE: Due care shall be taken during this operation to blade material to the roadway and away from the ditch line. Material inadvertently bladed to the roadway vegetation shall be removed at no cost to the Department.

6. Temporary traffic stripe shall be placed daily as per Section 618.

7. Guardrails shall be removed and replaced at the following location:

BR #	Guardrail Removal	Guardrail Installation	Terminal Section	Bridge Section Type H	Delineators, Guard Rail White
38.0	168	43	2	2	7
Totals	168	43	2	2	7

NOTE: The Contractor shall match the length, taper rate, and offset of the existing guardrail. The Contractor will be required to lay out the proposed rail for approval by the Project Engineer prior to installation.

8. Existing traffic stripe shall be removed from 1,464 linear feet of concrete bridge deck and replaced with double drop thermoplastic striping. Permanent pavement markings (double drop thermoplastic striping, two-way clear high performance raised pavement markers, two-

way yellow reflective high performance raised markers and red-clear high performance raised pavement markers) shall be placed as required.

9. All existing post mounted standard roadside signs estimated in the attached table shall be replaced. The Contractor shall deliver the removed signs to the Leflore County Maintenance Shop located at 6771 US Highway 49E South, Greenwood. All signs and hardware shall be removed from post prior to delivery. The Contractor is required to verify the sign quantity prior to ordering materials. All hardware and footings required for the erection of new signs and post shall be included in other items of work.

Sign Quantity			
Pay Item	Description	Unit	Quantity
202-B	Removal of Sign, Including Post and Footing	EA	55
630-A	Standard Roadside Signs, Sheet Aluminum, 0.080" Thickness	SF	154.76
630-A	Standard Roadside Signs, Sheet Aluminum, 0.125" Thickness	SF	118.14
630-A	Standard Roadside Signs, Sheet Aluminum, 0.1" Thickness	SF	139.56
630-C	Square Tube Post, 2.0 lb/ft	LF	720
630-C	Square Tube Post, 4.0 lb/ft	LF	30
630-G	Type 3 Object Marker, OM-3R or OM-3L	EA	4

NOTE: The existing pipe post will remain in place for the new signs to be attached as shown in the attached Sign Table.

10. Radar detection shall be installed at the traffic signals at the intersections of US Highway 82 and Carrollton Avenue per the attached information.

TRAFFIC SIGNAL RADAR DETECTION CHART								
Intersection	Detection Zone Location	Phase #	Detection Zone Size	STOPBAR Radar Unit	Advance Radar Unit	Radar Cable (ft)	Processor	Existing Pole Configuration
US 82 at SR7	EB Lanes	2	Priority Zone		1	225	1	Steel Strain
	NB Lane	4	6'x50'	1		200		
	EB Left Turn Lane	5	Existing					
	WB Lanes	6	Priority Zone		1	125		
	SB Lanes	3	Existing					
SR7 at Carrollton	NB Thru Lanes	2	Priority Zone		1	180	1	Steel Strain
	EB Left Turn Lane	4A	6'x50'	1		100		
	EB Thru Lane	4B	6'x50'					
	SB Thru Lanes	6	Priority Zone		1	160		
	WB Left Turn Lane	8A	6'x50'	1		300		
	WB Thru Lane	8B	6'x50'					
			Total	**3**	**4**	**1290**	**2**	

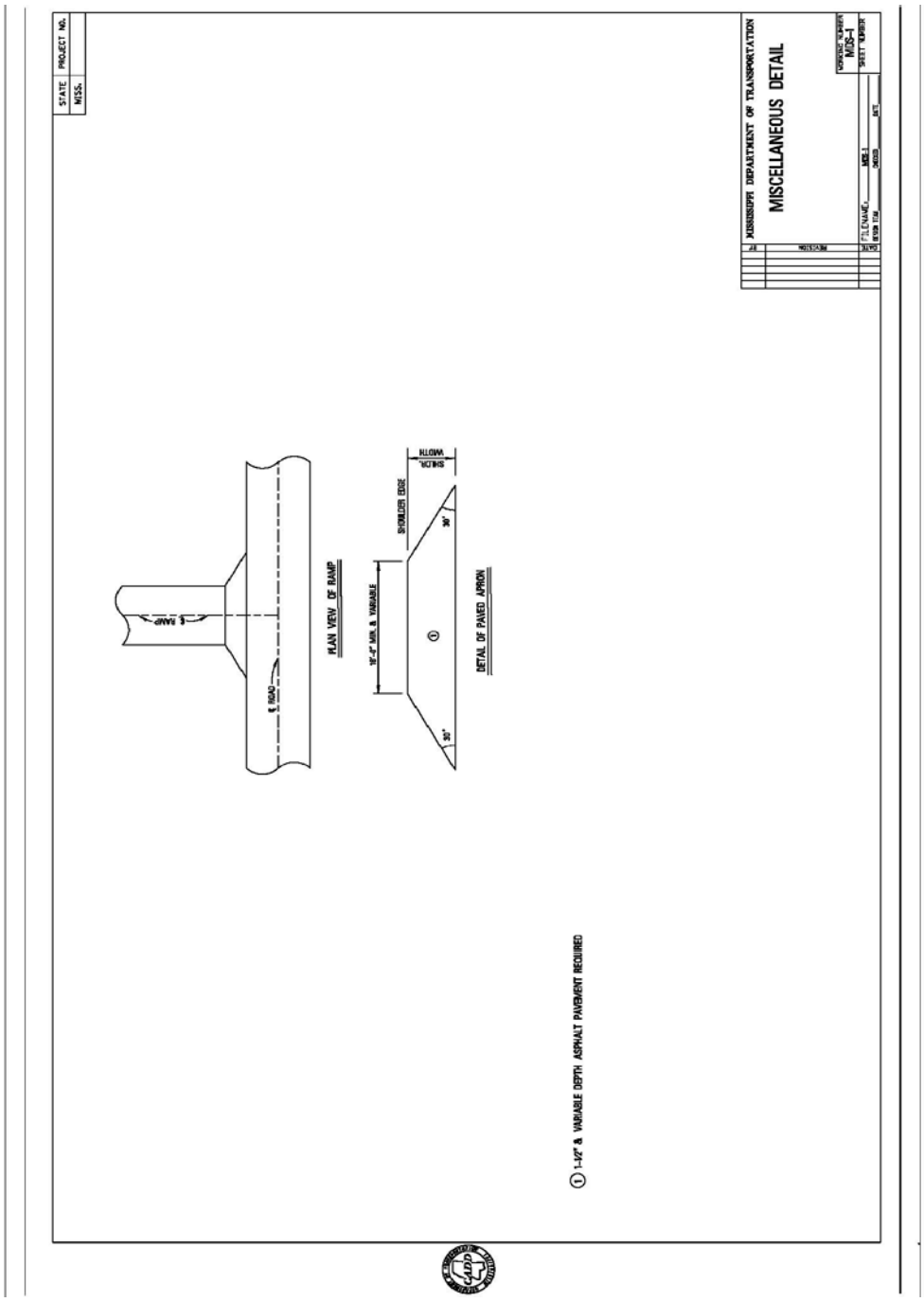
Note 1: Includes the replacement of controllers, conflict monitors, and installation of SDLC Hubs where called for in the plans.
Note 2: Radar units shall be mounted per manufacturer recommendations. Contractor shall be responsible for setting up all new signal controllers and detection units as per manufacturer recommendations.
Note 3: Contractor may remove existing detection loop cable, if necessary.
Note 4: Cable quantities may be adjusted based on radar locations per manufacturer recommendations.

The Contractor shall provide all signs and traffic handling devices necessary to safely maintain traffic around or through the work areas.

Incidental work such as removing vegetation, shaping and compaction of shoulder, necessary and incidental grading of roadway ditches and other incidental work that is necessary to complete the

work will not be measured for separate payment and the cost will be included in the bid items provided.

The Engineer may direct the use of additional cones at County roads or intersections within lane closures and will be included in pay item 907-618-A: Maintenance of Traffic.



HWY 7 LEFLORE COUNTY from US 82 to Grenada Blvd Ext.

Station #	Lane	Sign Description	Sign Code	Size	630-G004 Type 3 OM	630-A001 0.08" (SF)	630-A005 0.1" (SF)	630-A003 0.125" (SF)	202-B215 Removal U-Channel	630-C005 2lb Post (LF)	630-C002 4lb Post (LF)	Notes
5+60	LT	Yield	R1-2	36" Triangle		4.5			1	15		
5+84	RT	Added Lane from Right	W4-3R	36 x 36				9	1	15		
6+10	RT	Added Lane from Right	W4-3R	36 x 36				9	1	15		
7+73	LT	Right Lane Must Turn Right	R3-7R	30 x 30			6.25		1	15		
9+58	LT	US Route 82 Sign	M1-4	24 x 24		4						Route Tree ***KEEP THE EXISTING PIPE POST**
9+58	LT	US Route 82 Sign	M1-4	24 x 24		4						
9+58	LT	Advance Left Dir. Arrow	M5-1L	21 x 15		2.19						
9+58	LT	Angle Right Arrow	M6-2R	21 x 15		2.19						
9+58	LT	Right Directional Arrow	M6-1R	21 x 15		2.19						
9+58	LT	East	M3-2	24 x 12		2						
9+58	LT	West	M3-4	24 x 12		2						
9+58	LT	Hospital	D9-2	24 x 24		4						
10+55	RT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
13+18	LT	US Route 82 Sign	M1-4	24 x 24		4			1	15		Same Post
13+18	LT	Junction	M2-1	21 x 15		2.19						
13+92	RT	Speed Limit 45	R2-1	24 x 30		5			1	15		
16+05	LT	Right Lane Must Turn Right	R3-7R	30 x 30			6.25		1	15		
16+16	LT	36" STOP	R1-1	36" Octagon			7.46		1	15		
17+70	LT	Speed Limit 45	R2-1	24 x 30		5			1	15		
19+38	RT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
19+95	LT	36" STOP	R1-1	36" Octagon			7.46		1	15		
21+33	LT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
21+58	LT	36" STOP	R1-1	36" Octagon			7.46		1	15		
22+59	RT	Signal Ahead	W3-3	36 x 36				9	1	15		
26+11	RT	Speed Limit 45	R2-1	24 x 30		5			1	15		
28+23	LT	Speed Limit 45	R2-1	24 x 30		5			1	15		
28+55	RT	Railroad Crossing	W10-1	36" Diameter				7.07	1	15		
30+19	LT	Yield	R1-2	36" Triangle		4.5			1	15		Same Post
30+19	LT	Do Not Enter	R5-1	36 x 36			9					
30+71	RT	Yield	R1-2	36" Triangle		4.5			1	15		Same Post
30+71	RT	Do Not Enter	R5-1	36 x 36			9					
31+50	LT	36" STOP	R1-1	36" Octagon			7.46		1	15		
31+63	LT	Yield	R1-2	36" Triangle		4.5			1	15		Same Post
31+63	LT	Do Not Enter	R5-1	36 x 36			9					
31+95	RT	Yield	R1-2	36" Triangle		4.5				15		Missing - Same Post
31+95	RT	Do Not Enter	R5-1	36 x 36			9					
33+70	RT	36" STOP	R1-1	36" Octagon			7.46		1	15		
36+15	RT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
36+85	LT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
38+35	RT	36" STOP	R1-1	36" Octagon			7.46		1	15		
38+35	LT	Signal Ahead	W3-3	36 x 36				9	1	15		
38+54	RT	Speed Limit 45	R2-1	24 x 30		5			1	15		

39+33	LT	Railroad Crossing	W10-1	36" Diameter				7.07	1	15		
39+95	RT	36" STOP	R1-1	36" Octagon			7.46		1	15		
40+94	LT	Speed Limit 45	R2-1	24 x 30		5			1	15		
41+32	RT	Bridge Ices Before Road	W8-13	36 x 36				9	1	15		
43+72	LT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
44+28	LT	36" STOP	R1-1	36" Octagon			7.46		1	15		
46+46	RT	36" STOP	R1-1	36" Octagon			7.46		1	15		
48+65	Both	Type 3 OM	OM-3L & R	12 x 36	4				4			
50+70	RT	Right Lane Ends	W9-1R	48 x 48				16	2		15	
52+30	LT	Speed Limit 45	R2-1	24 x 30		5			1	15		
53+12	RT	Speed Limit 55	R2-1	24 x 30		5			1	15		
54+21	LT	Bridge Ices Before Road	W8-13	36 x 36				9	1	15		
55+83	RT	Lane Ends	W4-2	48 x 48				16	2		15	
55+83	LT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
59+07	LT	36" STOP	R1-1	36" Octagon			7.46		1	15		
59+90	LT	Yield	R1-2	36" Triangle		4.5			1	15		Same Post
59+90	LT	Do Not Enter	R5-1	36 x 36			9					
60+07	RT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
61+87	LT	Speed Zone Ahead	R2-5c	24 x 30		5			1	15		
64+53	RT	Side Road	W2-2	36 x 36				9	1	15		
65+21	LT	Two-Way Left Turn Only	R3-9b	24 x 36		6			1	15		
65+68	RT	Two-Way Traffic	W6-3	36 x 36				9	1	15		
70+35	RT	36" STOP	R1-1	36" Octagon			7.46		1	15		
TOTALS:					**4**	**154.76**	**139.56**	**118.14**	**55**	**720**	**30**	

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-101-1 **CODE: (IS)**

DATE: 07/20/2023

SUBJECT: Definitions and Terms

Section 101, Definitions and Terms, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-101.01--Abbreviations. After the abbreviation API on page 1, add the following.

APL Approved Products List

Replace the abbreviation for AWPA on page 1 with the following.

AWPA American Wood Protection Association

907-101.02--Definitions. Delete the sentence after the list of holidays in Subsection 101.02 on page 6 under **holidays, legal**, and substitute the following.

When a legal holiday falls on a Saturday or Sunday, the succeeding Monday, or as proclaimed by the Governor, will be observed as a legal holiday.

Delete the definition for Notice to Proceed in Subsection 101.02 on page 8, and substitute the following.

Notice to Proceed - Written notice to the Contractor to proceed with the contract work.

Delete the definition for "Plans" in Subsection 101.02 on page 8, and substitute the following.

plans - The approved plans, profiles, typical cross-sections, working drawings and supplemental drawings, or exact reproduction thereof, that show the location, character, dimensions, and details of the work to be done. The plans may also include electronic files, referred to on the plans as Electronic Files Identified as Plans, which may include engineering models, spreadsheets, CADD files or other electronic files used to convey design intent. When the contract does not have an official set of plans, reference to the plans shall mean the contract documents.

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. 907-103-2 **CODE: (SP)**

DATE: 06/22/2017

SUBJECT: Award and Execution of Contract

Section 103, Award and Execution of Contract, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-103.01--Consideration of Proposal. Delete the second and third paragraphs of Subsection 103.01 on page 19, and substitute the following.

907-103.01.1--For Projects Constructed Without Federal Funds. Resident Contractors actually domiciled in Mississippi are to be granted preference over nonresidents in awarding of Contracts financed 100% with State funds.

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-105-2 **CODE: (IS)**

DATE: 07/20/2023

SUBJECT: Control of Work

Section 105, Control of Work, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-105.01--Authority of the Engineer. Delete the first sentence of the second paragraph of Subsection 105.01 on page 31, and substitute the following.

The Engineer has the right to suspend the work wholly or in part and to withhold payments because of the Contractor's failure to correct conditions unsafe for workmen or the general public, for failure to carry out provisions of the Contract, or for failure to carry out orders.

907-105.02--Plans and Working Drawings. Delete the first paragraph of Subsection 105.02 on page 31, and substitute the following.

After the contract is executed by the Executive Director, the Contractor will receive, free of charge, two bound copies of the proposal and contract documents (one executed and one blank) two full scale copies of the plans, five half-scale copies of the Plans, and Electronic Files Identified as Plans. The Contractor shall have one copy of the proposal and contract documents and one half-scale copy of the plans available at all times during work activity on the project.

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. 907-108-6 **CODE: (SP)**

DATE: 03/11/2025

SUBJECT: Default and Termination 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.

907-108.08--Default and Termination of Contract. At the end of the Subsection 108.08 on page 85, add the following.

907-108.08.1--Debarment of Contractor. If the Contractor is declared to be in default under this Subsection and the Contract terminated for the reason(s) indicated in Subsections 108.08 (d), (f), or (g) above, the Commission may, in its discretion and in addition to default and termination, declare the Contractor to be debarred from bidding on any other projects for a period of one (1) year from the date of the termination letter. If the debarred Contractor has multiple on-going Contracts with the Commission and receives a one (1) year debarment, the on-going Contract(s) may continue; however, the Contractor will not be allowed to bid another project until one (1) year has passed from date of the termination letter.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 11/14/2023

SUBJECT: Measurement and Payment

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

907-109.01--Measurement of Quantities. Delete the sixth full paragraph of Subsection 109.01on 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.

907-109.04.2--Force Account Agreement. Delete the last sentence of subparagraph (c) in Subsection 109.04.2 on page 91, and substitute the following.

An amount will be added equal to fifteen percent (15%) of the sum thereof, excluding sales tax.

Delete subparagraph (d) in Subsection 109.04.2 on pages 91 & 92, and substitute the following.

(d) **Equipment.** Equipment used for force account work shall be of sufficient size and type necessary to perform the required work in an economic and expeditious manner. The Contractor must provide the manufacturer, make, model, year, type of fuel and other necessary information to determine proper hourly payment rates. Subject to advance approval of the Engineer, actual transportation cost for a distance of not more than 200 miles will be reimbursed for equipment not already on the project.

For equipment authorized by the Engineer for use on the force account work, the Engineer will use the equipment rental rates from the "*Rental Rate Blue Book*" as published on the Equipment Watch website www.equipmentwatch.com for the time period the force account work is authorized to determine payment to the Contractor. The maximum allowable rates

are determined as follows:

1. The hourly equipment rate will equal the FHWA total hourly rate. This rate takes into account adjustment factors for age and region.
2. The hourly estimated operating costs have been included in the FHWA total hourly rate.
3. The idle and standby rates shall be as listed in the "*Rental Rate Blue Book*" as reported by *Equipment Watch*.
4. These rates include the basic machine plus any necessary attachments.

Standby rates shall apply when equipment is not in operation and is approved by the Engineer to standby for later use to complete the work. Idle rates shall apply to equipment located on the project and the engine is burning fuel but no ground engaging or other components are actively engaged in meaningful work. In general, idle or standby rates shall apply when equipment is not in use, but will be needed again to complete the work and the cost of moving the equipment will exceed the accumulated standby cost. If the idle standby cost should exceed the equipment moving cost to or from the work site, the Contractor will be entitled to the moving cost only. Idle or standby rates will be used under the following conditions:

1. The equipment is totally dedicated to the force account work and not used intermittently on other work.
2. Idle or standby cost will be considered only after equipment has been operated on force account work.
3. The sum of idle or standby time and operating time shall not exceed eight (8) hours per day or 40 hours in a week.
4. Idle or standby payment will not apply to days not normally considered to be work days such as holidays, weekends, or days of inclement weather when no other work is taking place.

The Department will not pay for idle or standby time when equipment is inoperable, for time spent repairing equipment, or for the time elapsed after the Engineer has advised the Contractor that the equipment is no longer needed. The Department will determine if it will be more cost effective to pay standby time on approved equipment on site or for multiple mobilizations.

If equipment is needed, which is not included in the *Rental Rate Blue Book* as reported by *Equipment Watch*, the Department and Contractor will agree upon reasonable rental rates in writing before the equipment is used.

All equipment shall be subject to approval from day to day in accordance with the requirements of Subsection 108.05.

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.

907-109.07--Changes in Material Costs. After the fifth paragraph of Subsection 109.07 on page 96, change the web address to the following.

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

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-401-2 **CODE: (SP)**

DATE: **01/06/2025**

SUBJECT: **Asphalt Pavement - General**

Section 401, Asphalt Pavement - General, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows..

907-401.02--Materials.

907-401.02.6--Standards of Acceptance.

907-401.02.6.8--Acceptance Procedure for Pavement Smoothness Using Mean Roughness Index (MRI). Delete the third sentence of the second paragraph of Subsection 401.02.6.8 on page 253, and substitute the following.

The surface shall be tested and corrected to a smoothness index as described herein except those locations or specific projects that are excluded from smoothness testing with an IPS.

Delete the third, fourth and fifth paragraphs of Subsection 401.02.6.8 on pages 253 & 254, and substitute the following.

The smoothness of the surface lift will be determined for traffic lanes, auxiliary lanes, climbing lane and two-way turn lanes. Areas excluded from a smoothness test with the IPS are acceleration and deceleration lanes, tapered sections, transition sections for width, shoulders, crossovers, ramps, side street returns, etc. The roadway pavement on bridge replacement projects having 1,000 feet or less of pavement on each side of the structure will be excluded from a smoothness test. Smoothness testing shall exclude 264 feet from each transverse joint that separates the pavement from a bridge deck, bridge approach slab or existing pavement not constructed under the contract. This can apply to any other exceptions including, but not limited to, railroad crossings and manholes. Segments containing a considerable number of encroachments such as intersections, manholes, curb and gutter sections, etc. may be excluded at the Engineer's discretion.

Once paving has concluded, one final smoothness measurement shall be performed for both pay adjustments and corrective action. Multiple smoothness measurements for pay adjustments and correction can still be performed at the Engineer's discretion. These measurements must be performed at the posted speed limit or 50 miles per hour (±5 miles per hour), whichever is lower. Measurements will be made in both wheel paths of exterior and interior lanes. The wheel paths shall be designated as being located three feet (3') and nine feet (9') from centerline or longitudinal joint, respectively. Testing will also be required on sections that have been surface corrected. No smoothness testing shall be performed when there is any residual moisture on the

pavement surface. Any additional testing shall meet the requirements of Subsection 907-403.03.2.

The surface lift will be accepted on a continuous interval basis for pavement smoothness. Continuous reporting is based upon all MRI values for a specified running interval. These values are averaged and presented at the midpoint of the specified running interval.

Delete the last sentence of the last paragraph of Subsection 401.02.6.8 on page 254, and substitute the following.

All tests and corrections shall be in accordance with AASHTO R 54, Accepting Pavement Ride Quality When Measured Using Inertial Profiling Systems.

Delete Subsection 401.02.6.9 on pages 254 & 255, and substitute the following.

907-401.02.6.9--Inertial Profiling System.

907-401.02.6.9.1--General. The Inertial Profiling System (IPS), furnished and operated by the Contractor under the supervision of the Engineer or the Engineer's representative, shall be a dual-line laser on a high speed vehicle meeting the requirements of AASHTO M 328, Standard Specification for Inertial Profiler. Additionally, each IPS should be equipped with a GPS to ensure distance measurement accuracy. The profiler system and operator shall be certified at an MDOT approved regional calibration facility in accordance with AASHTO R 56, Standard Practice for Certification of Inertial Profiler Systems and AASHTO R 57, Operating Inertial Profiler Systems.

907-401.02.6.9.2--Computer Requirements. The computer measurement program must be menu driven, Windows compatible, and able to produce unfiltered profiler runs in the Pavement Profile (*.ppf) file format. The computer shall have the ability to display and print data on site for verification and shall have the ability to save and transfer data via Universal Serial Bus (USB) flash drive, which shall be provided by the Contractor.

All runs must be stored in a directory named in the following format for acceptance by the Project Engineer:

Project_County_Route

All profiler runs must be named in the following format for acceptance by the Project Engineer:

Direction_Lane_BeginStation_EndStation

In addition to manufacturers' software; the latest version of FHWA's ProVAL software shall be installed on the IPS computer.

907-401.03--Construction Requirements.

907-401.03.1--Specific Requirements.

907-401.03.1.2--Tack Coat. After the first sentence in Subsection 401.03.1.2 on page 256, add the following.

In addition to the products listed on the Department's APL, the Contractor may use one of the following as a tack coat.

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

907-401.03.1.4--Density. In the first sentence of the first paragraph of Subsection 401.03.1.4 on page 256, change "preleveling" to "pre-leveling".

907-401.03.9--Material Transfer Equipment. In the third sentence of Subsection 401.03.9 on page 261, change "include:" to "include".

907-401.03.14--Shoulder Wedge. In the second sentence of the first paragraph of Subsection 401.03.14 on page 263, change "cross roads" to "crossroads".

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-403-4 **CODE: (SP)**

DATE: **03/19/2025**

SUBJECT: **Asphalt Pavements**

Section 403, Asphalt Pavements, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

907-403.03--Construction Requirements.

907-403.03.2--Smoothness Tolerances. In the tenth paragraph of Subsection 403.03.2 on page 283, change "Sections(s)" to "Segment(s)".

907-403.03.2.1--Smoothness Tolerances for Mean Roughness Index (MRI). After the second paragraph of Subsection 403.03.2.1 on page 283, add the following.

For all projects, smoothness data shall be reported by two MRI methods:

1. A continuous long interval MRI report
2. A continuous 25-foot short interval MRI report

At the bottom of page 283 and top of 284 in Subsection 403.03.2.1, delete the paragraphs for Category, A, Category B, and Category C, and substitute the following.

Category A projects shall have a long interval surface MRI of not more than 60 inches per mile.

Category B projects shall have a long interval surface MRI of not more than 70 inches per mile.

Category C projects shall have the existing surface profiled at no additional cost to the State. These projects shall be measured by a long fixed interval (528-foot) surface MRI and meet the following requirements:

A 50% improvement in MRI from the existing surface
or
80 inches per mile (whichever value is higher)

Delete the first, second, and third full paragraphs on page 284, and substitute the following.

For all projects, areas of the surface lift with localized roughness greater than 160 inches per mile as determined by the continuous short interval (25') report will be identified for correction by the Contractor.

When a project has multiple lifts, the intermediate lift shall meet the short interval requirement of 200 inches per mile. Corrective action must be taken on those segments that do not meet this requirement. No unit price adjustment will be applied on the underlying lift.

Delete the table at the bottom of page 284, and substitute the following.

Mean Roughness Index (inches / mile)	Contract Price Adjustment Percent of Asphalt Unit Bid Price
Above 20.0 Over	REMOVE AND REPLACE *
15.1 to 20.0 Over	80
10.1 to 15.0 Over	85
5.1 to 10.0 Over	90
0.1 to 5.0 Over	95
Required Surface MRI	100

* In lieu of removal and replacement, segments may be brought into compliance through corrective action at the discretion of the Project Engineer.

Delete the table and footnote at the top of page 285, and substitute the following.

Mean Roughness Index (inches/mile) Percent Improvement	Contract Price Adjustment Percent of Asphalt Unit Bid Price
Below 30.1 Percent	80 **
30.1 to 35.0 Percent	80
35.1 to 40.0 Percent	85
40.1 to 45.0 Percent	90
45.1 to 50.0 Percent	95
Above 50%	100

** Segments that show less than 30 percent improvement as well as a final surface MRI greater than 100 inches/mile will be subject to removal.

Before the last paragraph on Subsection 403.03.2.1 on page 285, add the following.

Corrective action for all categories must be taken on those segments that exceed the localized roughness or the 'Remove and Replace' threshold. All locations must be located and marked by the Contractor and approved by the Project Engineer before corrective action shall take place. The minimum remove and replace length will be 528 feet (0.1 mile). Additional smoothness testing shall be required on segments following corrective action and/or replacement and will be required to meet *at least* the maximum surface MRI short of 'Remove and Replace' tolerance.

907-403.05--Basis of Payment.

907-403.05.2--Pay Items. Add the "907" prefix to the list of pay items on page 291.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-413-2 **CODE: (SP)**

DATE: 05/09/2023

SUBJECT: Cleaning and Sealing Joints and Cracks

Section 413, Cleaning and Sealing Joints and Cracks, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-413.03--Construction Requirements.

907-413.03.3--Sawing and Sealing Transverse Joints in Asphalt Pavement.

907-413.03.3.4--Sealing. Delete the last sentence of the last paragraph of Subsection 413.03.3.4 on page 333, and substitute the following.

Poured joint sealing material shall only be placed when the air temperature is within the limits specified by the manufacturer.

907-413.05--Basis of Payment. Delete the last pay item listed on page 336, and substitute the following.

907-413-E: Sawing and Sealing Transverse Joints in Asphalt Pavement - per linear foot

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-618-4

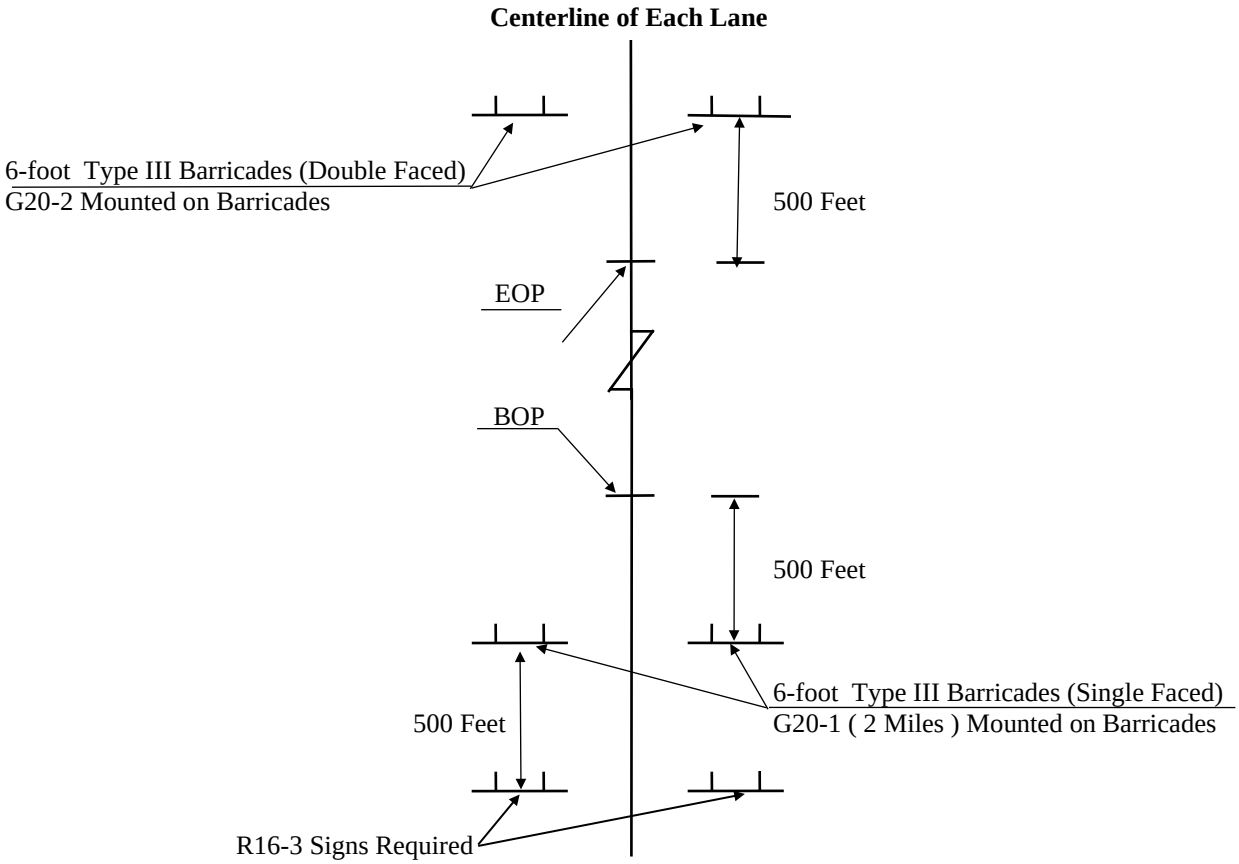
DATE: 01/13/2025

PROJECT: SP-0019-01(022) / 109744301 -- Leflore County

Delete the paragraph in Subsection 907-618.01.2 on page 1, and substitute 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. 907-618-A: Maintenance of Traffic per lump sum.

Additional traffic control devices will be required as follows.

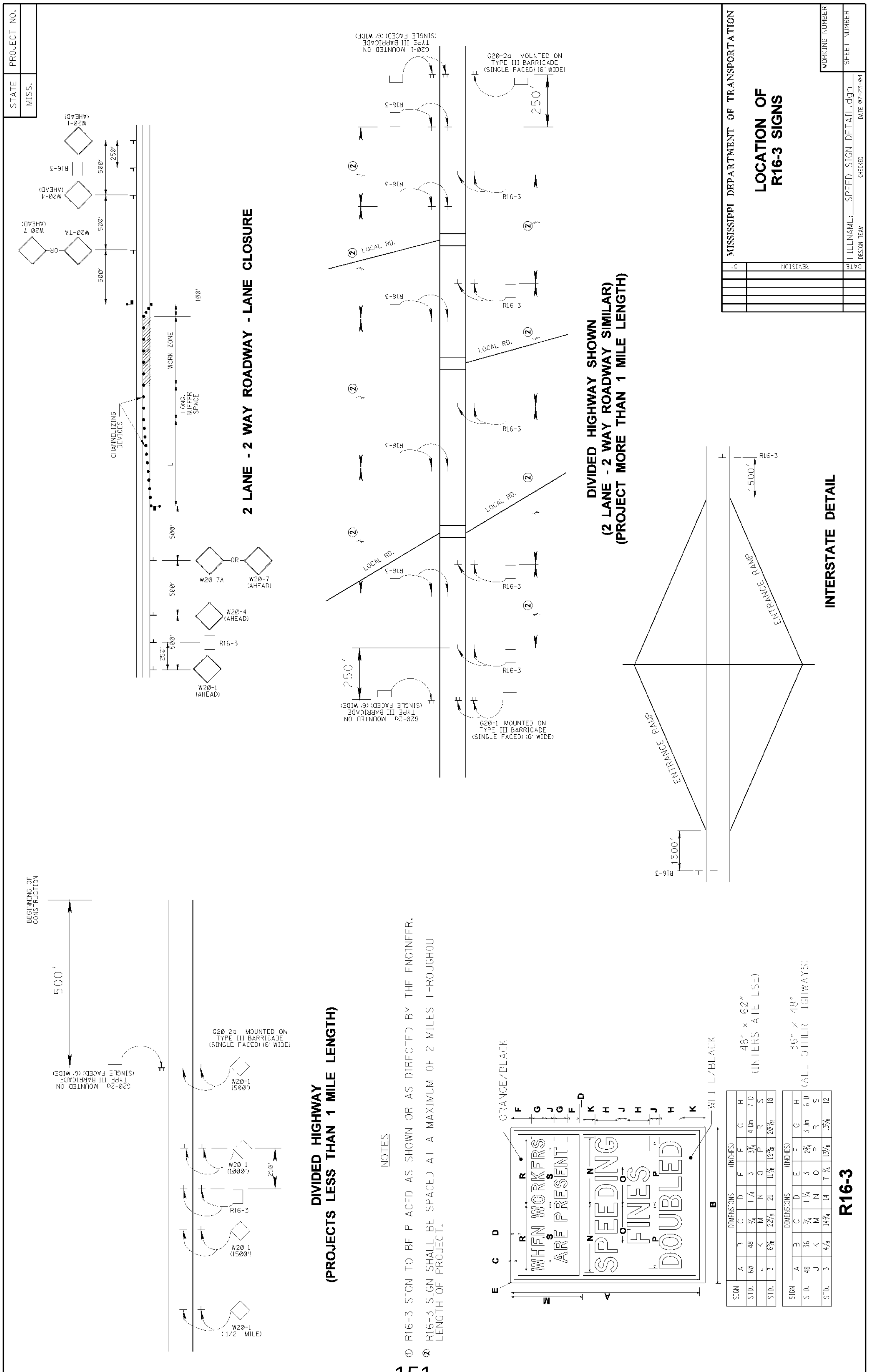


ADDITIONAL TRAFFIC CONTROL SIGNS REQUIRED:

7 - W20-1 "AHEAD" signs required. One (1) sign is required at each local road or street entering the project.
10 - 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 907-618-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.



SIGN	A	B	C	D	E	F	G	H
STD.	60	48	¾	1 ¼	3	3¾	4 Dm	7 D
	J	K	M	N	O	P	R	S
STD.	3	6⅝	22⅞	21	11⅞	19⅝	20⅞	18

SIGN	A	B	C	D	E	F	G	H
STD.	48	36	¾	1 ¼	3	2¾	3 Dm	6 D
	J	K	M	N	O	P	R	S
STD.	3	4⅞	14¾	14	7 ⅞	13⅞	13⅝	12

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. 907-618-12 **CODE: (SP)**

DATE: 05/03/2024

SUBJECT: Traffic Control Management

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--Description.

907-618.01.2--Traffic Control Management. Delete subparagraph (g) of Subsection 618.01.2 on page 441, and substitute the following.

g) Perform a minimum of once-a-week inspections from the Notice to Proceed until a Partial or Final Maintenance Release is obtained. Once work begins, daily daytime inspections and weekly nighttime inspections are required on projects with predominantly daytime work, and daily nighttime inspections and weekly daytime inspections are required on projects with predominantly nighttime work. Weekly inspections will be allowed for periods outside of active construction. When lane closures are present or any non-fixed signs or traffic handling devices such as cones or barrels are in place, inspections shall be performed daily whether work is being performed or not.

907-618.05--Basis of Payment. Delete pay item 618-A on page 449 and substitute the following.

907-618-A: Maintenance of Traffic - lump sum

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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

DATE: 01/17/2018

SUBJECT: Traffic Control for Construction Zones

Section 619, Traffic Control for Construction Zones, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-619.02--Materials.

907-619.02.8--Traffic Signals and Flashers. Delete Subsection 619.02.8.1 on pages 452 thru 455, and substitute the following.

907-619.02.8.1-Portable Traffic Signals. Portable traffic signals shall be trailer or pedestal mounted units that provide for easy, legal transportation and quick setup and deployment. Each unit shall be self-contained. The types of portable traffic signals are as follows.

- Type 1 portable traffic signal shall include two signal heads per trailer with one signal head mounted on an overhead mast arm that can be extended over the travel lane, and the other signal head shall be mounted on the vertical upright of the trailer.

- Type 2 portable traffic signal shall include one signal head that is mounted on the vertical upright of the pedestal/cart or trailer. Pedestal/Cart mounted shall be designated as Type 2A and Trailer mounted shall be designated as Type 2B. Type 2 portable traffic signals shall be tested to MASH Standards or NCHRP Test Level 3 crash testing requirements by an accredited independent test facility, with supporting documentation available upon request.

- Type 3 portable traffic signal shall be the same as Type 1 mentioned above but with enhanced capabilities as mentioned in each applicable section below.

The portable traffic signals shall be MUTCD Compliant and utilize standard ITE signal heads, and adhere to the ITE Specifications and Standards for Vehicle Traffic Control Signal Heads, Light Emitting Diode (LED) Circular Signal Supplement. The units shall be battery powered with a solar charging system, and be equipped with an onboard battery charger capable of being used with a 120V AC power source. Portable traffic signals shall be able to communicate with other portable signals via 900 MHz or other accepted wireless communications. If wireless connectivity is not feasible, hardwired connectivity shall be an acceptable alternative, as approved by the Engineer. Portable Traffic Signals shall include all the major components listed below or be able to perform the functions of these components. The major components of the unit shall include, but are not limited to, the trailer or pedestal/cart, telescoping mast arm (on Type 1 and 3), signal head(s) and back plates, traffic signal controller with operating software, solar charging system with batteries, input and output devices, vehicle detection, flasher units, conflict monitor, relays,

communications system and other equipment required for the safe operation and installation of the unit.

907-619.02.8.1.1--Signal Heads. The signal heads and all applicable components of the portable traffic signal shall meet the physical display and operational requirements of conventional traffic signals as specific in the Manual on Uniform Traffic Control Devices (MUTCD). The signal heads shall be cast aluminum or polycarbonate and shall meet the requirements laid out in the Mississippi Standard Specification for traffic signal heads and associated MDOT material specifications for traffic signal heads. The signal heads shall accommodate standard 12-inch LED indications meeting the ITE Specification "Vehicle Traffic Control Signal Heads" and ITE Specifications and Standards for Vehicle Traffic Control Signal Heads, Light Emitting Diode (LED) Circular Signal Supplement.

For Type 1, Type 2 and Type 3 portable traffic signals, the signal heads shall have the ability to be rotated 180 degrees to face in the opposite direction and shall have the ability to rotate and lock in approximately 10 degree increments to position the signal head for the optimum visibility to motorists.

For Type 1 portable traffic signals, each unit shall contain two signal heads with one signal head mounted on an overhead mast arm that can be extended over the travel lane with a minimum clearance of 17 feet measured from the bottom of the signal head unit to the road surface. The lower signal head shall be mounted to the vertical upright of the trailer at a minimum height of eight feet (8') from the bottom of the signal head unit to the road surface.

For Type 2 portable traffic signals, the signal head shall be mounted to the vertical upright of the trailer at a minimum height of eight feet (8') from the bottom of the signal head unit to the road surface.

For Type 3 portable traffic signals, each unit shall be the same as Type 1 mentioned above but with enhanced capabilities as mentioned below.

907-619.02.8.1.2--Controller and Operating Requirements. The portable traffic signal (Types 1, 2, and 3) shall include a solid state Controller Unit (CU) that is in compliance with NEMA TS 5 Performance Standard. The CU shall have an easy to read front panel backlit display for viewing and programming the configuration settings and CU status. The CU shall be capable of operating the portable traffic signal system in a fixed time, traffic actuated or manual control mode. Multiple portable traffic signals shall have the capability to be interconnected to form a portable traffic signal system. Each portable traffic signal within a connected system shall have the capability to serve as either the master or remote signal. Each portable traffic signal shall include a Conflict Monitor Unit (CMU), or Malfunction Management Unit (MMU) to ensure phase conflicts do not exist during operation.

For Type 1 and Type 2 portable traffic signals, a minimum of five (5) automatic time-of-day timing plans within a 24-hour period should be available in fixed time mode. The CU should have the ability to control a minimum of four (4) traffic phases with programmable cycle time adjustments and user adjustable red, amber, minimum green and maximum green times. The CU shall have

the capability of programming green and red times from 1 to 999 seconds and yellow times up to 15 seconds in one-second increments. The CU shall also have the capability of facilitating standby modes of red, red flash and yellow flash.

For Type 3 portable traffic signals, a minimum of ten (10) automatic time-of-day timing plans within a 24-hour period should be available in fixed time mode. The CU should have the ability to control a minimum of 16 traffic phases with programmable cycle time adjustments and user adjustable red, amber, minimum green and maximum green times. The CU shall have the capability of programming green and red times from 1 to 999 seconds and yellow times up to 15 seconds in one-second increments. The CU shall also have the capability of facilitating standby modes of red, red flash and yellow flash.

The system shall also have the ability to operate in vehicle actuation mode when vehicle detection components are used. The operating system shall have the capability to allow the Portable Traffic Signal to be connected to and controlled by a standard NEMA controller.

The system shall have the capability to be controlled remotely using a hardwired or wireless remote. The wireless radio remote shall be capable of communicating at a clear line of site distance up to ¼ mile from the master.

The CU shall have the capability of interfacing with a Remote Monitoring System (RMS) capable of reporting signal location, battery voltage, and system faults. The RMS shall include a password-protected web site, viewable via an internet connection. In the event of a system fault, the RMS shall provide specific information concerning the cause of the system fault (example: "red lamp on signal number 1 out"). The RMS shall immediately contact previously designated individuals via SMS text messaging or email, upon a fault event.

The active timing program operating the PTS system shall be available and viewable through the RMS website at all times. The RMS shall maintain a history of the operating system in each signal including total operating hours, alerts, and the location of the PTS trailer.

907-619.02.8.1.3--Wireless Communications. The portable traffic signals shall communicate with other portable traffic signals within the signal system via license-free wireless 900 MHZ radio link communications as specified in Subsection 662.02.2 of the radio Interconnect System specification. The radio units shall maintain communications at a minimum distance of one (1) mile. The radio system shall conform to the applicable Federal Communications Commission requirements and all applicable state and local requirements.

The portable traffic signals shall be in direct communication at all times either by wireless or hardwire connection to provide for the required conflict monitoring / malfunction management system.

907-619.02.8.1.4--Power Requirements. Each Portable Traffic Signal shall be equipped with a power source consisting of a solar collection array, solar controller and/or charging unit and batteries sufficient to operate the signal system. The number and size of batteries shall be sufficient to operate the Type 1 and Type 3 signals for a minimum of 30 days and Type 2A signals for

minimum of five (5) days, and Type 2B signals for minimum of 15 days without additional charging or assist from the solar array. An on-board battery charger shall be compatible with both the solar array and with a 120V AC power source.

For Type 1 signals, the solar panel array shall provide for a minimum of 440 watts of solar collection capability.

For Type 2A signals, the solar panel array shall provide for a minimum of 90 watts of solar collection capability.

For Type 2B signals, the solar panel array shall provide for a minimum of 110 watts of solar collection capability.

For Type 3 signals, the solar panel array shall provide for a minimum of 480 watts of solar collection capability and shall include a tilt and rotate system to optimally position the panels.

All instrumentation for the electrical system and battery compartment shall be contained in a lockable weatherproof enclosure. Solar panels shall be secured to the mounting brackets for theft prevention.

907-619.02.8.1.5--Trailer and Lift System. The trailer or pedestal/cart and all mounted components shall conform to the wind loading requirements as follows: 100 mph minimum for Type 1 portable traffic signals, 55 mph minimum for Type 2A portable traffic signals, 75 mph minimum for Type 2B portable traffic signals, and 90 mph minimum for Type 3 portable traffic signals as described in the AASHTO *Standard Specifications for Highway Signs, Luminaries and Traffic Signals*, as specified in the plans including all interims and updates. At the request of the Engineer, proof of conformance to these wind load ratings shall be verified by a third-party. No additional loose ballast shall be used to meet these wind load requirements. The trailer shall be made of structural steel and shall include four (4) leveling/stabilizer jacks capable of lifting the trailer a minimum of six inches (6").

The trailer or pedestal shall be equipped with a mechanical, hydraulic or electric lift system sufficient for one person to be able to raise and lower the vertical upright and/or horizontal mast arm to and from the operating position.

For Type 1, 2B, and Type 3 signals, the trailer shall be equipped to provide legal and safe transport on the public highway system at speeds up to 55 mph.

All exterior metal surfaces, except signal heads and back plates, shall be powder-coat painted highway safety orange.

907-619.02.9--Impact Attenuators. Delete the sentence in the first paragraph of Subsection 619.02.9 on page 455, and substitute the following.

Impact attenuators must be listed on the Department's APL.

907-619.02.11--Snap-Back Delineators. Delete the sentence in the paragraph of Subsection 619.02.11 on page 456, and substitute the following.

Snap-back delineators shall be selected from the list of surface mounted flexible delineator posts as shown on the Department's APL.

907-619.02.14--Changeable Message Sign.

907-619.02.14.5--PCMS Controller and Storage Cabinets. Delete the fifth sentence in the first paragraph of Subsection 619.02.14.5 on pages 462 and 463, and substitute the following.

The controller cabinet shall be illuminated.

907-619.05--Basis of Payment. Add the following to the list of pay items ending on page 480.

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

907-619-H2: Traffic Signal, Portable, Type ___ - per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-619-6 **CODE: (SP)**

DATE: **03/21/2018**

SUBJECT: Temporary Portable Rumble Strips

Section 619, Traffic Control for Construction Zones, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-619.02--Materials. After Subsection 619.02.15 on page 472, add the following.

907-619.02.16--Temporary Portable Rumble Strips. Temporary portable rumble strips shall be RoadQuake manufactured by PSS and meet the following requirements:

- capable of being installed without adhesives or bolts,
- have a minimum weight of 100 pounds,
- have a minimum overall length of 11 feet,
- have a minimum width of 12 inches, and
- have a maximum height of 3/4 inch.

Temporary portable rumble strips shall be installed in accordance with the attached details, or as directed by the Engineer.

907-619.03--Construction Requirements. After Subsection 619.03.11 on page 476, add the following.

907-619.03.16--Temporary Portable Rumble Strips. Temporary portable rumble strips shall be placed at locations shown on the traffic control plans, attached drawing, or as directed by the Engineer. The rumble strips shall be removed when lane closures are removed, relocated when lane closures are relocated, or as directed by the Engineer.

Prior to placement of the rumble strips, the roadway shall be cleaned to be free of dust, sand, and other materials that may cause slippage. The minimum roadway temperature at the time of installation shall be in accordance with manufacturer recommendations.

A minimum of three (3) temporary portable rumble strips shall be arranged in an array. The spacing of temporary portable rumble strips in each array shall be on 15-foot centers. One array of three (3) strips shall be used in each lane. The rumble strips shall be regularly monitored and maintained to ensure they stay in place under traffic.

907-619.04--Method of Measurement. At the end of Subsection 619.04 on page 478, add the following.

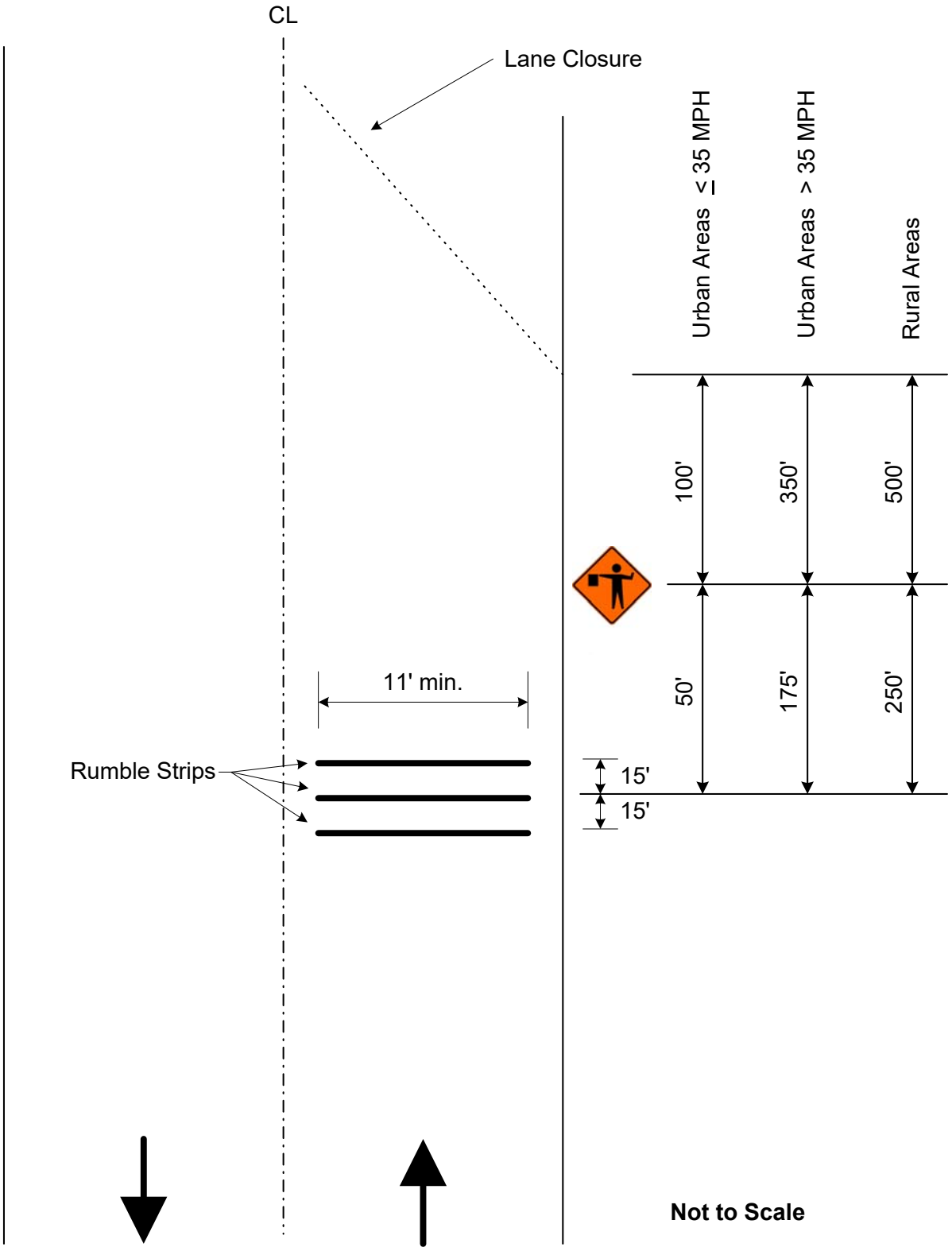
Temporary Portable Rumble Strips will be measured for payment by the linear foot only when a pay item for temporary portable rumble strips is included in the contract. Otherwise, temporary portable rumble strips will be included in the cost of pay item 618-A, Maintenance of Traffic. The quantity of temporary portable rumble strips will be the length of rumble strips approved by the Engineer to be in-place on the project at any one time.

907-619.05--Basis of Payment. After the fifth paragraph of Subsection 619.05 on page 478, add the following.

Temporary Portable Rumble Strips measured as prescribed above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for cleaning the roadway surface, installing the rumble strips, maintenance and repair of the strips, cleaning and resetting of the strips, removal and replacement, and for all labor, equipment, tools, and incidentals necessary to complete the work.

After the last pay item listed on page 480, add the following.

907-619-B: Temporary Portable Rumble Strips - per linear foot



Detail of Temporary Portable Rumble Strips

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-626-11 **CODE: (IS)**

DATE: 06/24/2024

SUBJECT: Thermoplastic Traffic Markings

Section 626, Thermoplastic Traffic Markings, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

Delete Section 626 on pages 492 thru 496, and substitute the following.

SECTION 626 - THERMOPLASTIC TRAFFIC MARKINGS

907-626.01--Description. This work consists of furnishing materials and placing thermoplastic pavement markings of the type specified in conformity with these specifications and the details shown on the plans or established. All hot-applied thermoplastic pavement markings shall be coated with a double-drop combination of optics.

This work may also consist of placing an audible bump or puck style marking system on the edge line that provides an audible and vibratory warning when driven over. The marking system shall be a road marking system of the dimensions indicated at regular and predetermined intervals.

This work may also consist of placing a profile or raised shape marking system on centerline or edge line that provides audible and vibratory warning when driven over. The marking system shall be a road marking system of the dimensions indicated and at regular and predetermined intervals. When placed on centerline, the markings system shall consist of an extruded black transverse thermoplastic bar of the dimensions indicated at regular and predetermined intervals.

This work may also consist of placing high contrast thermoplastic markings. High contrast thermoplastic markings shall consist of placing thermoplastic pavement markings over a black thermoplastic pavement marking to enhance the marking's visibility.

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

Permanent pavement marking tape (permanent cold plastic tape) may be used in lieu of hot applied thermoplastic markings. Substitution will only be allowed for pay items 907-626-A through H. Substituted pavement marking tape shall be of the same color and width as that required for the hot applied thermoplastic. Unless otherwise specified, the markings, whether hot applied or pavement marking tape, shall be of the same type of material for the entire project. Stop bars and crosswalks shall not be substituted with pavement marking tape and shall be alkyd hot-applied thermoplastic markings or heat-fused preformed pavement markings. Material and construction requirements for substituted pavement marking tape shall meet the requirements of Special

Provision 907-628. The layout and spacing for substituted pavement markings will remain as shown in the plans, or in the contract documents, for hot applied thermoplastic markings. Measurement of adhesive substituted pavement markings shall be made in accordance with Special Provision 907-628. Payment for adhesive substituted pavement markings shall be made at the unit price for the appropriate hot applied thermoplastic marking.

When thermoplastic pavement markings are used on bridge decks or concrete surfaces, the surface shall be sealed with an epoxy sealer prior to the application of thermoplastic.

907-626.02--Materials. All pavement marking materials shall meet the requirements of Special Provision 907-720-3.

Thermoplastic pavement marking material may be sampled in the field at the time of application by sampling from the marking equipment at the point of extrusion. Samples should be cooled until solid and then packaged into large re-closeable plastic bags and placed into a cardboard box for transport. Field samples will be tested at random or as determined necessary by the Department.

The Contractor shall supply the materials to be used for sampling and packaging. Department personnel shall witness the sampling and shall be responsible for transportation of the sample for testing.

907-626.02.1--Audible Bumps. Audible bumps shall have a profile such that the leading and trailing edges are sloped at a sufficient angle to create an audible and vibratory warning.

Audible bumps shall be at least 0.45 inches above the pavement surface at the highest point of the bump. The height shall be measured after the application of drop-on material. The bumps shall have a minimum dimension of two and one-half inches (2½") in both transverse and longitudinal directions. The bumps may have a drainage channel. The width of each drainage channel shall not exceed one-quarter of an inch (¼") at the bottom of the channel.

907-626.02.2--Audible Transverse Bars. The length of transverse bars is the measurement lateral to the direction of travel, also known as transverse width. The width of transverse bars is the measurement parallel to the travel way.

Transverse bars on centerline shall have a length of 10 inches, a width of three inches (3"), and a height of 350 mils. Transverse bars on centerline shall be placed on 2-foot centers through no-passing zones and 5-foot centers through passing zones. Transverse bars on centerline shall be placed in advance of permanent thermoplastic markings.

Transverse bars on edge lines shall have a length of six inches (6"), a width of three inches (3"), and a height of 350 mils. Transverse bars on edge lines shall be placed on 2-foot centers. Tolerance for the longitudinal and transverse measurements shall be one quarter of an inch (¼") and the tolerance for height shall be 50 mils. The above dimensions are based on 6-inch strip application.

Thermoplastic material for edge line transverse bars shall be as specified on the Plans and meet

the requirements of Special Provision 907-720-3 or as specified on the plans. Thermoplastic material for centerline transverse bars shall be black and shall meet the requirements of Special Provision 907-720.

907-626.02.3--High Contrast Markings. High contrast markings shall be black with the pertinent marking color overlaid on top and shall meet the requirements of Special Provision 907-720-3.

907-626.03--Construction Requirements.

907-626.03.1--Equipment. Equipment for hot application shall be of sufficient size and stability to ensure smooth, uniform, properly aligned markings of the dimensions specified. The equipment shall be suitably equipped for heating and controlling the flow of the material. The equipment shall be constructed to provide continuous mixing and agitation of the material. The conveying parts of the equipment, between the main material reservoir and applicator, shall be so constructed as to prevent accumulation and clogging. The equipment shall be constructed so that all mixing and conveying parts, up to and including the applicator, maintain the material at the plastic temperature. The thermoplastic material shall be dispensed at a temperature recommended by the manufacturer. The applicator shall include a cutoff device remotely controlled to provide clean, square stripe ends and to provide a method for applying skip lines. The thermoplastic reservoir shall be insulated and equipped with an automatic thermostatic control to maintain the proper temperature of the material.

The application equipment shall be capable of automatic placement of intermittent and continuous line patterns in single or double line applications simultaneously. The intermittent timer mechanism shall provide a variable ratio of materials applied and variable cycle length such that accurate placement of new patterns, or replacement of existing patterns can be achieved.

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

The equipment shall also be capable of applying the top dressing of optics (beads) in a manner that firmly embeds them into the surface of the thermoplastic material for at least one half of the diameter of the larger gradation sizes of the optics. The dispensing equipment shall be equipped with an automatic cut-off control for the application of the optics that is synchronized with the cut-off of the thermoplastic material.

Optics applied to the surface of the completed stripe shall be applied by an automatic dispenser attached to the pavement marking equipment in such a manner that the optics are immediately dispensed upon the completed line. The dispenser shall be equipped with an automatic cutoff control, synchronized with the cutoff of the pavement marking equipment. The double-drop optics as defined in 907-720-3 shall be automatically applied at a uniform rate to achieve the minimum retroreflectivity requirements of 907-626.03.3.

Upon request, the Engineer will establish the control points for markings at necessary intervals not to exceed 600 feet on tangents and more often on curves. All additional work necessary to establish intermediate control points shall be performed by the Contractor. On curves, unsightly variations

from the normal curvature will not be permitted unless specifically shown on the plans or ordered by the Engineer.

When edge lines are placed over rumble strips, the equipment must be able to apply the marking material using the atomization/spray method instead of extrusion/ribbon method. To ensure the proper alignment of the rumble stripes, the Contractor will be required to place a layout line to be followed during installation of the edge lines over the rumble strips.

907-626.03.2--Construction Details. The thermoplastic compound shall be screed or ribbon extruded to the pavement surface. Heat-fused, pre-formed pavement markings shall be fusible to asphalt surfaces by means of the normal heat of a propane weed-burner type of torch or other heating device as recommended by the manufacturer. Heat-fused, pre-formed pavement markings shall be instantly highly reflective without the application of additional optics.

Thermoplastic markings shall not be applied to the pavement surface when the pavement surface temperature is less than 55°F. The pavement surface shall be dry, to the satisfaction of the Engineer, before application will be permitted. Unless otherwise specified by the manufacturer, thermoplastic pavement marking material shall be applied to the surface between 400°F and 450°F with a recommended application temperature being 420°F.

Immediately before application, all areas to be marked shall be thoroughly cleaned. Cleaning may be done by rotary brooms, air blast, scrapers, or whatever combination of equipment is necessary to clean the pavement thoroughly without damage to the pavement surface. On areas of pavement cured with compound, the membrane shall be removed completely by shot blasting, sand blasting or other approved method. Before edge striping, particular care shall be taken to remove all vegetation, loose soil, and the like from the area to be marked. Should other methods fail, the surface shall be wetted with a water jet and scrubbed as necessary to dislodge all foreign material. After washing, the surface shall be allowed to dry thoroughly, and all films of dried mud apparent after surface drying shall be removed before application of markings. Marking shall follow as closely as practicable after the surface has been cleaned and dried, but no markings shall be applied until the surface has been inspected and permission given to proceed. The cost for preparing the surface shall be included in the contract unit prices for the marking items.

Unless otherwise directed by the Engineer, traffic stripes that are conflicting with the thermoplastic stripe shall be removed prior to placement of the thermoplastic material. Removal of pavement markings shall be done by a means that will not gouge the surface of the pavement in a manner that requires patching to ensure the integrity of the pavement. Temporary paint stripe may be left in place when satisfactorily placed in the proper location. Any temporary stripe not covered shall be removed. Payment for removal of stripe, except temporary stripe, will be made under Section 202.

On newly constructed asphalt pavements, any sand, grit, or other surface contaminants shall be removed using compressed air and/or sweeping. Water blasting may be necessary to remove surface contaminants which cannot be removed by the use of compressed air and/or sweeping. This work is considered surface preparation.

The finished lines shall have well defined edges and the thickness of thermoplastic markings above the roadway surface shall be no less than 90 mils for edge lines, center lines, lane lines, barrier lines, and detail stripe including gore markings, and no less than 120 mils for crosswalks, stop lines, and railroad, word and symbol markings. The minimum thickness, as required above, will be measured in the center of the line when gauged. The minimum thickness one-half inch (½") from the edges shall not be less than 75% of the thickness required in the center.

Any thermoplastic traffic marking less than the required thickness shall be corrected by recapping at no additional costs to the Department. Although a thickness tolerance of 25 percent from center to edge is allowed, a consistent underrun of any amount in thickness as determined by the Engineer will not be acceptable.

The length and width of lines shall be within a tolerance of ±3 inches and ±1/8 inch, respectively. For skip markings, the tolerance for intervals shall not exceed the line length tolerance. On curves, unsightly variations from the normal curvature will not be permitted unless specifically shown on the plans or ordered by the Engineer.

Heat-fused, pre-formed pavement markings shall be supplied with a minimum average thickness of 90 mils before application on the roadway surface.

All newly applied thermoplastic material shall be protected from traffic until the material is sufficiently dry so as not to sustain damage from vehicle tires. Any material so damaged by traffic shall be repaired, and the thermoplastic material tracked onto the pavement shall be removed and replaced.

907-626.03.3--Reflectivity Requirements. The longitudinal pavement markings shall meet the following retroreflectivity values when measured within 10 to 30 calendar days of placement, after removing loose beads.

Table 1. Minimum Dry Retroreflectivity

Color	All Stripe without Rumble $mcd/m^2/lx$	Rumble Stripe $mcd/m^2/lx$
White	375	250
Yellow	275	150

907-626.03.3.1--Measuring Devices. Retroreflectivity measurements shall be taken using a vehicle mounted mobile retroreflectometer using 30-meter geometry with video and mapping capabilities as per AASHTO T-398. The retroreflectometer and operator shall be certified by the manufacturer, authorized representative of the manufacturer, or an MDOT approved program such as the Texas A&M Transportation Institute (TTI) Mobile Retroreflectometer Certification Program.

907-626.03.3.2--Acceptance Procedure. Averages of the mobile measurements shall be provided for every 0.1 miles unless otherwise specified or approved. Take measurements on each section of roadway for each series of markings (i.e., edge line, center skip line, each line of a double line, etc.) and for each direction of traffic flow. Measure each line in both directions for centerlines on two-way roadways (i.e., measure both double solid line in both directions and measure all center

skip lines in both directions). Furnish measurements in compliance with the below requirements. Use all equipment in accordance with the manufacturer's recommendations and directions. Inform the Engineer at least 24 hours before taking any measurements.

A marking meets the retroreflectivity requirements if:

- The combined average retroreflectivity measurement for a one-mile segment meets the minimum retroreflectivity values specified, and
- No more than 30% of all the retroreflectivity measurement values are below the minimum retroreflectivity requirements value within the one-mile segment.

The one-mile segment will start from the beginning of the data collection and end after a mile worth of measurements have been taken; each subsequent mile of measurements will be a new segment. Centerlines with two (2) stripes (either solid or broken) will result in two (2) miles of data for each mile segment. Each centerline stripe must be tested for compliance as a stand-alone stripe.

The Contractor may elect to restripe with a minimum of 0.060 in. (60 mils) at no cost to the Department each one-mile segment that failed to meet the minimum retroreflectivity requirements. Measurements shall be retaken within 10 to 30 calendar days after the second application for the mile segment for that series of markings. If the markings do not meet minimum retroreflectivity after the second application, the Engineer may require removal of all existing markings, a new application as initially specified, and a repeat of the application process until minimum retroreflectivity requirements are met.

907-626.03.3.3--Mobile Retroreflectivity Data Collection. Mobile Retroreflectivity Data Collection (MRDC) shall be conducted on dry pavement only and when the ambient air temperature is greater than 40°F. Data shall be submitted to the Engineer no later than 3 working days after the day the data is collected. Submit all raw data collected in addition to all other data submitted. Provide data files in Microsoft Excel format or a format approved by the Engineer. The data file and video must contain the following information.

907-626.03.3.3.1--Data File. Data files shall be provided with the following:

- Date;
- District;
- County;
- Name of mobile retroreflectometer operator;
- Route number with reference markers or other reference information provided by the Engineer to indicate the location of beginning and end data collection points on that roadway;
- Cardinal direction;
- Line type (single solid, single broken, double solid, etc.);
- Line color;
- File name corresponding to video;
- Data for each centerline listed separately;

- Average reading taken for each 0.1-mi. interval (or interval designated by the Engineer);
- Accurate GPS coordinates (within 20 ft.) for each interval;
- Color-coding for each interval indicating passing or failing, unless otherwise directed by the Engineer (passing and failing thresholds provided by the Engineer);
- Graphical representation of the MRDC (y-axis showing retroreflectivity and x-axis showing intervals) corresponding with each data file;
- Distance in miles driven while measuring the pavement markings;
- Event codes (pre-approved by the Engineer) indicating problems with measurement;
- Upper validation threshold (may be included separately with the raw data but must be clearly identified with the data collected using that threshold).

907-626.03.3.3.2--Map. A map shall be provided in an electronic format approved by the Engineer with each MRDC submission that includes the following information:

- Date;
- District number;
- County;
- Color-coded 1-mi. intervals (or interval length designated by the Engineer) for passing and failing retroreflectivity values or retroreflectivity threshold values provided by the Engineer; and
- Percentage of passing and failing intervals, if required by the Engineer.

907-626.03.3.3.3--Video. A high-quality video file shall be provided with the following information:

- Date and corresponding data file name on label;
- District number;
- County;
- Route number with reference markers or other designated reference information to indicate the location of beginning and end collection points on that roadway; and
- Retroreflectivity values presented on the same screen with the following information:
    - Date;
    - Location;
    - Starting and ending mileage;
    - Total miles;
    - Retroreflectivity readings; and
    - Upper validation thresholds (may be included separately with the raw data but must be clearly identified with the data collected using that threshold).

907-626.03.4--Reflectivity Verification Testing. The Engineer or a third party may perform retroreflectivity verification testing on any project. At a minimum, each Contractor performing work for the Department will be verified on an annual basis. The Contractor-submitted retroreflectivity data will be compared to the verification test data to determine acceptability of the Contractor's mobile retroreflectometer data. Comparison of the data will result in one of the two scenarios below:

- Contractor's Data is Validated – If the difference between Contractor's and Engineer/third party data is 20% or less, then the Contractor's data is validated. The Contractor's data will be used for acceptance.
- Contractor's Data is not Validated – If the difference between Contractor's and Engineer/third party data is more than 20%, then the Contractor's data is not validated. The Engineer/third party data will be used for acceptance and the Contractor will be required to take corrective action prior to additional Contractor data collection and may require re-certification of the mobile retroreflectometer.

907-626.04--Method of Measurement. Thermoplastic stripe completed in accordance with the plans and specifications 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 skip intervals. The length used to measure centerline, lane lines, and edge stripes will be the horizontal length computed along the roadway.

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 inches (6") in width will be converted to equivalent lengths of 6-inch stripe.

Hot-applied legend, which is to include railroad markings, pedestrian crosswalks, and stop lines, will be measured by the square foot or linear foot. Pay areas of individual letters and symbols will usually be shown on the plans and measured by the square foot. Transverse railroad bands, pedestrian crosswalks and stop lines will generally be measured by the linear foot, in which case, stripes more than six inches (6") in width will be converted to equivalent lengths of 6-inch widths.

Pre-formed legend which is to include railroad markings and pedestrian crosswalks will be measured and paid for by each.

The length measured for thermoplastic audible bump edge stripe will not include the permanent thermoplastic edge stripe. Permanent thermoplastic edge stripe will be measured for payment under a separate pay item.

Thermoplastic audible bar centerline skip stripe will be measured by the linear foot or mile. Measurements will be made along the surface from end-to-end of the stripe and will include skip intervals. The length used to measure audible bar centerline stripe will be the horizontal length computed along the roadway. The length measured for thermoplastic audible bar centerline skip stripe will not include the permanent centerline continuous or skip stripe. Permanent centerline continuous and skip stripe will be measured for payment under separate pay items.

Thermoplastic audible bar edge stripe will be measured by the linear foot or mile. Measurements will be made along the surface from end-to-end of the stripe. The length used to measure thermoplastic audible bar edge stripe will be the horizontal length computed along the roadway. The length measured for thermoplastic audible bar edge stripe will not include the permanent thermoplastic edge stripe. Permanent thermoplastic edge stripe will be measured for payment

under a separate pay item.

907-626.05--Basis of Payment. Thermoplastic traffic markings will be paid for at the contract unit price per mile, linear foot, square foot or each as applicable. Any deductions for non-satisfactory material test results will be made after final testing has been performed.

Payment will be made under:

907-626-A:	6" Thermoplastic Traffic Stripe, Skip White	- per linear foot or mile
907-626-B:	6" Thermoplastic Traffic Stripe, Continuous White	- per linear foot or mile
907-626-C:	6" Thermoplastic Edge Stripe, Continuous White	- per linear foot or mile
907-626-D:	6" Thermoplastic Traffic Stripe, Skip Yellow	- per linear foot or mile
907-626-E:	6" Thermoplastic Traffic Stripe, Continuous Yellow	- per linear foot or mile
907-626-F:	6" Thermoplastic Edge Stripe, Continuous Yellow	- per linear foot or mile
907-626-G:	Thermoplastic Detail Stripe, Color *	- per linear foot
907-626-H:	Thermoplastic Legend, Color *	- per linear foot, square foot, or per each
907-626-Q:	Thermoplastic Audible Bump Edge Stripe	-per linear foot or mile
907-626-R:	Thermoplastic Detail Audible *** Stripe, Color **,	-per mile
907-626-AA:	6" High Contrast Thermoplastic Traffic Stripe, Skip White	- per linear foot or mile
907-626-BB:	6" High Contrast Thermoplastic Traffic Stripe, Continuous White	- per linear foot or mile
907-626-CC:	6" High Contrast Thermoplastic Edge Stripe, Continuous White	- per linear foot or mile
907-626-DD:	6" High Contrast Thermoplastic Traffic Stripe, Skip Yellow	- per linear foot or mile
907-626-EE:	6" High Contrast Thermoplastic Traffic Stripe, Continuous Yellow	- per linear foot or mile
907-626-FF:	6" High Contrast Thermoplastic Edge Stripe, Continuous Yellow	- per linear foot or mile

907-626-GG: High Contrast Thermoplastic Detail Stripe, Color * - per linear foot

907-626-HH: High Contrast Thermoplastic Legend, Color * - per linear foot, square foot, or each

* Indicate Blue - ADA if applicable
** Indicate White or Black
*** Indicate Centerline - Passing Zone, Centerline - No-Passing Zone, or Edge Line

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-627-1 **CODE: (IS)**

DATE: 06/24/2024

SUBJECT: Raised Pavement Markers

Section 627, Raised Pavement Markers, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows:

Delete Subsection 627.02 on page 496, and substitute the following.

907-627.02--Materials. Pavement and jiggle markers of the types specified shall conform to the applicable requirements of Subsection 907-720.06 and shall be listed on the Department's APL.

Type B through G High Performance reflective markers shall be listed on the Department's APL for high performance raised pavement markers.

The bituminous adhesive for pavement markers shall meet the requirements of Subsection 907-720.07.3.

907-627.05--Basis of Payment. Add the "907" prefix to the pay items listed on page 498.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-631-1

DATE: 08/27/2024

SUBJECT: Traffic Signal Systems - General

Before Subsection 907-631.02.4 on page 1, add the following.

907-631.02.3--Regulations and Code. At the end of the second paragraph, add the following.

The Certified IMSA Traffic Signal Construction Technician Level II employee is not required to be on-site during construction. Proof of this certification shall be provided prior to award of contract.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-631-1 **CODE: (IS)**

DATE: 11/15/2017

SUBJECT: Traffic Signal Systems - General

Section 631, Traffic Signal Systems - General, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-631.02--Materials.

907-631.02.4--Operations. Delete the second paragraph in Subsection 631.02.4 on page 513 and substitute the following.

The Contractor shall conduct the work at all times in such a manner as to ensure the least possible inconvenience to the traveling public, and to property owners on the streets, alleys, and other public places where the construction will take place.

907-631.02.5--Electrical Service. Delete the first paragraph in Subsection 631.02.5 on page 515 and substitute the following.

It shall be the Contractor's responsibility to make the necessary arrangements with the local power company to provide the electrical service 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 existing 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.

907-631.03--Construction Requirements.

907-631.03.2--Electrical Service Equipment. Delete the paragraphs of Subsection 631.03.2 on pages 515 and 516, and substitute the following.

The power supply assembly shall consist of all equipment mounted in a Power Service Pedestal as described in Subsection 722.13 or as otherwise shown in the plans. The configuration and installation of the equipment mounted on the assembly shall meet the safety requirements and approval of the utility company or municipality furnishing power for operation.

When required, service poles shall be provided by the Contractor and consist of wood poles with required pole line hardware, conduit, ground rods, guy wires and anchors and all other accessories and appurtenances mounted on the pole, except those items furnished by the utility company or

municipality, or as specified separately in the contract or plans. Costs of service poles shall be included in other items bids.

Main disconnect switches shall be separately housed on the power supply assembly. Circuit breaker cabinets and meters shall not be installed on the street or walk side of the pole or pedestal.

907-631.03.3--Performance Tests. Delete the second sentence of Subsection 631.03.3 on page 516.

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 un-welded 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 ¼-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/hardwire/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 μs)
- 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 μs)
- 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. 907-641-4 **CODE: (IS)**

DATE: **03/05/2024**

SUBJECT: **Radar Vehicle Detection**

Section 641, Radar Detection Systems, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

Delete Section 641 on pages 584 through 594 and substitute the following.

SECTION 907-641 – RADAR VEHICLE DETECTION

907-641.01--Description. This work shall consist of providing all labor, materials, equipment, and incidentals necessary to furnish, install, test, train and operate Radar Vehicle Detection, including Signal Radar Vehicle Detection (SRVD) and Intelligent Transportation Systems (ITS) Radar Vehicle Detection (IRVD). These systems will provide roadway monitoring capabilities via electromagnetic microwave radar signals through the air. The signals bounce off vehicles in their paths and the signal is returned to the detector. The returned signals are processed to determine traffic parameters.

907-641.01.1--Signal Radar Vehicle Detection. SRVD shall provide traffic parameters necessary to the traffic signal controller operation for vehicle detection. All SRVD shall be supplied from the same manufacturer per construction project.

Type 1 SRVD shall be used for basic vehicle detection at signalized intersections as described below in this specification.

Type 2 SRVD shall have all the functionality of the Type 1 SRVD with additional features described below in this specification. Type 2 SRVD shall utilize a matrix of radar signals for two-dimensional coverage and shall track vehicles through each type of detection's specified Area of Coverage. The Type 2 SRVD shall report real-time detection of both moving and stopped vehicles.

907-641.01.2--ITS Radar Vehicle Detection. IRVD shall provide data, including, but not limited to speeds, volume, lane occupancy and classification.

907-641.02--Materials.

907-641.02.1--Radar Design. The IRVD and the SRVD stop bar microwave shall operate in the 24.0 to 24.25 GHz frequency band. The advance radar has the option to either be in the 24 GHz band or in the 10.5 GHz band. Neither stop bar nor advanced radar shall interfere with any existing or proposed traffic signal control and Intelligent Transportation System (ITS) equipment. Should frequencies of other ITS equipment be in the same band, or conflict with detection, the Contractor shall move and space the less critical ITS device, as designated by the Engineer so as

not to interfere with vehicle detection.

The radar units shall operate in all weather conditions and comply with the applicable standards stated in the NEMA TS 2-2003 standard for shock, vibration, and temperature. All units shall be rated for up to 95% relative humidity, non-condensing.

The radar units shall be FCC certified under CFR 47, part 15.

907-641.02.1.1--Signal Radar Vehicle Detection (SRVD) Processor. The SRVD Processor shall be a module that provides power and communication to the radar sensors and/or signal controller through contact closure devices, Ethernet and/or the SDLC port of the signal Controller.

Type 1 SRVD Processors shall include all power cables, jumpers and terminal blocks needed to connect up to four (4) radar sensors to the signal cabinet. The SRVD Processor shall have a 10/100 Ethernet port to allow connection to the local network. Any variation of necessary communications ports or sensor connecting terminals shall be approved by the Engineer.

Type 2 SRVD Processors shall include all power cables, jumpers and terminal blocks needed to connect up to six (6) radar sensors to the signal cabinet. The SRVD Processor shall have a 10/100 Ethernet port to allow connection to the local network. Any variation of necessary communications ports or sensor connecting terminals shall be approved by the Engineer.

The SRVD Processor shall operate in the harsh conditions of a signal cabinet and comply with the applicable standards stated in the NEMA TS 2-2003 standard for shock, vibration, and temperature.

907-641.02.1.2--ITS Radar Vehicle Detection (IRVD) Processor. The IRVD Processor shall be a module that provides power and communication to the radar sensors and/or signal controller through contact closure devices, Ethernet and/or the SDLC port of the signal Controller.

Type 1 IRVD Processors shall include all power cables, jumpers and terminal blocks needed to connect up to four (4) radar sensors to the signal cabinet. The IRVD Processor shall have a 10/100 Ethernet port to allow connection to the local network. Any variation of necessary communications ports or sensor connecting terminals shall be approved by the Engineer.

Type 2 IRVD Processors shall include all power cables, jumpers and terminal blocks needed to connect up to six (6) radar sensors to the signal cabinet. The IRVD Processor shall have a 10/100 Ethernet port to allow connection to the local network. Any variation of necessary communications ports or sensor connecting terminals shall be approved by the Engineer.

The IRVD Processor shall operate in the harsh conditions of a signal cabinet and comply with the applicable standards stated in the NEMA TS 2-2003 standard for shock, vibration, and temperature.

907-641.02.2--Area of Coverage--SRVD.

907-641.02.2.1--Stop Bar Radar Vehicle Detection. Type 1 SRVD stop bar radar sensor shall track vehicles through a field of view that extends out a minimum of 100 feet.

The Type 1 SRVD stop bar radar sensor shall be able to detect and report presence in lanes located within a minimum 100-foot from the face of the detector. Any variance of the detectable area shall be approved by the Engineer.

The Type 1 SRVD stop bar radar sensor shall be able to detect up to four (4) lanes with eight (8) or sixteen (16) individual zones as indicated in the plans.

Type 2 SRVD stop bar radar sensor shall have all the functionality of the Type 1 SRVD stop bar sensor with the addition of the following:

- Type 2 SRVD stop bar radar sensor shall detect true presence of vehicles whether in motion or still without using Locking or Latching Algorithms.
- Type 2 SRVD stop bar radar sensor shall report presence in lanes with a minimum 90-degree arc from the face of the detector.
- Type 2 SRVD stop bar radar sensor shall be able to detect a minimum of ten (10) lanes.

907-641.02.2.2--Advanced Radar Vehicle Detection. The Type 1 SRVD advanced radar sensor shall be able to detect and report vehicle information such as range and speed when mounted within 50 feet of the center of the lanes of interest. Variance of this distance shall be approved by the Engineer per the application.

The Type 1 SRVD advanced radar sensor shall be forward fired and be able to detect and report vehicle information when mounted at heights above the road surface, as per manufacturer recommendations.

The Type 1 SRVD advanced radar sensor shall be able to detect and report vehicles on the roadway up to 600 feet from the detector.

The Type 2 SRVD advanced radar sensor shall have all the functionality of the Type 1 SRVD advanced with the following additions:

- Type 2 SRVD advanced radar sensor shall be able to detect and report heavy vehicles on the roadway up to 900 feet from the detector.
- Type 2 SRVD advanced radar sensor shall be able to detect Estimated Time of Arrival (ETA) for vehicles. The advanced radar sensors shall support user configurable upper and lower ETA filters for each zone. The sensors shall support the configuring of ETA filters in increments of 0.1 seconds.

907-641.02.3--Area of Coverage-IRVD. The IRVD's field of view shall cover an area with a minimum detection range of six (6) feet from the IRVD and a maximum detection range of 250 feet from the IRVD.

907-641.02.4--Detection Zones--SRVD.

907-641.02.4.1--Stop Bar Radar Vehicle Detection. The stop bar radar sensors shall be able to detect and report presence for vehicles at the stop bar.

The sensors shall be able to detect and report presence in up to eight (8) or sixteen (16) individual zones as indicated in the plans. The number of lanes used and detection zones shall be set up and selected from the Graphical User Interface and manually configured via software provided with the detection unit. The detection zones shall also have the ability to be auto configured by the software tool. A minimum of one (1) separate detection zone per lane is required.

Count zones shall also be able to be set up in the stop bar radar detection unit as a 'spot' type of radar detection zone. The software configuration tool included with the sensor shall allow all zones to be set up as required by the plans.

907-641.02.4.2--Advanced Radar Vehicle Detection. The advanced radar sensors shall be able to simultaneously detect and report information from a minimum of 25 vehicles on the roadway when they are serially sequenced between the near and far boundaries. The number of lanes and detection zones shall be set-up and selected from the Graphical User Interface.

The advanced radar sensors shall detect range, speed, and vehicle Estimated Time of Arrival (ETA) to the stop bar for vehicles or clusters of vehicles moving in the user- selected direction of travel. The detector shall also detect occupancy or density of the detection zones.

The advanced radar sensors shall provide vehicle call and extend data on up to eight (8) channels that can connect to contact closure modules compliant with NEMA TS 1, NEMA TS 2, and 170/2070 controller cabinets.

907-641.02.5--Detection Zones--IRVD. The minimum number of detection zones defined shall range from twelve (12) to 22, for simultaneous detection, as indicated in the plans. The range resolution of each zone shall be no greater than 1.3 feet, and the zone width shall be user defined within a range of six (6) to twenty (20) feet for the area of coverage limits described above.

907-641.02.6--Capabilities--SRVD. Sensors shall not require roadway modification for placement. The advanced detection should provide easy integration with the stop bar detection and vice versa into the same intersection to form one (1) method/system of detection.

The radar sensors shall distinguish and omit wrong way traffic from activating an assigned detector output.

907-641.02.6.1--Stop Bar Radar Vehicle Detection. The stop bar radar unit shall be suitable for mounting on roadside poles or mast arms and provide the following:

1) Presence indication of moving or stopped vehicles in its detection zones, provided by contact closure to existing controllers.
2) Assign a minimum of four (4) detector outputs per radar unit and capable of using two (2) or four (4)-channel interface modules to the detector rack for contact closure activation.

3) A cabinet interface module for multiple radar units may be provided in lieu of individual two (2) and four (4)-channel contact closure interface modules, and as shown in the plans.
4) Maintain a detection accuracy of 95% for each detection zone set-up on the graphical user interface.

907-641.02.6.2--Advanced Radar Vehicle Detection. The advance radar unit shall be suitable for mounting on signal pole uprights, span wire or mast arms and provide the following activation within the signal cabinet:

1) Assign a minimum of four (4) detector outputs per radar unit and capable of using two (2) or four (4)-channel interface modules to the detector rack for contact closure activation.
2) A cabinet interface module for multiple radar units may be provided in lieu of individual two (2) and four (4)-channel contact closure interface modules, and as shown in the plans.
3) Maintain a detection accuracy of 95% for each detection zone setup on the graphical user interface.

The advanced radar sensors shall turn on an alert output when the user defined zone output combinational logical is satisfied.

The advanced radar sensors shall turn on normal channel output when any of the channel's alerts is on and the channel's delay and extend time constraints are satisfied.

907-641.02.7--Capabilities--IRVD. The IRVD shall detect true presence of vehicles whether in motion or still without using Locking or Latching Algorithms. It shall be suitable for mounting on roadside poles or on overhead structure and provide the following:

1) Presence indication of moving or stopped vehicles in its detection zones shall be provided by contact closure to existing controllers.
2) Traffic data, periodically accumulated over user defined time intervals in a 10 to 600 second range, shall be transmitted to the TMC via the communications network.
3) Traffic data shall be available simultaneously with detection zone contact closures and serial communications.
4) Side-fired configuration data shall include the following in each of a minimum of 12 detection zones (lanes): Volume, lane occupancy, and average speed, as well as vehicle classification by length in up to six (6) user-defined classes.
5) IRVD in forward-looking configuration shall monitor traffic in one lane and be capable providing the following data: Volume, occupancy, average speed and travel direction in the lane.
6) The unit shall be furnished with the required software for data collection, processing, configuration and set-up and data logging and retrieval. An operator shall be able to use the software to set detector count periods, sensitivities and other operational features and parameters. The software shall be capable of providing both manual and automatic setup and calibration.

907-641.02.7.1--Measurement Accuracy. The following error levels shall be achievable and demonstrated during testing:

Parameter	Error Percentage
Volume	8%
Average Speed	10% or 5 mph
Lane Occupancy	20%

907-641.02.8--Environmental Conditions and Protection. The radar unit shall maintain accurate performance in all weather conditions, including rain, freezing rain, snow, wind, dust, fog, and changes in temperature and light, including direct light on sensor at dawn and dusk. All radar sensors shall not require cleaning or adjusting to maintain performance. Except as stated otherwise herein, the equipment shall meet all its specified requirements during and after subjecting to any combination of the NEMA TS 2-2003 standard and the following:

1) Ambient temperature range of -40°F to +165°F
2) Relative humidity from 5 to 95%, non-condensing
3) Rain and other precipitation up to 1.0 inch/hour
4) Power surge protection devices (SPD) shall be included with the radar sensors and shall meet Subsection 722.12 requirements for 24 VDC and signal/data line surge protection for Ethernet, RS-485, RS-422 and RS-232 data lines.

907-641.02.9--Mechanical. The radar sensors shall not exceed five pounds (5 lbs.) in weight. All external parts of the radar sensors shall be ultraviolet-resistant, corrosion resistant, and protected from fungus growth and moisture deterioration.

The radar sensors shall be classified as watertight according to the NEMA 250 Standard. The enclosure shall conform to test criteria set forth in the NEMA 250 standard for type 4X enclosures.

Each of the radar sensors shall be able to withstand a drop of up to five (5) feet without compromising its functional and structural integrity. The sensor shall not require adjustments to maintain performance unless roadway geometry changes.

The radar sensors shall be mounted directly onto a mounting assembly fastened to a pole or other solid structure. The assembly shall provide the necessary degrees of rotation to ensure proper installation. The assembly shall be constructed of weather-resistant materials and shall be able to support a 20-pound load.

907-641.02.10--Electrical. The radar sensors shall consume less than 10 W and shall operate with a DC input between 12 VDC and 28 VDC for IRVD and 9 VDC and 32 VDC for SRVD, or POE. POE injectors shall be approved by the Engineer.

Surge Protection Devices (SPD) shall be provided to protect the equipment from surges in the radar sensors 24 VDC power supply and the signal line RS232, RS 485, or Ethernet communications wiring. Surge suppression shall be UL 1449 listed and meet all requirements of Subsection 722.12 for surge protection devices.

907-641.02.11--Radar Design. The radar units shall be designed to provide detection over a large area and to discriminate lanes. The circuitry shall be void of any manual tuning elements that could lead to human error and degraded performance over time. The radar shall not rely on temperature compensation circuitry to maintain transmit frequency stability.

The bandwidth of the transmit signal of the radar sensor shall not vary by more than one percent (1%) under all specified operating conditions and over the expected life of the sensor. The stop bar radar sensor shall provide at least four (4) RF channels so that multiple units can be mounted in the same vicinity without causing interference between them.

907-641.02.12--Communication Ports. The radar sensor shall have Ethernet, RS-485, or RS-232 ports for communication from the unit to the cabinet. The IRVD shall be upgradable (optional) to include integral 10/100 Base-T Ethernet supporting TCP, UDP, IP, ARP, ICMP.

Within the cabinet, all remote communications to Ethernet switches shall be IP Ethernet with RJ-45 connections. For SRVD, any external device needed to convert serial to IP Ethernet within the cabinet for remote communications shall be provided with the radar sensor unit at no additional cost.

The radar sensor shall support the upload of new firmware into the unit's non-volatile memory. The sensor shall support user defined or automatic configuration of the com ports.

907-641.02.13--Radar Detection Cabling. All Radar Detection cable shall be paid per the unit cost of the pay item for Radar Detection Cable, as shown on the plans or details. The manufacturer is responsible for obtaining plan sets and ensuring cable lengths are properly measured and accounted for in the bid price for each sensor unit and as shown on the plans.

The cable shall have a single continuous run with no splices, unless inside a manufacturer supplied junction box. The cable shall be terminated only on the two (2) farthest ends of the cable. The cable shall meet the requirements of the manufacturer.

907-641.02.14--Electrical Isolation and Surge Protection. All communication and power lines shall be installed using surge protection devices (SPD), as stated in specification Subsection 722.12.

907-641.02.15--Configuration--SRVD. The radar sensor can either have an on screen interactive or automatic configuration setup. The auto setup shall automatically define traffic lanes, stop bars, and detection zones without requiring user intervention. The auto- configuration process shall automatically define traffic lanes or detection zones by detecting the relative position of vehicles with the sensor's field of view.

The radar sensor shall also allow the ability of the user to manually adjust the sensor configuration. The graphical interface shall operate on a MS Windows™ based software. The software shall automatically negotiate the baud rate, the correct serial communication port, operate over a TCP/IP connection, support dial-up modem connectivity, give the operator the ability to save/back up the sensor configuration to a file or load/restore the configuration from a file, and provide a

virtual connection option so that the software can be used without connecting to an actual sensor.

907-641.02.15.1--Stop Bar Radar Vehicle Detection. The stop bar sensor shall support the configuring of lanes, stop bars, and detection zones in 1-foot increments and as stated in these specifications for lane detection.

907-641.02.15.2--Advanced Radar Vehicle Detection. The advance radar sensor can either have an on screen interactive or automatic setup. The auto setup shall have a method for automatically configuring the sensitivity of detection between 5-foot and 7.5-foot increments. The advanced radar sensor shall support the configuring of zones in at least 5-foot increments.

The advanced radar sensor shall support user configurable high-speed and low-speed detection filters for each zone. These speed filters shall be configured in 1-mph increments.

907-641.02.16--Configuration--IRVD. The radar sensor can either have an on screen interactive or automatic configuration setup. The auto setup shall automatically define traffic lanes, stop bars, and detection zones without requiring user intervention. The auto- configuration process shall automatically define traffic lanes or detection zones by detecting the relative position of vehicles with the sensor's field of view.

The radar sensor shall also allow the ability of the user to manually adjust the sensor configuration. The graphical interface shall operate on a MS Windows™ based software. The software shall automatically negotiate the baud rate, the correct serial communication port, operate over a TCP/IP connection, support dial-up modem connectivity, give the operator the ability to save/back up the sensor configuration to a file or load/restore the configuration from a file, and provide a virtual connection option so that the software can be used without connecting to an actual sensor.

907-641.02.16.1--Stop Bar Radar Vehicle Detection. The stop bar sensor shall support the configuring of lanes, stop bars, and detection zones in 1-foot increments and as stated in these specifications for lane detection.

907-641.02.16.2--Advanced Radar Vehicle Detection. The advanced radar sensor can either have an on screen interactive or automatic setup. The auto setup shall have a method for automatically configuring the sensitivity of detection between 5-foot and 7.5-foot increments. The advanced radar sensor shall support the configuring of zones in at least 5-foot increments.

The advanced radar sensor shall support user configurable high-speed and low-speed detection filters for each zone. These speed filters shall be configured in 1-mph increments.

907-641.03--Construction Requirements. Radar Detection System shall be constructed to withstand and operate in sustained winds of up to 90 mph and a 30% gust factor. For projects that are in areas with higher wind standard, the higher standard shall be used.

907-641.03.1--SRVD Installation Requirements. The stop bar and advanced radar sensors shall be mounted as shown in the plans or per the manufacturer's recommendations on poles or structures. Mounting brackets shall be provided with the radar sensor and shall be attached to

the pole, structure, or mast arm with approved stainless-steel bands.

The Contractor shall install detector units on a pole, structure, span wire or mast arm at the manufacturers recommended height above the road surface or as shown in the plans so that the masking of vehicles is minimized and that all detection zones are contained within the specified elevation angle as suggested by the manufacturer.

Unused conductors in the cable shall be ground or terminated in the cabinet in accordance with the manufacturer's recommendations. Terminated conductors shall be individually doubled back and taped, then loosely bundled and secured if not specifically called out in the manufacturer's recommendations. If required by the plans and installation methods, impedance termination and testing of multi-drop runs shall be required per RS485 multi-drop standards.

907-641.03.1.1--SRVD Processor. Where required, the Contractor shall install any contact closure modules and processors needed to connect the sensor(s) to the signal controller within the signal cabinet environment shown in the plans. Sensors (up to 6) shall be connected to the cabinet interface module and the processor shall be connected to the signal controller per the manufacturer's requirements for the particular signal cabinet environment shown in the plans at no additional cost, or as approved by the Engineer.

907-641.03.2--IRVD Installation Requirements. All equipment shall be installed according to the manufacturer's recommendations, the plans and as follows:

1) The IRVD shall be mounted in side-fired or front facing configuration on poles as shown in the plans, using mounting brackets. The brackets shall be attached with approved 3/4-inch-wide stainless steel bands.
2) The Contractor shall install the detector unit on a pole at the manufacture's recommended height above the road surface so that the masking of vehicles is minimized and that all detection zones are contained within the specified elevation angle as suggested by the manufacturer.
3) When installing a detector near metal structures, such as building, bridges, or sign supports, the sensor shall be mounted and aimed so that the detection zone is not under and does not pass through any structure to avoid distortion and reflection.
4) The IRVD mode of operation, detection zones and other calibration and set up will be performed using a MS Windows™ based software and a Notebook PC. The software shall allow verification of correct setup and diagnostics. It shall include facilities for saving verification data and collected data as well as saving and retrieving sensor setup from disk file.
5) Unused conductors in the ITS Radar Vehicle Detector Cable shall be grounded or terminated in the cabinet in accordance with the manufacturer's recommendations. Terminated conductors shall be individually doubled back and taped, then loosely bundled and secured.
6) The Contractor shall provide the Department with a written inventory of items received and the condition in which they were received. Inventory shall be inclusive of make, model, and serial numbers, MAC address, and installation GPS coordinates. All equipment shall be installed according to the manufacturer's recommendations or as directed by the Department.

7) Any new, additional, or updated drivers required for the existing ATMS software to communicate and control new IRVD installed by Contractor shall be the responsibility of the Contractor.

907-641.03.2.1--IRVD Processor. Where required, the Contractor shall install any contact closure modules and processors needed to connect the sensor(s) to the signal controller within the signal cabinet environment shown in the plans. Sensors (up to 6) shall be connected to the cabinet interface module and the processor shall be connected to the signal controller per the manufacturer's requirements for the particular signal cabinet environment shown in the plans at no additional cost, or as approved by the Engineer.

907-641.03.3--Radar Sensor Test Requirements. When requested by the Project Engineer and/or the Project Engineer's representative, the Contractor shall conduct a Project Testing Program as required below. All costs associated with the Project Testing Program shall be included in overall contract prices; no separate payment will be made for any testing.

The Contractor shall be responsible for planning, coordinating, conducting, and documenting all aspects of the Project Testing Program. The Project Engineer and/or the Project Engineer's representative are only responsible for attending and observing each test and reviewing and approving the Contractor's test results documentation. The Project Engineer and/or the Project Engineer's representative reserve the right to attend and observe all tests.

Each test shall fully demonstrate that the equipment being tested is in full compliance with all project requirements.

Test procedures shall be submitted and approved for each test as part of the project submittals at the request of the Engineer. Test procedures shall include every action necessary to fully demonstrate that the equipment being tested is clearly and definitively in full compliance with all project requirements. Test procedures shall contain documentation regarding the equipment configurations and programming.

No testing shall be scheduled until approval of all project submittals and approval of the test procedures for the given test.

The Contractor shall provide all ancillary equipment and materials as required in the approved test procedures.

The Contractor shall request in writing the Project Engineer's approval for each test occurrence a minimum of 14 days prior to the requested test date. Test requests shall include the test to be performed and the equipment to be tested. The Project Engineer reserves the right to reschedule test request if needed.

All tests shall be documented in writing by the Contractor in accordance with the test procedure and submitted to the Project Engineer within seven (7) days of the test. Any given test session is considered incomplete until the Project Engineer has approved the documentation for that test session.

All tests deemed by the Project Engineer to be unsatisfactorily completed shall be repeated by the Contractor. In the written request for each test occurrence that is a repeat of a previous test, the Contractor shall summarize the diagnosis and correction of each aspect of the previous test that was deemed unsatisfactory. The test procedures for a repeated test occurrence shall meet all the requirements of the original test procedures, including review and approval by the Project Engineer.

The satisfactory completion of any test shall not relieve the Contractor of responsibility to provide a completely acceptable and operating system that meets all requirements of this project.

Test shall include verification of detection for each lane of traffic or zone per site.

907-641.03.4--Warranty. The Signal Radar Detection sensors shall be warranted to be free of manufacturer defects in materials and workmanship for a period of one (1) year 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 shall be 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 component from new. During the warranty period, the supplier shall repair or replace with new or refurbished material, at no additional cost to the State, any product containing a warranty defect, provided the product is returned postage-paid by the Department to the supplier's factory or authorized warranty site. Products repaired or replaced under warranty by the supplier shall be returned prepaid by the supplier.

During the warranty period, technical support shall be available from the supplier via telephone within four hours of the time a call is made by the Department, and this support shall be available from factory certified personnel. During the warranty period, updates, and corrections to control unit software shall be made available to the Department by the supplier at no additional cost.

907-641.03.5--MDOT Employee Training. The supplier of the radar detection sensors shall, at a minimum, provide an 8-hour operations and maintenance training class with suitable documentation for up to eight (8) persons selected by the Department, if shown and quantified in the plans. The training shall be at the discretion and approved by the Engineer. The training must include both classroom style training and hands-on training in the field of the maintenance and troubleshooting procedures required for the system. The training should also consist of a hands-on demonstration of all software configuration and functionality where applicable. The operations and maintenance class shall be scheduled at a mutually acceptable time and location.

907-641.03.6--Maintenance and Technical Support. The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the radar detection sensor(s). The manufacturer of the radar detection system must provide and have a parts support system capable of providing parts for a period of five (5) years from the date of system acceptance. Spare parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale of said spare parts.

The suppliers shall maintain an ongoing program of technical support for the Radar Detection System. This technical support shall be available via telephone or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale of said technical support services.

907-641.04--Method of Measurement. Radar Vehicle Detection Sensors, of the type specified, will be measured as a unit per each.

Radar Vehicle Detection Processor, of the type specified, will be measured as a unit per each.

Radar Vehicle Detection Cable will be measured by the linear foot, measured horizontally along the conduit, messenger cable or mast arm and vertically along the pole.

Radar Vehicle Detection Training will be measured per lump sum.

907-641.05--Basis of Payment. Radar Vehicle Detection Sensor, of the type specified, measured as prescribed above, will be paid for at the contract unit price bid per each, which price shall be full compensation for furnishing all materials, construction installation, connecting, testing, for all equipment, tools, labor, and incidentals required to complete the work. Work shall include furnishing, installing, system integration, testing and training (if required) of complete radar sensor system that includes the unit, cabling between the unit and the cabinet, surge protection devices, communication converters (if required), all conduit, risers and weatherhead between the radar sensors and the cabinet, interconnection wiring, power supply, connections to support structures (includes all incidental components, attachment hardware, mounting brackets, mounting arms, bolts, or any other items to mount the radar sensor as intended), satisfactory completion of testing and training requirements and all work, equipment and appurtenances as required to effect the full operation including remote and local control of the radar site complete in place and ready to use. The price bid shall also include all system documentation including shop drawings, operations, and maintenance manuals, wiring diagrams, block diagrams and other material necessary to document the operation of the radar sensor.

Radar Vehicle Detection Processor, of the type specified, measured as prescribed above, will be paid for at the contract unit price bid per each, which price shall be full compensation for furnishing all materials, construction installation, connecting, testing, for all equipment, tools, labor, and incidentals required to complete the work. Work shall include furnishing, installing, system integration, testing and training (if required) of the processor, that includes the unit, cabling between the unit and the signal controller, surge protection devices, communication converters (if required), and power supply. The price bid shall also include all system documentation including shop drawings, operations, and maintenance manuals, wiring diagrams, block diagrams and other material necessary to document the operation of the processor.

Radar Vehicle Detection 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.

Radar Vehicle Detection Training, measured as prescribed above, will be paid for as a lump sum

unit price.

Payment will be made under:

907-641-A:	Signal Stop Bar Radar Vehicle Detection Sensor, Type___	- per each
907-641-B:	Signal Advanced Radar Vehicle Detection Sensor, Type ___	- per each
907-641-C:	ITS Radar Vehicle Detection Sensor	- per each
907-641-D:	Radar Vehicle Detection Cable	- per linear foot
907-641-E:	Radar Vehicle Detection Training	- lump sum
907-641-F:	Signal Radar Vehicle Detection Processor, Type____	- per each
907-641-G:	ITS Radar Vehicle Detection Processor, Type____	- per each

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-701-4

DATE: 11/05/2024

SUBJECT: Hydraulic Cement

907-701.04--Blended Hydraulic Cement.

907-701.04.1--Types of Blended Hydraulic Cement. After the last paragraph of Subsection 907-701.04.1 on page 1, add the following.

Blended cement Types IL meeting the "HE" high early strength requirement listed in AASHTO M 240, Table 3 shall have the "(HE)" suffix added to the type designation.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-701-4 **CODE: (IS)**

DATE: 11/21/2023

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. Delete Subsections 701.02.1.1, 701.02.1.2, 701.02.2, 701.02.2.1, and 701.02.2.2 on pages 719 and 720, and substitute the following.

907-701.02.1.1--Types of Portland Cement. Portland cement shall be either Type I, Type II, or Type III conforming to AASHTO M85 or Type III (MS). Type III (MS) is defined as a Type III cement conforming to AASHTO M85 having a maximum tricalcium aluminate (C_3A) content of 8%.

907-701.02.2--Blank.

907-701.02.2.1--Blank.

907-701.02.2.2--Blank.

Delete Subsection 701.04 on pages 720 and 721, and substitute the following.

907-701.04--Blended Hydraulic Cement.

907-701.04.1--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.

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

	LD-7		CHPF-1		
Test Requirements	**Min.**	**Max.**	**Min.**	**Max.**	**Test Method**
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. 907-703-2 **CODE: (SP)**

DATE: **11/29/2022**

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--Coarse 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.

Delete Note 2 under the table in Subsection 703.03.2.4 on page 734, and substitute the following.

Note [2] – 100 percent shall pass the 1-inch sieve for Size 67 used in Class F and Class FX concrete.

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. 907-707-3 **CODE: (IS)**

DATE: **10/27/2021**

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--Joint Filler.

907-707.02.2--Preformed Sponge, Rubber, Cork and Closed-Cell Polypropylene Foam Joint Fillers for concrete Paving and Structural Constructions. Delete the two paragraphs of Subsection 707.02.2 on page 755, and substitute the following.

Preformed joint filler shall conform to AASHTO M 153 for sponge, rubber, and cork and tested according to ASTM D545. The type required will be indicated on the plans.

Closed-cell polypropylene foam shall conform to the requirements in ASTM D8139 and tested in accordance with ASTM D545.

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. 907-712-1 **CODE: (SP)**

DATE: 12/07/2021

SUBJECT: Fence and Guardrail

Section 712, Fence and Guardrail, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-712.01--General. After the sentence in Subsection 712.01 on page 785, add the following.

All materials' inspection, testing, and certification will be performed in accordance with the requirements of the current version of the Department's *Materials Division Inspection, Testing, and Certification Manual*.

Delete Subsections 712.02 and 712.03 on page 785, and substitute the following.

907-712.02--Barbed Wire. Barbed wire shall conform to the requirements of AASHTO M 280. In the coastal counties of Hancock, Harrison, and Jackson, either Coating Type Z Class 3 or Coating Type A shall be furnished. In all other areas of the State, either Coating Type Z Class 1, Coating Type Z Class 3, Coating Type ZA Class 60, or Coating Type A shall be furnished.

907-712.03--Metallic-Coated, Steel Woven Wire Fence Fabric. Woven wire fencing (i.e., "hog wire") shall conform to the requirements of AASHTO M 279. In the coastal counties of Hancock, Harrison, and Jackson, either Coating Type Z Class 3 or Coating Type A shall be furnished. In all other areas of the State, either Coating Type Z Class 1, Coating Type Z Class 3, Coating Type ZA Class 60, or Coating Type A shall be furnished.

907-712.04--Chain Link Fence. Delete Subsections 712.04.1 thru 712.04.7 on pages 785 & 786, and substitute the following.

907-712.04.1--Fabric. In the coastal counties of Hancock, Harrison, and Jackson, either Type I Class D, Type II, Type III, or Type IV fabrics shall be furnished. In all other areas of the State, either Type I Class C, Type I Class D, Type II, Type III, or Type IV fabrics shall be furnished.

907-712.04.2--Tie Wire. Tie wire shall be of the same material as the fencing wire being used, shall be of good commercial quality, and shall meet the requirements of AASHTO M 181. Either Type I, Type II, Type III, or Type IV tie wire shall be furnished.

907-712.04.3--Tension Wire. Tension wire shall be of the same material as the fencing wire being used, shall be of good commercial quality, and shall meet the requirements of AASHTO M 181. In the coastal counties of Hancock, Harrison, and Jackson, either Type I Class 3, Type II, Type III, or Type IV tension shall be furnished. In all other areas of the State, either Type II, Type III, Type IV, or Type I Classes 1, 2, or 3 tension wires shall be furnished.

907-712.04.4--Posts Rails, Gate Frames, and Expansion Sleeves. Posts, rails, gate frames, and expansion sleeves shall conform to the requirements for posts in Subsection 712.05.2, unless otherwise designated in the contract.

907-712.04.5--Miscellaneous Fittings and Hardware. Miscellaneous fittings and hardware shall conform to the requirements of Subsection 712.16.

907-712.05--Fence Posts and Braces.

907-712.05.1--Treated Timber Posts and Braces.

907-712.05.1.1--General. Delete the third, fourth, fifth, and sixth paragraphs of Subsection 712.05.1.1 on page 787, and substitute the following.

All wood posts and braces shall be treated in accordance with Subsections 718.03 and 718.04.

907-712.05.1.2--Round Posts. Delete the last sentence of the last paragraph of Subsection 712.05.1.2 on page 788.

907-712.05.1.3--Sawed Posts. Delete the last sentence of the paragraph of Subsection 712.05.1.3 on page 788.

907-712.05.1.4--Sawed Braces. Delete the last sentence of the paragraph of Subsection 712.05.1.4 on page 788.

Delete Subsection 712.05.2 on page 788, and substitute the following.

907-712.05.2--Metal Posts.

907-712.05.2.1--Round Steel Pipe. Round steel pipe shall meet the requirements of AASHTO M 181, either Grade 1 (i.e., meeting the requirements in ASTM F 1083) or Grade 2 (i.e., meeting the requirements of ASTM F 1043).

Round steel pipe shall be sized in accordance with NPS (nominal pipe size) designations as shown on Plans, and not according to the outer or inner pipe diameter.

907-712.05.2.2--Steel Fence Post and Assemblies, Hot-Wrought. Steel posts with the following section shapes, Tee, channel or U, and Y-Bar shall meet the requirements of AASHTO M 281, galvanized in accordance with the requirements of AASHTO M 111, unless otherwise specified in the contract. Acceptance of these steel posts shall be by certification from the manufacturer, producer, supplier, or fabricator, as applicable.

907-712.05.2.3--Blank.

907-712.05.2.4--Steel H-Beam Posts. Steel H-Beam posts shall be produced from structural quality weldable steel having a minimum yield strength of 45,000 psi and shall be galvanized in accordance with ASTM A 123. Steel H-Beam line posts shall be 2.250 inches by 1.625 inches and shall weigh 3.43 pounds per foot. A tolerance of plus or minus 5.0 percent is allowed for

weight per foot. A tolerance of plus or minus 1.0 percent is allowed for dimensions.

907-712.05.2.5--Aluminum-Alloy Posts and Assemblies. Round aluminum-alloy posts shall meet the requirements of ASTM B 241, Alloy 6061, T6. Aluminum-Alloy H-Beam posts shall meet the requirements of ASTM B 221, Alloy 6061, T6.

907-712.05.2.6--Formed Steel Section Posts. Formed steel section posts, "C" sections, shall be formed from sheet steel conforming to ASTM A 1011, Grade 45, and shall be galvanized in accordance with ASTM A 123.

907-712.06--Guard and Guardrail Posts.

907-712.06.2--Treated Wood Posts.

907-712.06.2.1--Square Posts. Delete the paragraph in Subsection 712.06.2.1 on page 789, and substitute the following.

All square posts shall be inspected for conformance with Section 712.05, except that the posts may be rough and shall be within ±3/8" of the dimensions shown on the plans.

907-712.06.2.2--Round Posts. Delete the paragraph in Subsection 712.06.2.2 on page 789, and substitute the following.

All round posts shall be inspected for conformance with Section 712.05, except that the posts shall be of the shape and dimensions shown on the plans.

907-712.06.5--Treated Wood Blocks for Use with Metal Guardrail Posts. Delete the paragraphs of Subsection 712.06.5 on pages 789 & 790, and substitute the following.

Treated wood blocks for use with metal guardrail posts shall be within ±3/8" of the size and dimensions shown on the plans, except that a minus tolerance shall not be allowed for the slotted width in which the metal post must fit.

Delete Subsection 712.16 on page 791, and substitute the following.

907-712.16--Hardware. All ferrous metal hardware for fencing such as bolts, nuts, washers, and metal straps shall be as specified on the plans and galvanizing shall not be less than 1.0 ounce per square foot of uncoated area. Aluminum coated hardware shall be coated with aluminum meeting the requirements of AASHTO M 181 for aluminum coating and at the rate of not less than 0.4 ounces per square foot of uncoated area.

Aluminum alloy hardware shall conform to the requirements of ASTM B 221 for extruded aluminum alloy 6063, T6. The finished members shall be of uniform quality.

Aluminum-zinc coated hardware shall be coated with an aluminum-zinc alloy meeting the chemical requirements and weight of coating specified for aluminum-zinc alloy coated metal gates.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-714-3 **CODE: (SP)**

DATE: **08/31/2021**

SUBJECT: **Miscellaneous Materials**

Section 714, Miscellaneous Materials, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-714.01--Water.

907-714.01.1--General. Delete the last sentence of the second paragraph in Subsection 714.01.1 on page 794.

907-714.01.2--Water for Use in Concrete. Delete Subsection 714.01.2 on page 794, and substitute the following:

Water from municipal sources is permitted be used as mixing water in concrete, mortar, and grout without Department testing. Water from non-municipal water sources used in mixing of concrete, mortar, and grout which does not meet the requirements in Subsection 714.01.1 shall be tested for conformance as required in AASHTO M157, Table 1 and Table 2.

907-714.01.3--Water for Use in Chemically Stabilized Based. Delete the first sentence of first paragraph in Subsection 714.01.3 on page 794, and substitute the following:

Water used in the construction of bases that contain cement, lime, or other chemical additive shall be as set out in Subsection 714.01.1. Water from municipal sources is permitted to be used without testing for conformance to the requirements below. If water is not from a municipal source, it shall not contain impurities in excess of the following limits:

Delete Subsection 714.01.6 on page 795, and substitute the following.

907-714.01.6--Blank.

907-714.05--Fly Ash.

907-714.05.1--General. Delete the first sentence of the fifth paragraph in Subsection 714.05.1 on page 797.

907-714.13--Geotextiles.

907-714.13.11--Tables. Delete Table 1 in Subsection 714.13.11 on page 813, and substitute the following.

Table 1 - Geotextiles

Type Designation	I[1]	II[1]	III	IV	V	VI		VII		VIII	IX	
	Sediment Control		Drainage	Paving	Separation & Drainage	Separation, Stabilization & Reinforcement				High Strength		
Physical Property[2]						Woven	Non-Woven	Woven	Non-Woven			**Test Method**
Grab Strength (lb)	50	90	110	90	200	280	180	450	280	----	----	ASTM D 4632
Elongation (%)	----	50% max @ 45 lb	20% min	50% min @ break	50% min	50% max	50% Min	50% max	50% Min	----	----	ASTM D 4632
Seam Strength (lb)	----	----	70	----	180	240	160	400	240	----	----	ASTM D 4632
Puncture Strength (lb)	----	----	40	----	80	110	75	180	115	----	----	ASTM D 6241
Trapezoidal Tear (lb)	----	----	40	----	80	100	70	150	100	----	----	ASTM D 4533
Asphalt Retention (gal/yd^2)	----	----	----	0.2	----	----	----	----	----	----	----	ASTM D 6140
Permittivity (sec^{-1}) min	0.05	0.05	0.5	----	0.2	0.2	0.2	0.2	0.2	----	----	ASTM D 4491
AOS Woven (mm) max	0.60	0.60	0.6	----	0.6	0.43	----	0.43	----	----	----	ASTM D 4751
AOS Non-Woven (mm) max	0.84	0.84	0.43	----	0.43	----	0.43	----	0.43	----	----	
Tensile Strength after UV (% Retained)	70% @ 500 hr	70% @ 500 hr	50% @ 500 hr	----	50% @ 500 hr	50% @ 500 hr	50% @ 500 hr	50% @ 500 hr	50% @ 500 hr	----	----	ASTM D 4355
Melting Point °(F)	----	----	----	325	----	----	----	----	----	----	----	ASTM D 276
Minimum Ultimate Tensile Strength[3] (lb/in)	----	----	----	----	----	----	----	----	----	660	2000	ASTM D 4595

Notes: 1 - All property values, with the exception of apparent opening size (AOS), represent minimum average roll values in the weakest principal direction. Values for AOS represent the maximum average roll values, 2 - Values not identified in this table should meet manufacturer certification for the use and application, 3- Machine direction

Delete Subsection 714.15 on pages 816 and 817 and substitute the following.

907-714.15--Geogrids.

907-714.15.1–General. A geogrid is defined as a geosynthetic formed by a regular network of connected elements with apertures greater than 0.25 inch to allow interlocking with surrounding soil, rock, and other surrounding materials to function primarily as reinforcement.

Geogrid shall be manufactured from an expanded strain hardened monolithic polymer sheet composed of one or more synthetic polymers and shall be mildew resistant and inert to biological degradation and naturally encountered chemicals, alkalis and acids. The geogrid shall contain stabilizers and/or inhibitors, or a resistance finish or covering to make it resistant to deterioration from direct sunlight, ultraviolet rays, and heat.

Geogrid manufacturers shall participate in and be in compliance with the American Association of State Highway Transportation Officials (AASHTO) National Transportation Product Evaluation Program's (NTPEP) Geosynthetics audit program. Geogrid shall meet the requirements of Table II for the application and type shown on the plans and shall be selected from the Department's Approved Lists.

907-714.15.1.1--Geogrid for Retaining Walls and Reinforced Soil Slopes. Geogrid for retaining walls and reinforced soil slopes shall be creep tested in accordance with AASHTO R69 and meet Long Term Design Load, Minimum Ultimate Tensile Strength, and open area criteria listed in Table II. Manufacturers shall perform at least one long-term creep test for no less than 10,000 hours in accordance to ASTM D 5262 for each polymer or composition of polymers from which the geogrid is produced. The long-term design load that shall be reported for design use, shall be that load at which no more than 10% strain occurs over a 100-year design life of the geogrid, as calculated in accordance with AASHTO R69. Long-term design loads shall be reported unfactored, and the AASHTO strength reduction factors (Durability and Installation, and safety factors) will be considered by the Department's Geotechnical Branch on a site specific design basis.

907-714.15.1.2--Geogrid for Subgrade Stabilization. Geogrid for subgrade stabilization shall meet Minimum Ultimate Tensile Strength and open area criteria listed in Table II.

907-714.15.2--Marking, Shipment, and Storage. Each roll or container of geogrid shall be visibly labeled with the name of the manufacturer, trade name of the product, lot number, and quantity of material. In addition, each roll or container shall be clearly tagged to show the type designation that corresponds to that required by the plans. During shipment and storage the geogrid shall be protected from direct sunlight, and temperatures above 120°F or below 0°F. The geogrid shall either be wrapped and maintained in a heavy duty protective covering or stored in a safe enclosed area to protect from damage during prolonged storage.

907-714.15.3--Manufacturer Certification. The Contractor shall furnish the Engineer three copies of the manufacturer's certified test reports indicating that the geogrid furnished conforms to the requirements of the specifications and is of the same composition as the originally approved

by the Department.

907-714.15.4--Acceptance Sampling and Testing. Final acceptance of each shipment will be based upon results of tests performed by the Department on verification samples submitted from the project, as compared to the manufacturer's certified test reports. The Engineer will select one roll or container at random from each shipment for sampling. As sample extending full width of the randomly selected roll or container and being at least five (5) square yards in area will be obtained and submitted by the Engineer. All material samples shall be provided at no cost to the State.

TABLE II
GEOGRIDS

Physical Properties	Type Designation						Test Method
	I	II	III	IV	V	VI	
Long Term Design Load[1], pounds per foot, Machine Direction	250	500	750	1500	2500	3500	AASHTO R69, ASTM D5262
Minimum Ultimate Tensile Strength[2], pounds per foot, Machine Direction	500	1000	1500	3000	5000	7000	ASTM D6637
Open Area, percent	70	70	50	50	50	50	Direct Measurement

[1] Minimum design criteria requirement.
[2] Minimum Average Roll Value (MARV).

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-718-1 **CODE: (SP)**

DATE: 12/07/2021

SUBJECT: Timber and Dimension Lumber

Section 718, Timber and Dimension Lumber, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

Delete the Subsections in Section 718 on pages 836 thru 838, and substitute the following.

907-718.01--General. All timber and dimension lumber shall be Southern pine and shall conform in all respects to applicable requirements of AASHTO M 168. The Department reserves the right to sample and to test all materials at any time; all inspection, testing, and certification of materials will be performed in accordance with the requirements of the current version of the Department's *Materials Division Inspection, Testing, and Certification Manual*.

Timber and dimension lumber shall be furnished in the sizes shown on the plans or as specified. Unless otherwise specified, timber and dimension lumber shall be No. 1, or better, graded according to the latest American Lumber Standards.

Only one type of preservative shall be used for the treatment of materials for any one class of construction on a project, unless otherwise specified.

Where treated timber and dimensional lumber is to be used in non-highway construction or use, such as decking, handrails in walking trails, or in any manner where general public exposure by touch is possible, the treatment requirements will be as per project plans and/or approved by the State Materials Engineer.

907-718.02--Untreated Timber and Dimension Lumber. Untreated timber and dimension lumber shall conform to the requirements of AASHTO M 168.

907-718.03--Treated Timber and Dimension Lumber. Timber and dimension lumber to be treated shall meet the requirements herein specified and shall be treated as specified. Treated timber or dimensional lumber will not be accepted for use unless it has been inspected by an authorized representative of the Department and found to be satisfactory after treatment.

907-718.03.1--Blank.

907-718.03.2--Treatment.

907-718.03.2.1--General. All materials shall be treated in accordance with AASHTO M 133 unless otherwise directed by the Environmental Protection Agency (EPA).

907-718.03.2.2--Blank.

907-718.03.2.3--Inspection. Treated timber and dimension lumber shall be inspected by an authorized representative of the Department before being incorporated into the work. Treatment reports shall be provided to the Department for each lot of material supplied.

907-718.03.3--Blank.

907-718.03.4--Storage of Treated Material. All material treated for stock shall be stacked as compactly as possible on a well-drained surface. Material shall be supported on sills spaced as necessary, not to exceed 10 foot intervals and shall have at least one foot of air space beneath the stacks.

All materials treated with preservatives for use in buildings and applications where painting is required shall be dried after treatment. The treated wood shall be dried in accordance with American Lumber Standards.

907-718.04--Preservative. Preservatives shall be as specified in AASHTO M 133 unless otherwise directed by the Environmental Protection Agency (EPA).

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-720-3 **CODE: (IS)**

DATE: 07/09/2024

SUBJECT: Pavement Marking Materials

Section 720, Pavement Marking Materials, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

Delete Section 720 on pages 840 thru 854, and substitute the following.

SECTION 720 - PAVEMENT MARKING MATERIALS

907-720.01--General. The Department reserves the right to perform sampling and testing of any materials at any time. Upon request of the Engineer, samples of the material shall be furnished.

907-720.02--Color Requirements. All pavement markings except raised pavement markers are required to meet the color requirements of ASTM D6628.

907-720.03--Optics. Optics used in thermoplastic pavement markings shall consist of a double-drop system of glass beads or advanced optics.

907-720.03.1--Glass Beads. The manufacturer shall furnish the Engineer with a certified test report indicating that the glass beads meet AASHTO M 247. AASHTO Type 4 beads shall be applied to the newly placed stripe first, followed by the application of AASHTO Type 1 beads. Type 1 and 4 glass beads shall be transparent, clean, colorless glass, smooth and spherically shaped, free from milkiness, pits, or excessive air bubbles. Type 1 and 4 glass beads shall be coated with a bead coating that is compatible with the traffic marking material to which the glass beads will be applied and will provide adequate moisture proofing, increased adhesion, and optimum embedment of the glass beads.

907-720.03.1.1--Acceptance Procedure. The Contractor shall furnish the Engineer with a copy of the manufacturer's certified test reports for the lot(s) of materials from which the shipment originated. The test report shall show all the test results for the material properties and characteristics as specified herein. The test report shall state that the material represented by the test results meets all the requirements of the contract. It shall be the Contractor's responsibility to furnish the manufacturer's test report to the Engineer for each shipment of material to the project.

Acceptance sampling and testing will be in accordance with the Materials Division Inspection, Testing, and Certification Manual (Materials Manual). Samples of the material shall be furnished and shall be provided at no cost to the State.

907-720.03.2--Advanced Optics. Advanced optics are materials that do not meet the specific requirements of AASHTO M 247 but produce a final drop-on optics system that meets or exceeds

the reflectivity requirements in Special Provision 907-626. Advanced optics shall be a double-drop system that is pre-approved and listed on the Department's Approved Products List.

907-720.03.2.1--Acceptance Procedure. The Contractor shall furnish the Engineer with a copy of the manufacturer's certified test reports for the lot(s) of materials from which the shipment originated. The test report shall show all the test results for the material properties and characteristics as specified herein. The test report shall state that the material represented by the test results meets all the requirements of the contract. It shall be the Contractor's responsibility to furnish the manufacturer's test report to the Engineer for each shipment of material to the project.

Acceptance sampling and testing may be conducted at the request of the Engineer. Samples of the material shall be furnished and shall be provided at no cost to the State.

907-720.04--Thermoplastic Marking Material.

907-720.04.1--General. Thermoplastic marking material shall meet the color requirements of Subsection 907-720.02.

There shall be no obvious change in the color of the material if held at its plastic temperature for a period of four (4) hours nor by reason of four (4) re-heatings to its plastic temperature.

The pavement markings shall maintain its original dimension and placement. The material shall not be slippery when wet and it shall not lift from the pavement in freezing weather.

907-720.04.2--Extruded Thermoplastic Material. Extruded thermoplastic pavement marking material shall meet the requirements of AASHTO M 249, and shall meet the requirements of 907-720.04 with the following exceptions:

- Blue - ADA thermoplastic marking material shall meet the requirements of Subsection 907-720.04.2 with the exception that the color shall be Blue – ADA, and the Contractor may use hot applied thermoplastic materials meeting the satisfaction of the Engineer.

907-720.04.3--Spray-Applied Thermoplastic Material. Spray-applied thermoplastic pavement marking material shall meet the requirements of AASHTO M 249 and shall meet the requirements of 907-720.04.

907-720.04.4--Pre-formed Thermoplastic Material. Heat-fused, pre-formed thermoplastic pavement marking material shall meet the color requirements of 907-720.02.

907-720.04.5--Acceptance Procedure. The Contractor shall furnish the Engineer with a copy of the manufacturer's certified test reports for the lot(s) of materials from which the shipment originated. The test report shall show all the test results for the material properties and characteristics as specified herein. The test report shall state that the material represented by the test results meets all the requirements of the contract. It shall be the Contractor's responsibility to furnish the manufacturer's test report to the Engineer for each shipment of material to the project.

907-720.05--Pavement Marking Tape.

907-720.05.1--General. Pavement marking tape shall be listed on the Department's Approved Lists.

907-720.05.2--Cold Plastic Pavement Markings (Permanent Pavement Marking Tape). Pavement marking tape for use in roadway applications shall be designated on the Department's Approved Lists as permanent.

The prefabricated markings described shall consist of white or yellow pigmented plastic films with reflective optics uniformly distributed throughout their entire cross-sectional area, and be capable of being affixed by either a pressure sensitive pre-coated adhesive or a liquid contact cement. The markings shall be provided complete in a form that will facilitate rapid application and protect the markings in shipment and storage. The manufacturer shall identify proper solvents and/or adhesives to be applied at the time of application, all equipment necessary for proper application, and recommendations for application that will assure an effective performance life.

Prefabricated legends and symbols shall conform to the applicable shapes and sizes as outlined in the current "Manual on Uniform Traffic Control Devices."

907-720.05.2.1--Specific Requirements. Unless otherwise indicated on the plans, the patterned material without adhesive shall have a minimum caliper of 0.065 inch at the thickest portion of the patterned cross-section and a minimum caliper of 0.020 inch at the thinnest portion of the cross-section. The material shall be a pliant polymer film with 50±15% of the surface are raised and presenting a near vertical face angle of 0° to 60° to traffic from any direction. The channels between the raised areas shall be substantially free of exposed optics or particles.

The size and quality of the optics will be such that performance requirements of Subsection 907-720.02 for the retroreflective pliant polymer film shall be met. The pigments shall be selected and blended to provide a marking film that is white or yellow conforming to the performance requirements of Subsection 907-720.02 through the expected life of the film.

907-720.05.2.2--Conformability and Resealing. The marking shall be capable of conforming to pavement contours, breaks, faults, etc. through the action of traffic at normal pavement temperatures.

The marking shall have resealing characteristics that allows it to be capable of fusing with itself and previously applied marking of the same composition under normal conditions of use. The marking shall be capable of use for patching worn areas of the same type in accordance with manufacturer's instructions.

907-720.05.2.3--Tensile Strength and Elongation. The material shall have a minimum tensile strength of 40 pounds per square inch of cross section when tested according to ASTM D 638. A 6-inch x 1-inch x 0.06-inch sample shall be tested at a temperature between 70°F and 80°F using a jaw speed of 12 inches per minute.

The material shall have a minimum elongation of 75% at break when tested according to ASTM D 638 using a jaw speed of 12 inches per minute.

907-720.05.2.4--Skid Resistance. The surface of the material shall provide a minimum skid resistance value of 45 BPN when tested according to ASTM E 303 except values will be taken at downweb and at a 45-degree angle from downweb. These two values will then be averaged to find the skid resistance of the patterned surface.

907-720.05.2.5--Effective Performance Life and Warranty. When applied according to the recommendations of the manufacturer the pavement marking tape shall provide a neat and durable marking that will not flow or distort due to temperature if the pavement surface remains stable. The film shall be weather resistant and through normal traffic wear shall show no appreciable fading, lifting, or shrinkage throughout the useful life of the marking, nor shall it show significant tearing, roll back, or other signs of poor adhesion.

All manufacturer's standard warranties and guarantees on pavement marking tape, which are provided as customary trade practice, shall be delivered to the Engineer at the final inspection. All warranties and guarantees shall be made out to the Department.

907-720.05.2.6--Acceptance Procedure. The Contractor shall furnish the Engineer with a copy of the manufacturer's certified test reports for the lot(s) of materials from which the shipment originated. The test report shall show all the test results for the material properties and characteristics as specified herein. The test report shall state that the material represented by the test results meets all the requirements of the contract. It shall be the Contractor's responsibility to furnish the manufacturer's test report to the Engineer for each shipment of material to the project.

Acceptance sampling and testing will be in accordance with the Materials Division Inspection, Testing, and Certification Manual (Materials Manual). Samples of the material shall be furnished and shall be provided at no cost to the State.

907-720.05.3--Preformed Pavement Markings for Construction Zones. Preformed pavement markings for construction zones shall be designated Department’s Approved Lists as temporary. Retroreflective preformed pavement markings for construction zones shall be as specified on the plans or in the contract documents.

The markings shall be provided in specified widths and shapes. Preformed words and symbols shall conform to the applicable shapes and sizes as outlined in the current "Manual on Uniform Traffic Control Devices for Streets and Highways," or as modified.

The materials shall be packaged in accordance with accepted commercial standards and when stored indoors in a cool dry place, shall be suitable for use one year after date of purchase.

907-720.05.3.1--Specific Requirements. Preformed markings shall consist of retroreflective materials on a conformable backing and shall meet the performance requirements of Subsection 907-720.02. The markings shall consist of a mixture of high-quality polymeric materials, pigments, and optics with a reflective layer of optics bonded to the top surface. The markings shall

be pre-coated with a pressure sensitive adhesive capable of adhering to pavement in accordance with the manufacturer's instructions without the use of heat, solvents, or other additional adhesives. The markings and/or adhesive shall not require any curing time after application. A coated non-metallic medium shall be incorporated with the pressure sensitive adhesive to facilitate removal.

907-720.05.3.2--Acceptance Procedure. The Contractor shall furnish the Engineer with a copy of the manufacturer's certified test reports for the lot(s) of materials from which the shipment originated. The test report shall show all the test results for the material properties and characteristics as specified herein. The test report shall state that the material represented by the test results meets all the requirements of the contract. It shall be the Contractor's responsibility to furnish the manufacturer's test report to the Engineer for each shipment of material to the project.

907-720.06--Raised Pavement Markers.

907-720.06.1--General. Pavement markers shall be listed on the Department's Approved Lists and shall conform to ASTM D 4280.

907-720.06.2--Packaging. Shipments shall be made in containers acceptable to common carriers and packaged in such a manner as to ensure delivery in perfect condition. All damaged shipments shall be replaced by the Contractor. Each package shall be clearly marked as to the name of the manufacturer, type, quantity enclosed, lot number, and date of manufacture.

907-720.06.3--Non-Reflective Pavement Markers. Non-reflective pavement markers are occasionally referred to as "jiggle markers". Non-reflective markers consisting of a heat-fired, vitreous, ceramic base, and a heat-fired, opaque, glazed surface are permitted for use; the bottom of the marker shall not be glazed. Ceramic markers shall be produced from any suitable combination of intimately mixed clays, shales, talcs, flints, feldspars, or other inorganic material. Ceramic markers shall be thoroughly and evenly matured, and all non-reflective pavement markers shall be free from defects which affect appearance or serviceability.

Ceramic non-reflective markers shall conform to the following finish and testing requirements in Table 2 below.

Table 2

Ceramic Non-Reflective Marker Requirements	
Glaze Thickness	0.005 inch, minimum
Mohs Hardness	6, minimum
Autoclave	Glaze shall not spall, craze, or peel.
Compressive Strength	750 psi, minimum
Water Absorption	2.0%, maximum

907-720.06.4--Acceptance Procedure. The Contractor shall furnish the Engineer with a copy of the manufacturer's certified test reports for the lot(s) of materials from which the shipment originated. The test report shall show all the test results for the material properties and characteristics as specified herein. The test report shall state that the material represented by the test results meets all the requirements of the contract. It shall be the Contractor's responsibility to

furnish the manufacturer's test report to the Engineer for each shipment of material to the project.

907-720.07--Adhesive for Pavement Markers.

907-720.07.1--General. The adhesive shall be listed on the Department's Approved Lists and shall be an asphaltic material suitable for bonding pavement markers to surfaces when the road surface and marker temperatures are in the range of 50°F to 160°F. The composition of the adhesive must be such that its properties will not deteriorate when heated to and applied at temperatures up to 425°F. Samples may be submitted in the form of an adhesive testing package from each batch or material obtained from a package shipped to the project.

907-720.07.2--Packaging and Labeling. The adhesive shall be packaged in self-releasing cardboard containers that will stack properly. The label shall show the manufacturer, quantity, and lot or batch number. "Adhesive for Pavement Markers" or "Adhesive for Traffic Markers" shall be printed in bold lettering on the label.

907-720.07.3--Bituminous Adhesive. The asphaltic adhesive material shall be flexible type.

907-720.07.3.1--Flexible Bituminous Adhesive. Flexible bituminous adhesive shall be designated on the Department's Approved Lists as flexible and shall comply with requirements of Table 3 below.

Table 3

Flexible Bituminous Adhesive Properties			
	Min	Max	Test Method
Penetration @ 77°F	-	25	ASTM D 5
Softening Point, °F	200	-	ASTM D 36
Brookfield Viscosity @ 400°F, cp.	-	10,000	ASTM D 3236
Ductility @ 77°F, 5 cm/min	15	-	ASTM D 113
Ductility @ 39.2°F, 1 cm/min	5	-	ASTM D 113
Asphalt Compatibility	Pass		ASTM D 5329
Flexibility @ 20°F	Pass		Per Subsection

907-720.07.4--Acceptance Procedure. The Contractor shall furnish the Engineer with a copy of the manufacturer's certified test reports for the lot(s) of materials from which the shipment originated. The test report shall show all the test results for the material properties and characteristics as specified herein. The test report shall state that the material represented by the test results meets all the requirements of the contract. It shall be the Contractor's responsibility to furnish the manufacturer's test report to the Engineer for each shipment of material to the project.

Acceptance sampling and testing will be in accordance with the Materials Division Inspection, Testing, and Certification Manual (Materials Manual). Samples of the material shall be furnished and shall be provided at no cost to the State.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-721-4 **CODE: (IS)**

DATE: **04/19/2022**

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/fc/ft^2)
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

After Subsection 721.10 on page 864, add the following.

907-721.11--Digital Applied Printing. The following addresses the requirements for digitally printed finished retroreflective traffic control signs on flat sheet aluminum and digitally printed traffic sign faces intended to be applied to a sign substrate.

907-721.11.1--Digitally Printed Ink Systems. Traffic signs must be produced using components, and processes that comply with the retroreflective sheeting manufacturer's recommendations.

Digital printed ink systems used to print traffic signs must meet and comply with daytime and nighttime chromaticity (color standards) as recognized in ASTM D4956 "Standard Specification for Retroreflective Sheeting for Traffic Control."

Digital printed ink systems must meet 70% of the initial retroreflectivity specifications of each respective reflective film color as found in ASTM D4956 "Standard Specification for Retroreflective Sheeting for Traffic Control."

Prior to fabrication and preferably at the preconstruction meeting, the Contractor shall advise the Project Engineer in writing as to which signs on the project will be digitally printed and which ones will be screen printed. The Contractor shall submit to the Project Engineer certifications for all digitally printed signs, which will be forwarded to the State Traffic Engineer for review.

907-721.11.2--Protective Overlay Film. Permanent traffic signs printed with digital ink systems will be fabricated with a full sign protective overlay film designed to provide a smooth surface needed for retroreflectivity, and to protect the sign from fading and UV degradation. The overlaminate shall comply with the retroreflective sheeting manufacturer's recommendations to ensure proper adhesion and transparency and will also meet the reflective film durability as identified in Table 1.

Table 1
Retroreflective Film Minimum Durability Requirements

ASTM D4956 Type	Full Sign Replacement Term (years)	Sheeting Replacement Term (years)
IV	7	10
VIII	7	10
IX	7	12
XI	7	12

Temporary signs used in work zones printed with black ink only will not require a protective overlay film as long as the finished sign is warranted for a minimum outdoor durability of three years by the sheeting manufacturer.

907-721.11.3--Inspection. During fabrication, the Contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements, the entire order may be returned at the vendor's expense.

907-721.11.4--Traffic Sign Performance Warranty Provisions. Based on the ASTM Type of sheeting specified, traffic control signs shall be warranted for the duration shown in Table 1. The Contractor shall supply a copy of the warranty document with complete details of terms and conditions upon request of the Department.

907-721.11.5--Certified Digital Sign Fabricator. Sign fabricators using digital imaging methods to produce regulated traffic signs must be certified by the reflective sheeting manufacturer whose materials are used to produce the delivered signs.

Certified sign fabricators must undergo an audit process by the sheeting manufacturer to ensure they have the proper equipment, manufacturing capabilities, manufacturing application processes and the materials required to fulfill the sheeting manufacturer's warranty obligations. Sign fabricators must recertify annually with reflective sheeting manufacturers or utilize a 3rd party certifier approved by the reflective sheeting manufacturer.

The Contractor shall submit proof of Sign Fabricator Certification as issued by the retroreflective sign sheeting manufacturer to the Project Engineer upon delivery of the signs, or with the Shop Drawings.

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.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-899-1 **CODE: (SP)**

DATE: 01/17/2017

SUBJECT: Railway-Highway Provisions

Section 907-899, Railway-Highway Provisions, is hereby added to and made part of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows:

SECTION 907-899--RAILWAY-HIGHWAY PROVISIONS

907-899.01--Description. This special provision addresses the Contractor's involvement with railroad flagging, Contractor Safety Orientation, Contractor Background Investigation, Contractor Roadway Worker on Track Safety Program and Safety Action Plan, and any other requirements set forth by the Railroad and any attached Exhibits.

Prior to bidding, the Contractor shall read and comply with the requirements of the Railroad and any attached Exhibits. The Contractor shall contact the Railroad concerning insurance coverage requirements, Railroad flagging costs, Contractor Safety Orientation, Contractor Background Investigation, Contractor Roadway Worker on Track Safety Program and Safety Action Plan, and any other requirements set forth by the Railroad and any attached Exhibits. In case the railroad requires coverage over and above that required by the Standard Specifications, the railroad requirements shall be met.

If in the opinion of the RAILROAD, the presence of an authorized representative of the RAILROAD is required to supervise the same, the RAILROAD shall render bills to the Contractor for all expenses incurred by it for such supervision. This includes all labor costs for flagmen or cable locate supplied by the RAILROAD to protect RAILROAD operation, and for the full cost of furnishing, installation and later removal of any temporary supports for said tracks, as the RAILROAD's Chief Engineer's Office may deem necessary.

It will be the Contractor's responsibility to pay all bills associated with the Railroad requirements and any attached Exhibits.

A cable locate of RAILROAD owned facilities may be required to identify and protect Signal & Communication cables that have been installed to provide power, signal control, wayside communications. These cables are vital to a safe and reliable railway operation. The cable locate will be performed by a qualified RAILROAD employee.

Outside Contractors are prohibited from driving on, along, or across any track that does not have a RAILROAD installed crossing. They may utilize an existing public crossing. The practice of allowing rubber tired equipment to operate over track with no crossing has been banned.

The Contractor shall complete and process any required forms addressed by the Railroad or any attached Exhibits. The Contractor shall not commence or carry on any form of work on, under, above or within the designated distance from the Railroad track prior to getting approval from the Railroad.

907-899.02--Blank.

907-899.03--Construction Requirements. The Contractor shall read and comply with the requirements of the Railroad and any attached Exhibits.

907-899.04--Method of Measurement. Railway-highway provisions will be measured as a unit lump sum quantity. Measurement for payment will be in accordance with the following schedule:

a) On the first estimate, twenty five percent (25%) of the amount bid for Railway Highway Provision will be paid.
b) When twenty five percent (25%) of the original contract amount is earned from all direct pay items, fifty percent (50%) of the amount bid for Railway Highway Provision will be paid.
c) When fifty percent (50%) of the original contract amount is earned from all direct pay items, one hundred percent (100%) of the amount bid for Railway Highway Provision will be paid.

907-899.05--Basis of Payment. Railway-highway provisions, measured a prescribed above, will be paid for at the contract lump sum price, which price shall be payment in full for all insurance coverage requirements, railroad flagging costs, Contractor safety orientation, Contractor background investigation, Contractor safety programs and plans, and any other requirements set forth by the Railroad and any attached Exhibits, and other incidentals necessary to complete the requirements of this work.

Payment will be made under:

907-899-A: Railway-Highway Provisions - lump sum

S E C T I O N 9 0 5 - P R O P O S A L

Date _____

Mississippi Transportation Commission
Jackson, Mississippi

Sirs: The following proposal is made on behalf of _____
_____ of _____
_____
for constructing the following designated project(s) within the time(s) hereinafter specified.

The plans are composed of drawings and blue prints on file in the offices of the Mississippi Department of Transportation, Jackson, Mississippi.

The Specifications are the current Standard Specifications of the Mississippi Department of Transportation approved by the Federal Highway Administration, except where superseded or amended by the plans, Special Provisions and Notice(s) to Bidders attached hereto and made a part thereof.

I (We) certify that I (we) possess a copy of said Standard and 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.

Mill & Overlay approximately 1.3 miles of SR 7 from US 82 to Grenada Boulevard Extended, known as State Project No. SP-0019-01(022) / 109744301 in Leflore County.

Line no.	Item Code	Adj Code	Quantity	Units	Description[Fixed Unit Price]
			Roadway Items		
0010	202-B069		380	Square Yard	Removal of Concrete Pavement w/ Variable Depth Overlay
0020	202-B158		168	Linear Feet	Removal of Guard Rail, Including Rails, Posts and Terminal Ends
0030	202-B184		2	Each	Removal of Overhead Sign Assembly, Truss and Supports Only
0040	202-B197		1	Each	Removal of Railroad Crossing
0050	202-B215		55	Each	Removal of Sign Including Post & Footing
0060	202-B240		1,464	Linear Feet	Removal of Traffic Stripe
0070	203-G001	(E)	16	Cubic Yard	Excess Excavation, FM, AH
0080	304-B004	(GT)	475	Ton	Granular Material, Class 5, Group D
0090	406-D001		50,374	Square Yard	Fine Milling of Bituminous Pavement, All Depths
0100	407-A001	(A2)	5,038	Gallon	Asphalt for Tack Coat
0110	503-C010		468	Linear Feet	Saw Cut, Full Depth
0120	606-B001		43	Linear Feet	Guard Rail, Class A, Type 1
0130	606-D001		2	Each	Guard Rail, Bridge End Section
0140	606-E005		2	Each	Guard Rail, Terminal End Section, Flared
0150	618-B001		1	Square Feet	Additional Construction Signs ($10.00)
0160	619-A1001		5	Mile	Temporary Traffic Stripe, Continuous White
0170	619-A2001		5	Mile	Temporary Traffic Stripe, Continuous Yellow
0180	619-A3001		5	Mile	Temporary Traffic Stripe, Skip White
0190	619-A4002		5	Mile	Temporary Traffic Stripe, Skip Yellow
0200	619-A5001		20,170	Linear Feet	Temporary Traffic Stripe, Detail
0210	619-A6001		252	Square Feet	Temporary Traffic Stripe, Legend
0220	619-A6002		3,588	Linear Feet	Temporary Traffic Stripe, Legend
0230	620-A001		1	Lump Sum	Mobilization
0240	630-A001		155	Square Feet	Standard Roadside Signs, Sheet Aluminum, 0.080" Thickness
0250	630-A003		119	Square Feet	Standard Roadside Signs, Sheet Aluminum, 0.125" Thickness
0260	630-A005		140	Square Feet	Standard Roadside Signs, Sheet Aluminum, 0.1" Thickness
0270	630-C001		30	Linear Feet	Square Tube Posts, 4.0 lb/ft
0280	630-C005		720	Linear Feet	Square Tube Posts, 2.0 lb/ft
0290	630-F006		7	Each	Delineators, Guard Rail, White
0300	630-G004		4	Each	Type 3 Object Markers, OM-3R or OM-3L
0310	907-403-A006	(BA1)	325	Ton	19-mm, ST, Asphalt Pavement
0320	907-403-A014	(BA1)	3,550	Ton	9.5-mm, MT, Asphalt Pavement
0330	907-403-A015	(BA1)	650	Ton	9.5-mm, ST, Asphalt Pavement
0340	907-413-E001		194	Linear Feet	Sawing and Sealing Transverse Joints in Asphalt Pavement
0350	907-618-A001		1	Lump Sum	Maintenance of Traffic

Line no.	Item Code	Adj Code	Quantity	Units	Description[Fixed Unit Price]
0360	907-619-E3001		2	Each	Changeable Message Sign
0370	907-626-A007		3	Mile	6" Thermoplastic Double Drop Traffic Stripe, Skip White
0380	907-626-C012		3	Mile	6" Thermoplastic Double Drop Edge Stripe, Continuous White
0390	907-626-D003		3	Mile	6" Thermoplastic Double Drop Traffic Stripe, Skip Yellow
0400	907-626-E003		3	Mile	6" Thermoplastic Double Drop Traffic Stripe, Continuous Yellow
0410	907-626-G004		5,962	Linear Feet	Thermoplastic Detail Stripe, White
0420	907-626-G005		4,123	Linear Feet	Thermoplastic Detail Stripe, Yellow
0430	907-626-H009		1,080	Square Feet	Thermoplastic Legend, White
0440	907-626-H010		1,196	Linear Feet	Thermoplastic Legend, White
0450	907-627-J001		173	Each	Two-Way Clear Reflective High Performance Raised Markers
0460	907-627-K001		591	Each	Red-Clear Reflective High Performance Raised Markers
0470	907-627-L001		752	Each	Two-Way Yellow Reflective High Performance Raised Markers
0480	907-632-C001		2	Each	Modify Existing Traffic Signal Cabinet Assembly
0490	907-641-A002		3	Each	Signal Stop Bar Radar Vehicle Detection Sensor, Type 2
0500	907-641-B002		4	Each	Signal Advanced Radar Vehicle Detection Sensor, Type 2
0510	907-641-D001		1,290	Linear Feet	Radar Vehicle Detection Cable
0520	907-641-F002		2	Each	Signal Radar Vehicle Detection Processor, Type 2
0530	907-899-A001		1	Lump Sum	Railway-Highway Provisions

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).

	Project No.	County		Project No.	County
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. _____	_____	_____	_____	_____	

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.

TO: EXECUTIVE DIRECTOR, MISSISSIPPI DEPARTMENT OF TRANSPORTATION
JACKSON, MISSISSIPPI

CERTIFICATE

If awarded this contract, I (we) contemplate that portions of the contract will be sublet. I (we) certify that those subcontracts which are equal to or in excess of fifty thousand dollars ($50,000.00) will be in accordance with regulations promulgated and adopted by the Mississippi State Board of Contractors on September 8, 2011.

I (we) agree that this notification of intent DOES NOT constitute APPROVAL of the subcontracts.

(Individual or Firm)	(Address)
(Individual or Firm)	(Address)
(Individual or Firm)	(Address)
(Individual or Firm)	(Address)

NOTE: Failure to complete the above DOES NOT preclude subsequent subcontracts. Subsequent subcontracts, if any, equal to or in excess of fifty thousand dollars ($50,000.00) will be in accordance with regulations promulgated and adopted by the Mississippi State Board of Contractors on September 8, 2011.

Contractor _____

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CERTIFICATION

I,_____,
(Name of person signing bid)

individually, and in my capacity as_____ of
(Title of person signing bid)

_____
(Name of Firm, partnership, or Corporation)

do hereby certify under 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. **SP-0019-01(022)/ 109744301000**

in **Leflore** County(ies), Mississippi, has not either directly or indirectly entered into any agreement, participated in any collusion; or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its corporate officers or principal owners.

Except as noted hereafter, it is further certified that said legal entity and its corporate officers, principal owners, managers, auditors and others in a position of administering federal funds are not currently under suspension, debarment, voluntary exclusion or determination of ineligibility; nor have a debarment pending; nor been suspended, debarred, voluntarily excluded or determined ineligible within the past three years by the Mississippi Transportation Commission, the State of Mississippi, any other State or a federal agency; nor been indicted, convicted or had a civil judgment rendered by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

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.

All of the foregoing is true and correct.

(1/2016 S)

SECTION 902

CONTRACT FOR _____
LOCATED IN THE COUNTY(IES) OF _____

STATE OF MISSISSIPPI
COUNTY OF HINDS

This Contract is entered into by and between the Mississippi Transportation Commission (the "Commission") and the undersigned contractor (the "Contractor"), as follows:

As consideration for this Contract, the Commission agrees to pay the Contractor the amount(s) set out in the Proposal attached hereto. Said payment will be made in the manner and at the time(s) specified in the Specifications and/or Special Provisions, if any. In exchange for said consideration, the Contractor hereby agrees to accept the prices stated in the Proposal as full compensation for the furnishing of all labor, materials and equipment, and the execution of the scope of work identified for this referenced Project as contemplated in this Contract, and as more fully outlined in the Contract Documents (the "Work"). The Contract Documents consist of the Advertisement, the Notice to Bidders, the Proposal, the Specifications, the Special Provisions, and the approved Plans, all of which are hereby made a part of this Contract and incorporated herein by reference.

The Contractor shall be responsible for all loss or damage arising out of, or in any way in connection with the Work, or from any unforeseen obstructions or difficulties that may be encountered in the prosecution of the Work, and for all risks of every description connected with the Work, with the exception of any items specifically excluded in the Contract Documents. The Contractor shall fully and faithfully complete the Work in a good and workmanlike manner, according to the Contract Documents and any Supplemental Agreements thereto.

The Contractor further agrees that the Work shall be done under the direct supervision of, and to the complete satisfaction of, the Executive Director of the Mississippi Department of Transportation, or his authorized representative(s), and, when federal funds are involved, subject to the inspection and approval of the Federal Highway Administration, or its agents, and/or the agents of any other state or federal agency whose funds are involved. Further, the Work shall be done in accordance with any applicable state and federal laws, and any such rules and regulations issued by the Commission and/or any relevant Federal Agency.

The Contractor agrees that all labor as outlined in the Contract Documents may be secured from a list furnished by the Manager of the Win Job Center nearest the project location, or any successor thereto.

It is agreed and understood that each and every provision of law and clause required by law to be inserted into this Contract shall be deemed to be inserted herein, and this Contract shall be read and enforced as though it were included herein. If through mere mistake or otherwise, any such provision is not inserted, then upon the application of either party hereto, the Contract shall be physically amended to make such insertion.

The Contractor agrees that he has read each and every clause of the Contract Documents, and fully understands the meaning of same, and hereby acknowledges that he will comply with all terms, covenants and agreements therein.

Witness our signatures, this the _____ day of _____, 20___.

_____
Contractor

By: _____
Title: _____

_____
Signed and sealed in the presence of: (name and address of witness)

_____
_____

MISSISSIPPI TRANSPORTATION COMMISSION

_____
Executive Director

_____
Secretary to the Commission

Award authorized by the Mississippi Transportation Commission in session on the ____ day of _____, _____, Minute Book No._____, Page No. _____.

SECTION 903
PERFORMANCE BOND

PERFORMANCE BOND FOR THE FOLLOWING CONTRACT:
Project No.: _____

For the construction of: _____

Contract date: _____ Contract Price: _____

FOR OWNER: MISSISSIPPI TRANSPORTATION COMMISSION, 401 N. WEST STREET, JACKSON, MISSISSIPPI 39201.

CONTRACTOR (full legal name, contact person, phone number and address):
_____
_____
_____
_____

SURETY (legal name, phone number, principal place of business and address ***for notice purposes***):
_____
_____
_____

Second Surety (if applicable):
_____
_____
_____

The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns, to the Owner for the performance of the Contract, which is incorporated herein by reference, and subject to the following terms:

1. If the Contractor fully and faithfully performs the Contract, the Surety and the Contractor shall have no obligation under this Bond.

2. The Surety's obligation under this Bond shall arise after:
   (a) the Owner first provides notice to the Contractor and the Surety that termination is imminent, pursuant to the current edition of the Mississippi Standard Specifications for Road and Bridge Construction, which is a part of the Contract; and
   (b) the Owner declares a Contractor Default, terminates the Contract, and notifies the Surety.

3. Within 20 calendar days as set forth in Section 108.08 of the current edition of the Mississippi Standard Specifications for Road and Bridge Construction, the Surety shall, after discussions with and consent from the Owner, and at the Surety's expense, elect to take one of the following actions:
   (a) Arrange for the Contractor, with the consent of the Owner, to perform and complete the Contract;
   (b) Undertake to perform and complete the Contract itself, through its agents or independent contractors;
   (c) Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and after investigation, determine the amount for which it may be liable to the Owner (subject to the consent of the Owner) and as soon as practicable after the amount is determined, make payment to the Owner.

4. If the Surety does not proceed, within a reasonable time frame, to enact and carry out the election made in Paragraph 3, then the Surety shall be deemed to be in default on this Bond, and the Owner shall be entitled to enforce any remedy available to it under the Contract and applicable law.

5. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for
   (a) the responsibilities of the Contractor for correction of defective work and completion of the Contract;
   (b) additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 3; and
   (c) liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the Contractor.

6. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

7. The penal sum of the Bond shall be equal to the Contract Price; however, the penal sum may be increased or decreased as the result of any subsequent Supplemental Agreements and/or final contract quantities.

8. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address listed for notice purposes on the first page of this Bond.

CONTRACTOR AS PRINCIPAL
Company: _____

Signature: _____
Name: _____
Title: _____
Address: _____
_____

SURETY
Company: _____

Signature: _____ MS Insurance ID # _____
Name: _____
Title: _____
Address: _____
_____

SURETY (if applicable)
Company: _____

Signature: _____ MS Insurance ID # _____
Name: _____
Title: _____
Address: _____
_____

SECTION 903
PAYMENT BOND

PAYMENT BOND FOR THE FOLLOWING CONTRACT:
Project No.: _____

For the construction of: _____

Contract date: _____ Contract Price: _____

FOR OWNER: MISSISSIPPI TRANSPORTATION COMMISSION, 401 N. WEST STREET, JACKSON, MISSISSIPPI 39201.

CONTRACTOR (full legal name, contact person, phone number and address):
_____
_____
_____

SURETY (legal name, phone number, principal place of business and address ***for notice purposes***):
_____
_____
_____
Second Surety (if applicable):
_____
_____
_____

The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns, to the Owner for payment of labor, materials and equipment furnished for use in the performance of the Contract, which is incorporated herein by reference, subject to the following terms:

1. If the Contractor promptly makes payment of all sums due to any and all subcontractors, sub-subcontractors, suppliers to the Contractor, suppliers to subcontractors and/or laborers who have performed work on the project site, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Contract, then the Surety and the Contractor shall have no obligation under this Bond.

2. The Owner shall provide notice to the Surety of any claims, demands, liens or suits against the Owner or the Owner's property that it receives from any person or entity ("Claimants") seeking payment for labor, materials or equipment furnished for use in the performance of the Contract.

3. Upon notice of any claims, demands, liens or suits provided by the Owner or Contractor or given to the Surety by a Claimant, the Surety shall promptly and at the Surety's expense, defend, indemnify and hold harmless the Owner against said claim, demand, lien or suit and shall take the following additional actions:
    (a) Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
    (b) Pay or arrange for payment of any undisputed amounts.

4. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond and shall have no obligation under this Bond to make payments to, or give notice on behalf of, Claimants, or otherwise have any obligations to Claimants under this Bond.

5. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

6. The penal sum of the Bond shall be equal to the Contract Price; however, the penal sum may be increased or decreased as the result of any subsequent Supplemental Agreements and/or final contract quantities.

CONTRACTOR AS PRINCIPAL
Company: _____

Signature: _____
Name: _____
Title: _____
Address: _____
_____

SURETY
Company: _____

Signature: _____ MS Insurance ID # _____
Name: _____
Title: _____
Address: _____
_____

SURETY (if applicable)
Company: _____

Signature: _____ MS Insurance ID # _____
Name: _____
Title: _____
Address: _____
_____

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 **Mill & Overlay approximately 1.3 miles of SR 7 from US 82 to Grenada Boulevard Extended, known as State Project No. SP-0019-01(022) / 109744301 in Leflore County.**

NOW THEREFORE, the condition of this obligation is such that if the aforesaid Principal shall be awarded the contract, the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former, but in no event shall liability hereunder exceed the penal sum hereof.

Signed and sealed this _____day of _____, 20___

_____
(Principal) (Seal)

_____ By:_____
(Witness) (Name) (Title)

_____
(Surety) (Seal)

_____ By:_____
(Witness) (Attorney-in-Fact)

_____
(MS Agent)

_____
Mississippi Insurance ID Number

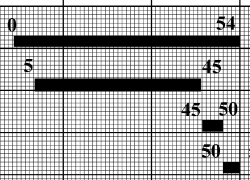
FORM CSD-612
Rev. 1 / 2015

YEAR 2025 PROGRESS SCHEDULE

YEAR _____

PROJECT NUMBER SP-0019-01(022) / 109741301
COUNTY Leflore

WORK PHASE NO.	DESCRIPTION	LINE NUMBERS
1	Miscellaneous	10-70, 110, 150-300, 340-360, 480-530
2	Mill, Overlay & Shoulder	80-100, 310-330
3	Guardrail	120-140
4	Stripe	370-470
	LET:	April 22, 2025
	NOA:	May 13, 2025
	NTP/BCT:	June 12, 2025
	W.D.:	54



MONTH	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV	DEC	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV	DEC
ANTICIPATED WORKING DAYS PER MONTH	6	7	11	15	19	20	21	21	20	16	11	5	6	7	11	15	19	20	21	21	20	16	11	5

172 WORKING DAYS PER YEAR

NOTE: THE ANTICIPATED WORKING DAYS SHOWN ON THIS SCHEDULE ARE FOR INFORMATIONAL PURPOSES ONLY.
THE ACTUAL WORKING DAY TOTAL AS ASSESSED BY THE PROJECT ENGINEER ON FORM CSD-765 SHALL GOVERN.