

# ROAD COMMISSION FOR IONIA COUNTY

170 E. Riverside Drive • P.O. Box 76 • Ionia, Michigan 48846 • Phone (616) 527-1700 • Fax (616) 527-8848

---

CHARLES G. MINKLEY  
Commissioner

KENNETH L. GASPER  
Commissioner

ALBERT A. ALMY  
Commissioner

KAREN D. BOTA  
Commissioner

ROBERT G. DUNTON  
Commissioner

DOROTHY G. POHL, CPA  
Managing Director

PAUL A. SPITZLEY, P.E.  
County Highway Engineer

---

## Notice to Bidders

**Sealed bids will be received by the Board of Ionia County Road Commissioners until 1:15 p.m., Thursday, June 22<sup>nd</sup>, 2017** at which time they will be publicly opened and read in the Commission offices for:

### I-96 CONCRETE REPAIRS

The contractor shall certify that all materials and equipment meet current Michigan Department of Transportation specifications. All bids will meet or exceed the specifications established by the Ionia County Road Commission and/or the Michigan Department of Transportation.

Further information on which bids shall be based is available at the road commission office; phone 616-527-1700 or [www.ioniacountyroads.org](http://www.ioniacountyroads.org) on the "Doing Business" page. The bid form is to be returned in a sealed envelope and plainly marked "Sealed Bid for I-96 Concrete Repairs" and shall include the name and address of the bidder.

The Ionia County Road Commission and/or Michigan Department of Transportation reserve the right to reject any and all proposals or to waive irregularities therein, and to accept any proposals which, in their opinion, may be most advantageous and in the best interest of the Ionia County Road Commission and the Michigan Department of Transportation.

Board of County Road Commissioners Ionia County, Michigan

Karen D. Bota - Chairperson  
Charles G. Minkley - Vice Chairperson  
Albert A. Almy - Member  
Robert G. Dunton - Member  
Kenneth L. Gasper - Member

BOARD OF COUNTY ROAD COMMISSIONERS  
Of the County of Ionia  
INSTRUCTIONS TO BIDDERS

Sealed bids will be publicly opened at the offices of the Board of County Road Commissioners of the County of Ionia, State of Michigan, located at 170 E. Riverside Drive, Ionia, MI 48846.

Refer to the NOTICE TO BIDDERS for the exact timing and for the identification of the bids as related to furnishing materials, services, equipment, work and/or supplies with the terms, conditions, specifications, drawings, plans and special provisions as stated herein and hereto attached.

The Board's normal practice is to open and read the bids then refer the file to staff for tabulation and analysis. During this period, the files are closed and will remain closed until presented to the Board of County Road Commissioners at their next regular meeting. Notifications of award, pending award or other outcome, will be made in writing. The bid tabulation will accompany award, as is customary for item bid, or may be requested by phone at (616) 527-1700.

1. All bids must be submitted on the Board's blank form when provided. The bid shall be legibly prepared in ink or typewriter. Erasures or alterations must be initialed by the bidder.
2. Specifications and plans should not be returned unless otherwise stated herein.
3. Bids shall be in a sealed envelope and identified on the outside as to the bid concerned. Bids shall be mailed or delivered. Faxed or emailed bids will NOT be accepted.
4. Bids will not be accepted after the time designated for the opening of the bids. The bidder shall assume full responsibility for delivery of bids prior to the appointed hour for opening same and shall assume the risk of late delivery or non-delivery regardless of the manner employed for the transmission thereof. Bids will be accepted at the Road Commission office on behalf of the Board at any time during normal business hours only, said hours being 6:00 a.m. to 4:00 p.m., Monday through Thursday, with the exception of legal holidays.
5. It is understood that the Board of County Road Commissioners is a governmental unit and as such, is exempt from the payment of all State and Federal taxes, except as allowed by the regulatory agencies to be included in the cost of materials and services.
6. The bidder, as evidenced by execution of the bid form, thereby declares that the bid is made without collusion with any other person, firm or corporation and agrees to furnish all bid items in strict adherence with all Federal regulatory measures.
7. The Board reserves the right to reject any and all bids, to waive any irregularities therein, and to accept any bid which, in the opinion of the Board, may be most advantageous and to the best interest of the County. In case of error in the extension of prices in the bid or other arithmetical error, the unit prices will govern.

## **CONTRACT FOR: I-96 Concrete and HMA Pavement Repairs**

It is the intent of the Ionia County Road Commission to contract for the Michigan Department of Transportation for concrete and asphalt pavement repairs on west & East bound I-96 between the 62-mile mark and Kent St.

**Scope:** The contractor shall furnish all the materials, labor and equipment needed for concrete and asphalt pavement repairs as required, per the Michigan Department of Transportation plans and specifications.

### **General Specifications**

- A. Locations:** East and West bound I-96 between Bliss Road (mile marker 62) and Sunfield Highway (mile marker 71).
- B. Qualifications:**
  - 1. Licensed by the State of Michigan
  - 2. State of Michigan Pre-qualified
  - 3. Minimum of 5 years experience in the field
- C. Completion Date:**  
August 31<sup>st</sup>, 2017
- D. Contacts:**
  - 1. Questions concerning the plans or specifications should be directed to Ken Hildebrand, MDOT at 231-250-6396 or Paul Spitzley, Ionia County Highway Engineer at 616-527-1700.
- E. Schedule of Work:**
  - 1. Upon award, work will be scheduled at the Michigan Department of Transportation and as specified.
  - 2. The contractor is to coordinate their schedule alongside the Hot Mastic Contractor, specifically in regards to traffic control and its respective schedule of work.
- F. Traffic Control:**
  - 1. Traffic control shall be in compliance with the minimum requirements set forth in Part VI of the current "Michigan Manual of Uniform Traffic Controls." This section is inclusive of traffic control requirements for equipment.
  - 2. The contractor is to coordinate traffic control with the Hot Mastic Application Contractor.
  - 3. Any questions on this subject should be directed to MDOT at (231) 250-6396.
- G. Barriers:**  
Contractor shall be responsible for providing and maintaining adequate barriers and or safe guards to protect the public and the workers.
- H. Disposal**  
Contractor shall be responsible for the cleanup of all construction debris, its removal and disposal as required. All concrete debris shall be placed at Bugbee Pit located on Quarry Rd in Ionia County.

**I. Insurance Requirements:**

1. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Michigan Department of Transportation and the Ionia County Road Commission and its agents and employees from and against all claims, damages, losses and expenses including, but not limited to, attorneys' fees arising out of or resulting from the performance of this Contract including claims, damages, losses and expenses attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, but only to the extent caused by the fault, negligent acts, or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage loss or expense is caused in part by the parties indemnified hereunder. This obligation does not include an obligation to indemnify the parties, indemnified hereunder for their sole negligence and shall not be construed to negate or modify other rights or obligations of indemnity that otherwise exist as to the parties or persons described herein, arising out of and during the progress and to the completion of work all in accordance with Public Act 468 of 2012 and the 2012 Michigan Department of Transportation's "Standard Specifications for Construction", Division 1, paragraph 1.07.10 with the following minimum requirements:

Workman's Compensation:      Statutory Coverage

Bodily Injury and Property Damage Other Than Automobile:

Each Occurrence	\$1,000,000
Aggregate	\$2,000,000

Bodily Injury Liability and Property Damage Liability Automobile:

Bodily Injury Liability	\$500,000 Each Person, Each Occurrence	\$1,000,000
Property Damage Liability	\$1,000,000 Each Occurrence	

Combined Single Limit for Bodily Injury and Property Damage

Liability: Each Occurrence	\$2,000,000
----------------------------	-------------

2. Insurance Certificate declaring The Michigan Department of Transportation and Ionia County Road Commission as additional insured, not certificate holder, must be issued and shall become part of the contract.
3. Contractor shall maintain current up-to-date insurance coverage during the term of the contract and failure to do so shall result in termination of said contract.
4. Certificate must be submitted within fifteen days upon notification of award of Contract and prior to Contract signing.

**J. Payment:**

Upon completion, payment will be authorized and approved by the Michigan Department of Transportation.

**K. Warranty:**

1. Upon completion, a one-year warranty on the installation must be furnished.
2. Upon completion, all manufacturer's warranties, if applicable, must be furnished.

- L. Submission of bid will be construed as a conclusive presumption that the Contractor is thoroughly familiar with the bid requirements and specifications and that he/she understands and agrees to abide by each and all of the stipulations and requirements contained therein.
- M. "The ICRC, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 USC 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority 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 gender, disability, race, color, or national origin in consideration for an award."

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations: The contractor shall comply with the Regulations relative to non-discrimination in Federally-assisted programs of the Department of Transportation, Title 49, code of Federal Regulations, Part 21 as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. Non-discrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulation, including employment practices when the contractor covers a program set forth in Appendix B of the Regulations.
3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to non-discrimination on the grounds of race, color, or national origin.
4. Information and Reports: The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by the Ionia County Road Commission to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the State highway department, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
5. Sanctions for Non-compliance: In the event of the contractor's non-compliance with the non-discrimination provisions of this contract, the Ionia County Road Commission shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

- (a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
  - (b) Cancellation, termination or suspension of the contract, in whole or in part.
6. Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Ionia County Road Commission may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Ionia County Road Commission to enter into such litigation to protect the interests of the County, and, in addition, the contractor may request the State highway department to enter into such litigation to protect the interests of the State and/or the United States to enter into such litigation to protect the interests of the United States.

### **Technical Specifications**

#### **A. Concrete Pavement Repairs and Debris Removal/Disposal**

1. The contractor shall provide equipment, labor, and material and traffic control. The equipment and labor will be used to perform the work of saw cutting existing concrete pavement, removal of the existing pavement, placement of the concrete pavement repair and disposal of the removed existing concrete pavement and related debris. Disposal of the debris shall be at the ICRC's Bugbee Pit located on Quarry Road off of Riverside Drive in Ionia. The contractor shall also perform the saw cutting and resealing after the concrete pavement repairs are placed.
2. The single pay item within this contract will be per cubic yard for placed concrete pavement. The as-bid unit price for this item shall include all equipment, labor, and materials needed to perform all aspects of the joint repairs including all specified traffic control measures.

#### **B. Setup**

1. Work shall be performed as described in the Maintenance of Traffic section of this document. All work shall be completed by August 31<sup>st</sup>, 2017.
2. **No work will be performed or lane closures allowed during holiday periods.**
3. **The ONLY allowable lane closure timeframes:**
  - **Nightly Saturday through Thursday from 8 pm – 7 am**
  - **Friday 9 pm – Monday 5 am**
4. **In efforts to meet the timeframes specified, the Contractor may utilize Rapid Set Concrete for shortening of joint cure time. Rapid Set Concrete must be in accordance with special provision, 12DS603, attached herein. If the Contractor elects to use Rapid Set Concrete as specified, it must be stated in the submitted bid.**

5. The contractor shall notify the Road Commission and MDOT 10 days before the start of work. Once the work starts the contractor shall stay on site until the work is completed per the Road Commission.
6. Perform concrete pavement repairs in accordance with the MDOT 2012 Standard Specifications for Construction, MDOT standard plans (R-44 -F and R-41-G are included in this document), and as directed by the MDOT Engineer.
7. Perform Cold Milling and HMA paving in accordance with the MDOT 2012 Standard Specification for Construction, Sec. 501 and as directed herein.
8. The location of the concrete pavement repairs shall be determined by the MDOT Maintenance Coordinator. The location, size and quantity of patches may be field adjusted by the Maintenance Coordinator, depending on conditions. For informational purposes assume 120 concrete pavement repair locations (12' x 5') on average).
9. All contraction joints (CRG and C2) and expansion joints (ERG) shall be placed as directed by the Engineer.
10. The contractor shall locate the existing Perforated Drainage System (PDS). The general location is under the shoulder. Damaged PDS shall be the responsibility of the contractor and repaired according to the engineer.
11. The contractor is informed that the existing concrete pavement thickness is approximately 9 inches.

**Contract #518-453W**  
**I-96 Concrete Joint Repairs**

Anticipated Total Quantity: 200 Cyd

Concrete Placed Cost per Cyd \$ \_\_\_\_\_

State License Number \_\_\_\_\_

MDOT Prequalified Copy \_\_\_\_\_

Years of Experience \_\_\_\_\_

References of contracts completed in this type of installation:

Co. Name	Contact Person	Phone #
----------	----------------	---------

Co. Name	Contact Person	Phone #
----------	----------------	---------

Co. Name	Contact Person	Phone #
----------	----------------	---------

Warranty per specifications \_\_\_\_\_

Fed. Emp. ID# \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name / Title

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Fax Number

\_\_\_\_\_  
Address

\_\_\_\_\_  
Cell Phone Number

\_\_\_\_\_  
City, State, ZIP

\_\_\_\_\_  
Email address



MICHIGAN  
DEPARTMENT OF TRANSPORTATION  
SPECIAL PROVISION  
FOR  
**MAINTAINING TRAFFIC,  
PERMANENT SIGNING AND PAVEMENT MARKING**

GND:CPE

1 of 6

GND:APPR:BEF:KH:05-30-2017

- a. Description.** This work shall consist of concrete joint repairs on both bounds of I-96 from approximately Bliss Road to approximately South Sunfield Road in Ionia County.
- b. General.** Traffic shall be maintained according to the most current edition of the Standard Specifications for Construction, including any Supplemental Specifications, and as specified herein.
1. The Contractor shall notify the Engineer a minimum of 72 hours prior to the implementation of any detours, road, bridge, ramp or lane closures and major traffic shifts. The Contractor shall start work at the time agreed upon with the Engineer. Any delay in the start time may result in delaying the project, until another start date can be agreed upon with the Engineer. Any delay on a new start date may not be reason for an extension of time.
  2. The Contractor shall coordinate his operations with Contractors performing work on other projects within or adjacent to the Construction Influence Area (CIA) as described below.
  3. MDOT maintenance crews and/or Contract Maintenance Agencies may perform maintenance work within or adjacent to the Construction Influence Area (CIA). The Maintenance Division of MDOT and/or Contract Maintenance Agency will coordinate their operations with the Engineer to minimize the interference to the Contractor. No additional payment will be made to the Contractor for the joint use of the traffic control items.
- c. Construction Influence Area (CIA).** The CIA will include the rights-of-way of the following roadways and ramps within the approximate limits described below:
1. On I-96 from approximately 2 miles west of Bliss Road to 2 miles east of South Sunfield Road.
  2. In addition, the CIA will include the right-of-way of any intersecting roads and ramps adjacent to the work zone for a distance of approximately ¼ mile in advance of the state trunkline.
- d. Traffic Restrictions.**
1. No work will be performed or lane closures allowed during the July 4<sup>th</sup> (3:00 pm Friday, 6/30/2017 to 6:00 am Wednesday, 7/5/2017), Labor Day (3:00 pm Friday,

9/1/2017 to 6:00 am Tuesday, 9/5/2017), or Thanksgiving (3:00 pm Wednesday, 11/22/2017 to 6:00 am Monday, 11/27/2017) holiday periods.

2. A minimum of 1 lane of traffic in each direction shall be maintained at all times on I-96.
3. Allowable lane closure timeframes:
  - Nightly Saturday through Thursday from 8 pm – 7 am
  - Friday 9 pm – Monday 5 am
4. Additional lane closure restrictions will be required on Saturdays when there is a home football game at Michigan State University or the University of Michigan. The dates below are subject to change.
  - September 2 (Both)
  - September 9 (Both)
  - September 16 (Michigan)
  - September 23 (MSU)
  - September 30 (MSU)
  - October 7 (Michigan)
  - October 21 (MSU)
  - October 28 (Michigan)
  - November 4 (Both)
  - November 18 (MSU)
  - November 25 (Michigan)
5. No more than 1 lane closure in each direction, maximum 5 miles in length, will be permitted at one time.
6. All centerline saw cutting must be done during left lane closures.
7. Restrict access between traveled lanes and work areas to specific locations for construction vehicles. The number of access points and their locations requires the approval of the Engineer. If requested, the Contractor will be required to submit a “Work Zone Traffic Control Plan” to the Engineer, at the pre-construction meeting, in accordance with Section 104 of the Standard Specifications for Construction. The Engineer will have seven (7) calendar days to review the plan for acceptance or provide comments for plan revisions required to obtain acceptance. At a minimum, the Plan shall include the proposed ingress/egress locations for construction equipment and vehicles, traffic control devices that will be utilized to warn the motoring public of ingress/egress locations, and measures that will be taken to ensure compliance with the Plan. No work shall begin prior to acceptance of the “Work Zone Traffic Control Plan”. Additional time required to obtain an accepted “Work Zone Traffic Control Plan” shall not be cause for delay or impact claims. All costs associated with obtaining an acceptable Plan, providing and executing all parts of the accepted Plan including required traffic control devices, or resolving an incomplete or unacceptable Plan shall be borne by the Contractor.
8. Once work is initiated that includes any lane restrictions, that work shall be continuous until completed. A lack of work activity for more than 3 hours (with the exception of mainline concrete curing) will require the removal and replacement of lane restrictions at the Contractor’s expense.
9. Two channelizing devices meeting MMUTCD standards shall be used to delineate uncured/open concrete joints as directed by the Engineer.

10. The location and duration of equipment and materials stored in the right of way, public or private property shall be as approved by the Engineer.
11. Sign covers shall be placed over existing regulatory, warning and construction signs that are not applicable during construction.
12. Changes or adjustments in the temporary signs and maintaining traffic typicals provided may be necessary to fit field conditions as determined by the Engineer.

**e. Traffic Control Devices.**

1. General

- A. All traffic control devices and their usage shall conform to the most current edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD) specifically part 6, which is available on the Traffic and Safety Support Area web site [www.michigan.gov/tands](http://www.michigan.gov/tands).
- B. During non-working periods, any work site with uncompleted work shall have applicable advance warning signs and channelizing devices, at specific locations, as directed by the Engineer, at no additional cost to the Department.
- C. The Contractor shall be required to drive through the Construction Influence Area at a minimum at the beginning and end of each work day to ensure all traffic control devices remain properly installed.
- D. All items used for maintaining traffic, which include but are not limited to temporary signs, plastic drums, and Type III barricades, must meet the “**acceptable**” criteria as defined in the most current version of the ATSSA publication entitled “Quality Guidelines for Temporary Traffic Control Devices and Features” at the time of initial deployment and as needed throughout the project.

2. Temporary Signs

- A. Refer to the attached sheet M0020a for device spacing, taper/shift lengths, and buffer zones.
- B. Signing for the supplemental speed limit signs will be as shown on attached Figure M0100a.
- C. Signing for a nighttime only single lane closure will be as shown on attached Figure M0990a.
- D. Signing for a single lane closure that will be in place during the day will be as shown on attached Figure M1040a.
- E. All temporary signs on this project will be on portable supports and must be laid down with the feet off when they are not applicable.

- F. Temporary traffic control devices shall be as shown on attached Special Detail WZD-125-E or shall be a NCHRP-350 compliant or MASH accepted design.
- G. All temporary signs shall be mounted at a 5 foot minimum bottom height in uncurbed areas and 7 foot minimum bottom height in curbed or pedestrian areas.
- H. All temporary signs shall be faced with fluorescent prismatic retro-reflective sheeting.
- I. Portable Changeable Message Signs (PCMS)

1. PCMS shall be used during the life of this project. The PCMS shall be used to inform traffic of upcoming work and changing traffic control during the life of the project and as directed by the Engineer. They shall be installed off the shoulder where possible with the wheels blocked up, and operated a minimum of 7 calendar days prior to the start of work. Each PCMS shall be delineated with 3 plastic drums. The drums shall be placed on the shoulder at an offset and alignment as directed by the Engineer.

2. Moving the PCMS's to multiple locations and displaying different messages will be expected through the life of the project. All messages and locations of the signs shall have the approval of the Engineer prior to displaying the message. All PCMS shall have the ability to change/update the message from a remote location. PCMS shall be turned off and removed from the roadway when not being used to display a message approved by the Engineer. Turning the sign parallel to traffic is not acceptable.

3. Sample messages include:

I-96	Fri 8 PM	Nightly	8 PM
Lane	Thru	Lane	TO
Closures	Mon 5 AM	Closures	7 AM

3. Channelizing Devices

- A. Channelizing devices required shall be high intensity Plastic Drums.
- B. If the right lane is closed in the vicinity of an entrance ramp and patch locations allow, the channelizing devices shall be arranged to allow the ramp the same acceleration taper to merge into the left lane as the ramp has during periods without construction. Channelizing devices shall have a maximum spacing of 25' in the tapers of ramps.
- C. A miscellaneous quantity of 20 each of Plastic Drum, High Intensity, Furn & Oper are included to be used at the discretion of the Engineer.

f. **Measurement and Payment**-The estimate of quantities for maintaining traffic is based on signing and related traffic control devices for 2 single lane closure, and the description in this Special Provision. Payment for these devices shall be in accordance with the most current edition of the Standard Specifications for Construction unless otherwise specified.

1. Payment for temporary signs shall be made on the maximum square foot of sign legends in use at any one time during the project.
2. Any additional signing or maintaining traffic devices required to expedite the construction shall be at the Contractor's expense.

**ESTIMATE OF TEMPORARY SIGN QUANTITIES**  
(for information only)

<b>SIGN</b>	<b>MESSAGE</b>	<b>QTY.</b>	<b>inch x inch</b>		<b>Square Foot</b>
W3-2	YIELD AHEAD Symbol	4	48	48	64
R1-2	YIELD	8	48	48	128
<b>Sign, Type A, Temp, Prismatic, Furn/Oper</b>			<b>Total (Sft):</b>		<b>192</b>

<b>SIGN</b>	<b>MESSAGE</b>	<b>QTY.</b>	<b>inch x inch</b>		<b>Square Foot</b>
E5-1	Exit with arrow symbol	4	72	60	120
R2-1	SPEED LIMIT 45	10	48	60	200
R2-1	SPEED LIMIT 60	10	48	60	200
R2-1	SPEED LIMIT 70	4	48	60	80
W3-5b	REDUCED SPEED ZONE AHEAD	4	48	48	64
W4-2 (R)	Rt Channelizing Symbol	4	48	48	64
W4-2 (L)	Lt Channelizing Symbol	4	48	48	64
W20-1	ROAD WORK AHEAD	8	48	48	128
W20-5 (R)	RIGHT LANE CLOSED AHEAD	4	48	48	64
W20-5 (L)	LEFT LANE CLOSED AHEAD	4	48	48	64
W20-5 (Mod) (R)	RIGHT LANE CLOSED 1 MILE	4	48	48	64
W20-5 (Mod) (L)	LEFT LANE CLOSED 1 MILE	4	48	48	64
W20-5 (Mod) (R)	RIGHT LANE CLOSED 2 MILES	4	48	48	64
W20-5 (Mod) (L)	LEFT LANE CLOSED 2 MILES	4	48	48	64
<b>Sign, Type B, Temp, Prismatic, Furn/Oper</b>			<b>Total (Sft):</b>		<b>1304</b>

**Maintaining Traffic Devices****Quantities**

8120140	Lighted Arrow, Type C, Furn	2	ea
8120141	Lighted Arrow, Type C, Oper	2	ea
8120160	Ltg for Night Work	1	LS
8120170	Minor Traf Devices	1	LS
8120250	Plastic Drum, High Intensity, Furn	600	ea
8120251	Plastic Drum, High Intensity, Oper	600	ea
8120310	Sign Cover	10	ea
8120330	Sign, Portable, Changeable Message, Furn	2	ea
8120331	Sign, Portable, Changeable Message, Oper	2	ea
8120340	Sign, Type A, Temp, Prismatic, Furn	192	sft
8120341	Sign, Type A, Temp, Prismatic, Oper	192	sft
8120350	Sign, Type B, Temp, Prismatic, Furn	1304	sft
8120351	Sign, Type B, Temp, Prismatic, Oper	1304	sft

## MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET FEET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
1	10	15	20	27	45	50	55	60	65	70
2	21	30	41	53	90	100	110	120	130	140
3	31	45	61	80	135	150	165	180	195	210
4	42	60	82	107	180	200	220	240	260	280
5	52	75	102	133	225	250	275	300	325	350
6	63	90	123	160	270	300	330	360	390	420
7	73	105	143	187	315	350	385	420	455	490
8	83	120	163	213	360	400	440	480	520	560
9	94	135	184	240	405	450	495	540	585	630
10	104	150	204	267	450	500	550	600	650	700
11	115	165	225	293	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840
13	135	195	266	347	585	650	715	780	845	910
14	146	210	286	374	630	700	770	840	910	980
15	157	225	307	400	675	750	825	900	975	1050

TAPER LENGTH "L" IN FEET

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

"L" =  $\frac{W \times S^2}{60}$  WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

- L = MINIMUM LENGTH OF MERGING TAPER
- S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
- W = WIDTH OF OFFSET

### TYPES OF TAPERS

#### UPSTREAM TAPERS


- MERGING TAPER
- SHIFTING TAPER
- SHOULDER TAPER
- TWO-WAY TRAFFIC TAPER

#### DOWNSTREAM TAPERS

(USE IS OPTIONAL)

### TAPER LENGTH

- L - MINIMUM
- 1/2 L - MINIMUM
- 1/3 L - MINIMUM
- 100' - MAXIMUM
- 100' - MINIMUM (PER LANE)

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf CHECKED BY: BMM	JUNE 2006 PLAN DATE:	M0020a
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn REV. 08/21/2006			

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D"  
AND LENGTH OF LONGITUDINAL BUFFER SPACE ON  
"WHERE WORKERS PRESENT" SEQUENCES


"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
D (FEET)	250	300	350	400	450	500	550	600	650	700

GUIDELINES FOR LENGTH OF  
LONGITUDINAL BUFFER SPACE "B"

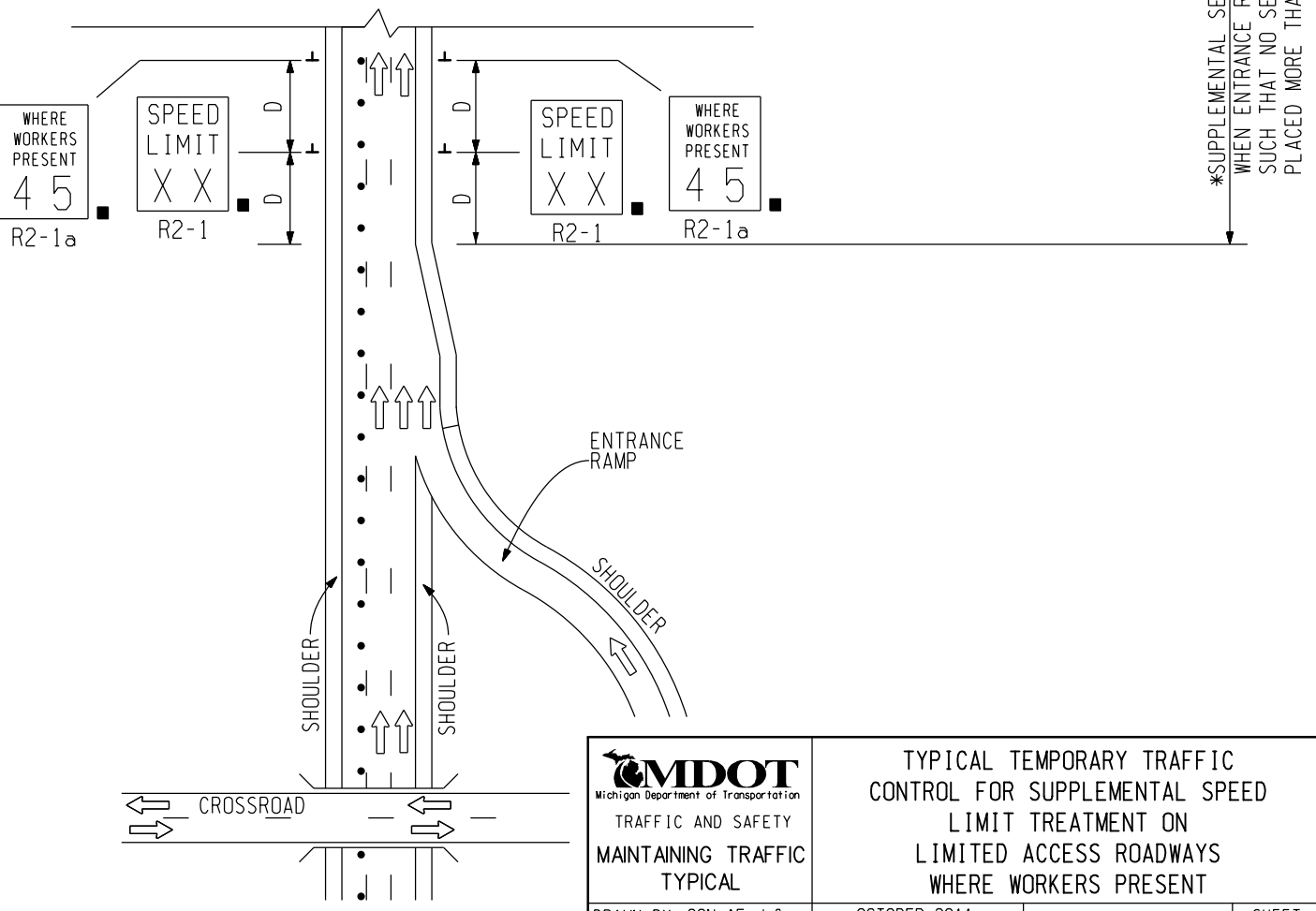
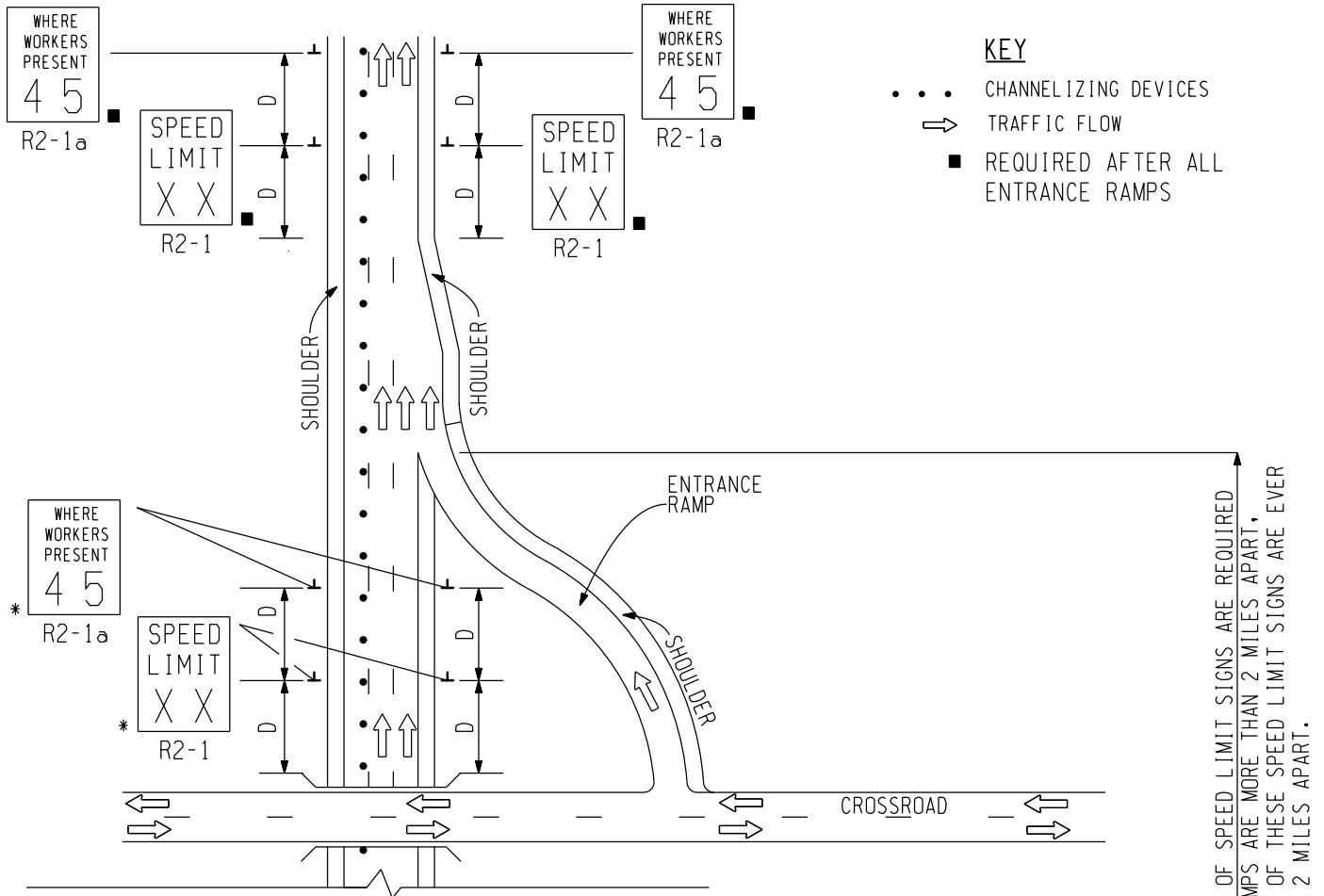
SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

\* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO. THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS.

 Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TABLES FOR "L", "D" AND "B" VALUES		
	DRAWN BY: CON:AE:djf CHECKED BY: BMM	JUNE 2006 PLAN DATE:	M0020a
FILE: K:/DGN/TSR/STDS/ENGLISH/MNTTRF/M0020a.dgn      REV. 08/21/2006			





**KEY**

- CHANNELIZING DEVICES
- ➔ TRAFFIC FLOW
- REQUIRED AFTER ALL ENTRANCE RAMP


\*SUPPLEMENTAL SET OF SPEED LIMIT SIGNS ARE REQUIRED WHEN ENTRANCE RAMP ARE MORE THAN 2 MILES APART, SUCH THAT NO SET OF THESE SPEED LIMIT SIGNS ARE EVER PLACED MORE THAN 2 MILES APART.

NOT TO SCALE

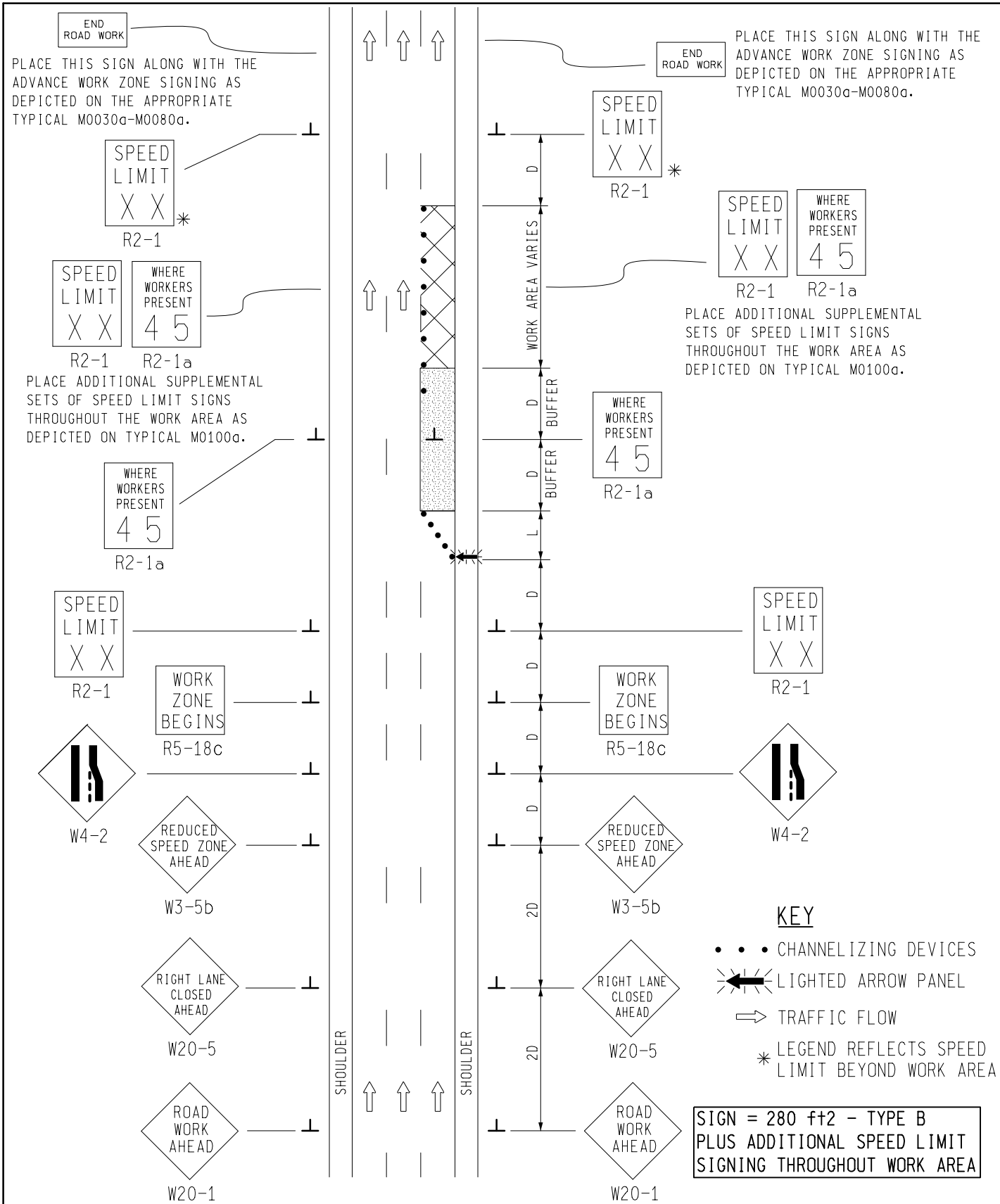
<p>TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL</p>		<p>TYPICAL TEMPORARY TRAFFIC CONTROL FOR SUPPLEMENTAL SPEED LIMIT TREATMENT ON LIMITED ACCESS ROADWAYS WHERE WORKERS PRESENT</p>	
		<p>DRAWN BY: CON:AE:djf CHECKED BY: BMM:CRB</p>	<p>OCTOBER 2011 PLAN DATE:</p>
<p>FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0100a.dgn REV. 10/04/2011</p>			

## NOTES

- 1N. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES  
SEE **M0020a** FOR "D" VALUES
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.

 <b>MDOT</b> <small>Michigan Department of Transportation</small> TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR SUPPLEMENTAL SPEED LIMIT TREATMENT ON LIMITED ACCESS ROADWAYS WHERE WORKERS PRESENT						
DRAWN BY: CON:AE:djf CHECKED BY: BMM:CRB	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border-bottom: 1px solid black;">OCTOBER 2011</td> <td style="width: 40%; border-bottom: 1px solid black;">PLAN DATE:</td> <td style="width: 30%; border-bottom: 1px solid black;">M0100a</td> </tr> <tr> <td colspan="2" style="font-size: x-small;">SHEET</td> <td style="font-size: x-small;">2 OF 2</td> </tr> </table>	OCTOBER 2011	PLAN DATE:	M0100a	SHEET		2 OF 2
OCTOBER 2011	PLAN DATE:	M0100a					
SHEET		2 OF 2					
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0100a.dgn REV. 10/04/2011							

NOT TO SCALE



NOT TO SCALE

<p>MDOT Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL</p>	<p>TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A FREEWAY USING REDUCED SPEED LIMIT WHERE WORKERS PRESENT</p>	
	<p>DRAWN BY: CON:AE:djf CHECKED BY: BMM:CRB</p>	<p>OCTOBER 2011 PLAN DATE:</p>
<p>FILE: K:\-DGN-TSR-STDS-ENGL\ISH-MNTTRF-M0990a.dgn</p>		<p>REV. 10/27/2011</p>


## NOTES

11. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES  
AND LENGTH OF LONGITUDINAL BUFFERS  
L = MINIMUM LENGTH OF TAPER  
SEE **M0020a** FOR "D" AND "L" VALUES
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
- 3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
- 4D. THE SPACING OF CHANNELIZING DEVICES SHOULD NOT EXCEED 45 FEET WHEN USED FOR TAPER CHANNELIZATION, AND SHOULD NOT EXCEED 90 FEET WHEN USED FOR TANGENT CHANNELIZATION.
5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED.
6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHLY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.
- 16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.
21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.
26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

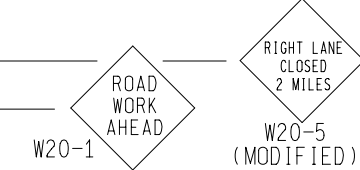
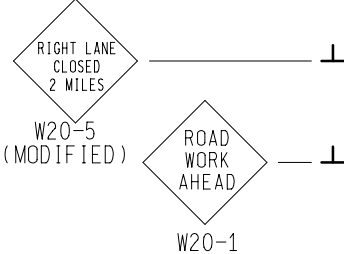
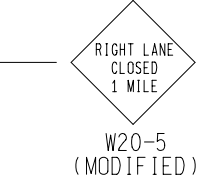
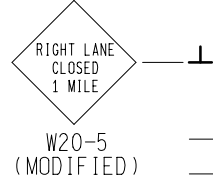
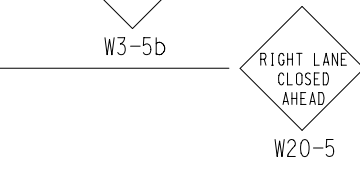
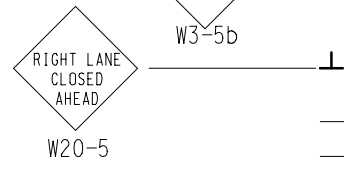
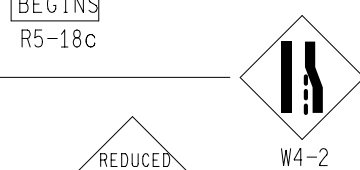
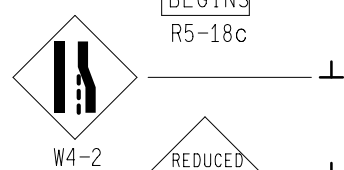
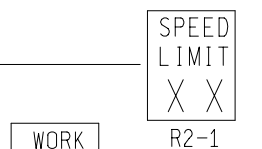
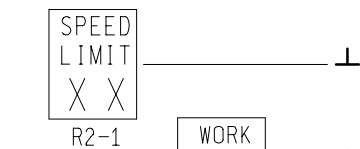
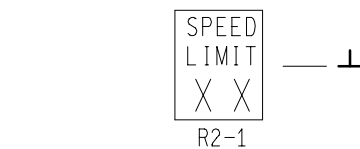
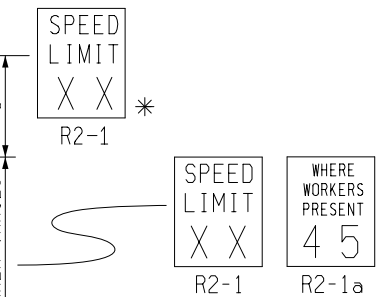
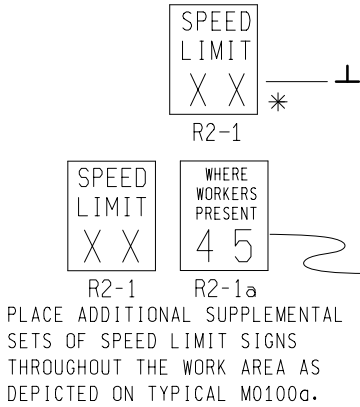
## SIGN SIZES

DIAMOND WARNING - 48" x 48"  
 RECTANGULAR REGULATORY - 48" x 60"  
 R5-18c REGULATORY - 48" x 48"

NOT TO SCALE

 Michigan Department of Transportation TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A FREEWAY USING REDUCED SPEED LIMIT WHERE WORKERS PRESENT
DRAWN BY: CON:AE:djf CHECKED BY: BMM:CRB	OCTOBER 2011 PLAN DATE:
M0990a	
FILE: K:\-DGN-TSR-STDS-ENGLISH-MNTTRF-M0990a.dgn	
SHEET 2 OF 2 REV. 10/27/2011	

PLACE THESE SIGNS ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030c-M0080a.

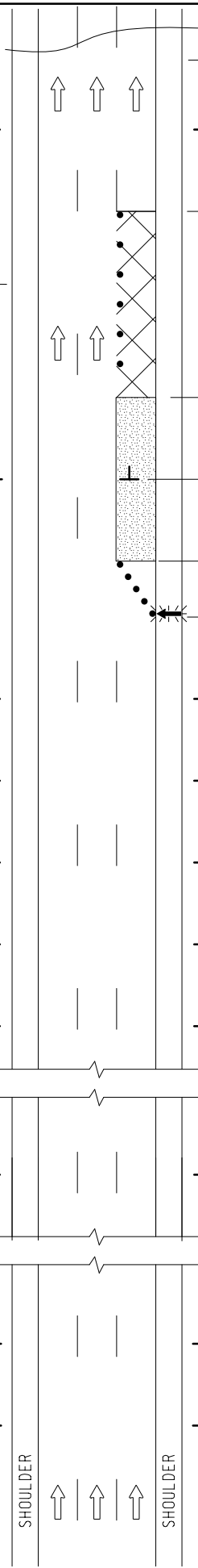


PLACE ADDITIONAL SUPPLEMENTAL SETS OF SPEED LIMIT SIGNS THROUGHOUT THE WORK AREA AS DEPICTED ON TYPICAL M0100d.

**KEY**

- • • CHANNELIZING DEVICES
- ← LIGHTED ARROW PANEL
- TRAFFIC FLOW
- \* LEGEND REFLECTS SPEED LIMIT BEYOND WORK AREA

**SIGN = 344 ft± - TYPE B PLUS ADDITIONAL SPEED LIMIT SIGNING THROUGHOUT WORK AREA**



**MDOT**  
Michigan Department of Transportation  
TRAFFIC AND SAFETY  
MAINTAINING TRAFFIC  
TYPICAL

TYPICAL EXTENDED TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A FREEWAY USING A REDUCED SPEED LIMIT WHERE WORKERS PRESENT

DRAWN BY: CON:AE:djf	OCTOBER 2011	M1040a	SHEET 1 OF 2
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT Fwy/M1040a.dgn		REV.	10/26/2011

NOT TO SCALE


## NOTES

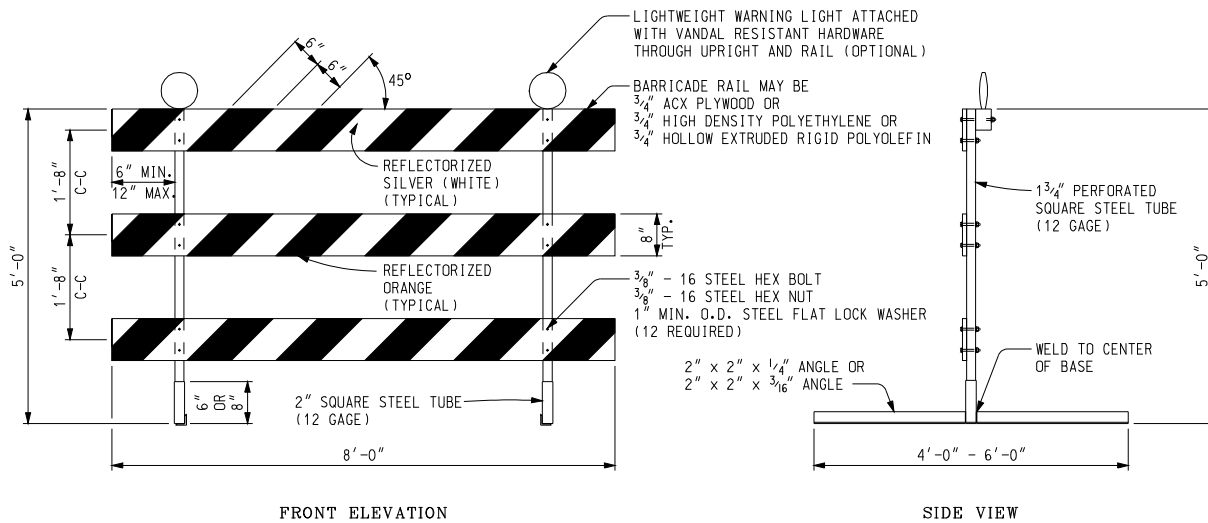
11. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES  
AND LENGTH OF LONGITUDINAL BUFFERS  
L = MINIMUM LENGTH OF TAPER  
SEE **M0020a** FOR "D" AND "L" VALUES
2. ALL NON-APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED.
3. DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
- 3A. THE "WORK ZONE BEGINS" (R5-18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY.
- 4D. THE SPACING OF CHANNELIZING DEVICES SHOULD NOT EXCEED 45 FEET WHEN USED FOR TAPER CHANNELIZATION, AND SHOULD NOT EXCEED 90 FEET WHEN USED FOR TANGENT CHANNELIZATION.
5. FOR OVERNIGHT CLOSURES, TYPE III BARRICADES SHALL BE LIGHTED
6. WHEN CALLED FOR IN THE FHWA ACCEPTANCE LETTER FOR THE SIGN SYSTEM SELECTED, THE TYPE A WARNING FLASHER, SHOWN ON THE WARNING SIGNS, SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAREST THE ROADWAY.
7. ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL MEET NCHRP 350 CRASHWORTHY REQUIREMENTS STIPULATED IN THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
8. WHEN BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIALS STORED OR WORK CONDUCTED IN THE BUFFER AREA.
- 16B. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED SHALL BE PLACED BEYOND THE LIMITS OF THE REDUCED SPEED AS INDICATED.
21. ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS, SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR DAYTIME-ONLY TRAFFIC PATTERNS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.
26. THE LIGHTED ARROW PANEL SHALL BE LOCATED AT THE BEGINNING OF THE TAPER AS SHOWN. WHEN PHYSICAL LIMITATIONS RESTRICT ITS PLACEMENT AS INDICATED, THEN IT SHALL BE PLACED AS CLOSE TO THE BEGINNING OF THE TAPER AS POSSIBLE.

## SIGN SIZES

DIAMOND WARNING            - 48 " x 48 "  
 RECTANGULAR REGULATORY - 48 " x 60 "  
 R5-18c REGULATORY        - 48 " x 48 "

NOT TO SCALE

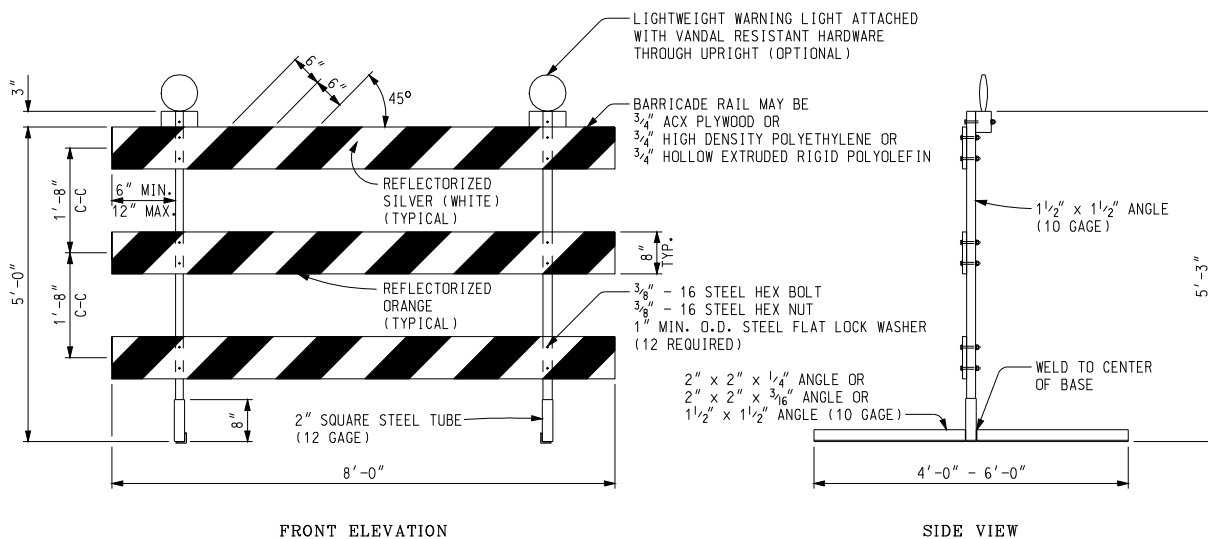
 Michigan Department of Transportation TRAFFIC AND SAFETY <b>MAINTAINING TRAFFIC</b> TYPICAL	<b>TYPICAL EXTENDED TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A FREEWAY USING A REDUCED SPEED LIMIT WHERE WORKERS PRESENT</b>
DRAWN BY: CON:AE:djf CHECKED BY: BMM:CRB	OCTOBER 2011 PLAN DATE:
FILE: PW RD/TS/Typicals/Signs/MT FWY/M1040a.dgn	M1040a REV. 10/26/2011
SHEET 2 OF 2	



FRONT ELEVATION

SIDE VIEW

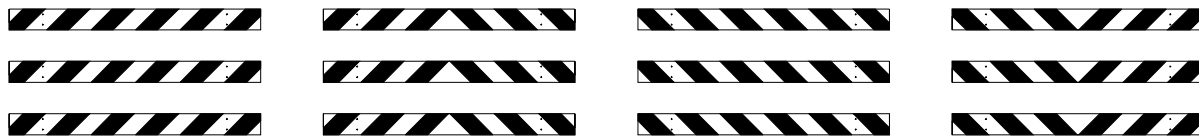
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

RIGHT DIRECTIONAL

CLOSURES

BARRICADE RAIL SHEETING OPTIONS  
TYPE III BARRICADES

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at [http://safety.fhwa.dot.gov/roadway\\_dept/road\\_hardware/wzd.htm](http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm)

NOT TO SCALE

File: T&S/Typ/Signs/WorkZones/wzd 125 d

Rev. 09/22/09 PJ



PREPARED BY  
TRAFFIC AND SAFETY

DRAWN BY: ECH

CHECKED BY: MWB

ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

(SPECIAL DETAIL)

FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION  
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR

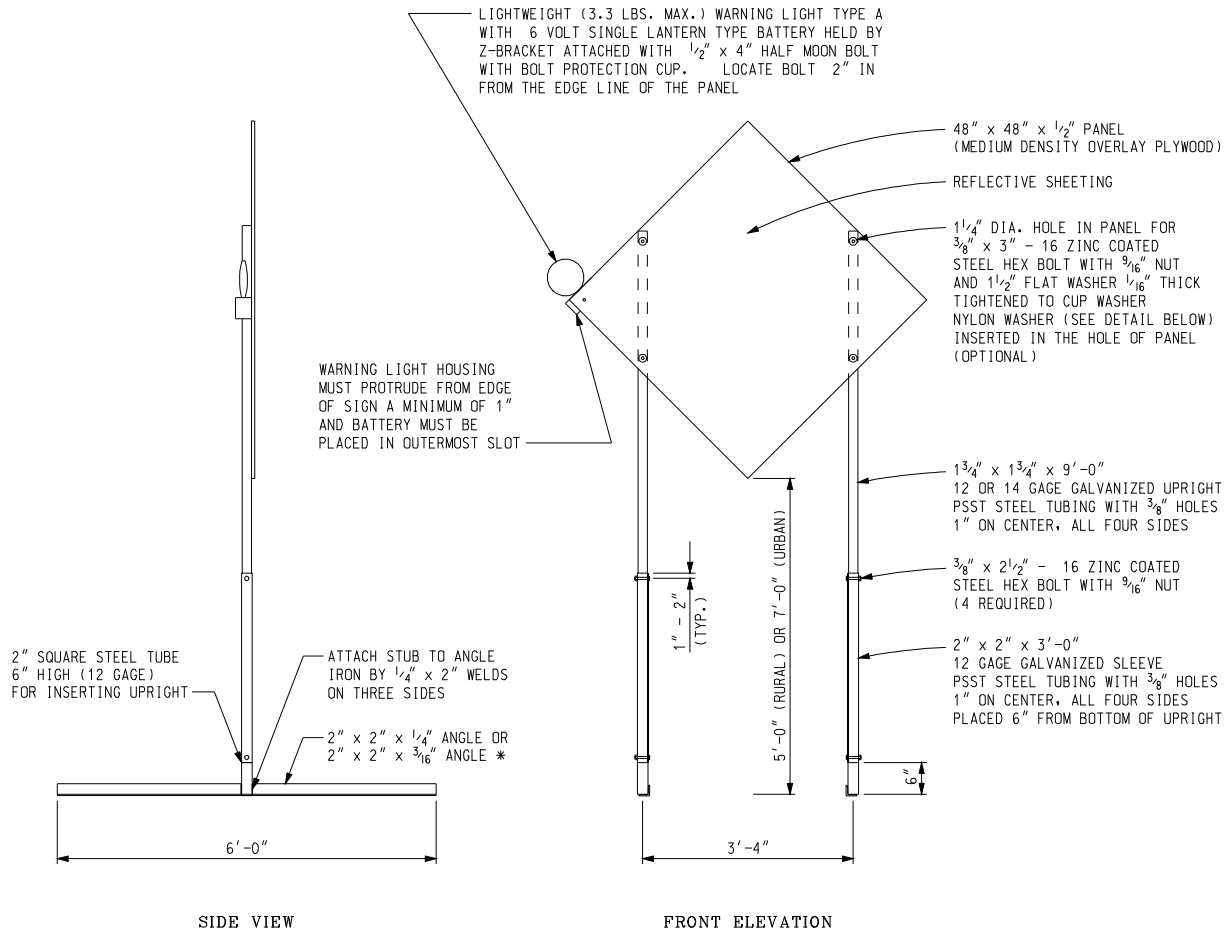
Temporary  
Traffic Control Devices

9/22/09  
PLAN DATE

WZD-125-E

SHEET  
1 of 3

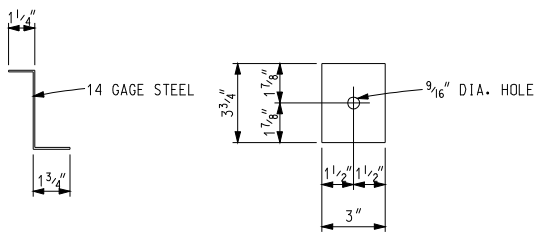
NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



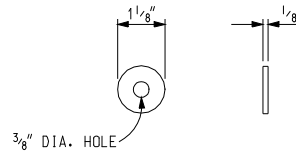
### TEMPORARY SIGN SUPPORT

(WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)

\* SIGN STAND IS BALLASTED WITH FOUR OR MORE 35 LB SANDBAGS. A MINIMUM OF ONE ON EACH END.  
 UPRIGHTS SHALL NOT EXTEND ABOVE THE SIGN PANEL.



Z-BRACKET DETAIL



OPTIONAL NYLON WASHER

Other temporary sign supports meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at [http://safety.fhwa.dot.gov/roadway\\_dept/road\\_hardware/wzd.htm](http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm)

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION  
 BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

(SPECIAL DETAIL)  
 FHWA APPROVAL DATE

9/22/09  
 PLAN DATE

WZD-125-E

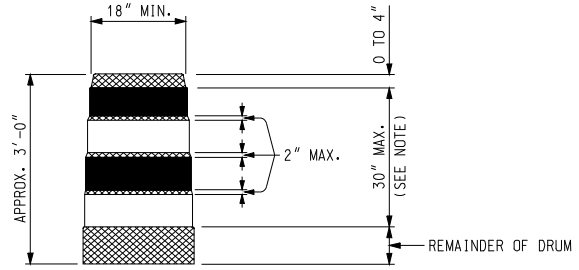
SHEET  
 2 of 3

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



- PLASTIC DRUM
- ▲▲▲ PROPOSED TYPE III BARRICADE
- △△△ EXISTING TYPE III BARRICADE

SYMBOLS TO BE USED ON PLANS



- REFLECTORIZED ORANGE
- REFLECTORIZED WHITE
- NON REFLECTORIZED ORANGE

NOTE:  
 DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZED STRIPES (2 ORANGE AND 2 WHITE) OF 6" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZED STRIPE BEING ORANGE. NON REFLECTORIZED SPACES BETWEEN THE HORIZONTAL REFLECTORIZED ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

PLASTIC DRUM

NOTES:

2" PERFORATED SQUARE STEEL TUBES MAY BE USED TO FABRICATE THE HORIZONTAL BASE OF THE TYPE III BARRICADE.

WARNING LIGHTS SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ALL OTHER PROVISIONS IN THE CONTRACT WHEN THEY ARE USED ON TYPE III BARRICADES.

SEE ROAD STANDARD PLANS R-113-SERIES FOR TEMPORARY CROSSOVERS FOR DIVIDED ROADWAY, AND R-126-SERIES FOR TYPICAL LOCATION AND SPACING OF PLASTIC DRUMS FOR PLACEMENT OF TEMPORARY CONCRETE BARRIER.

SIGNS, BARRICADES, AND PLASTIC DRUMS SHALL BE FACED WITH PRESSURE-SENSITIVE REFLECTIVE SHEETING ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	9/22/09	WZD-125-E	SHEET 3 of 3
File: T&S/Typ/Signs/WorkZones/wzd 125 d	Rev. 09/22/09 PJ	PLAN DATE		

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.