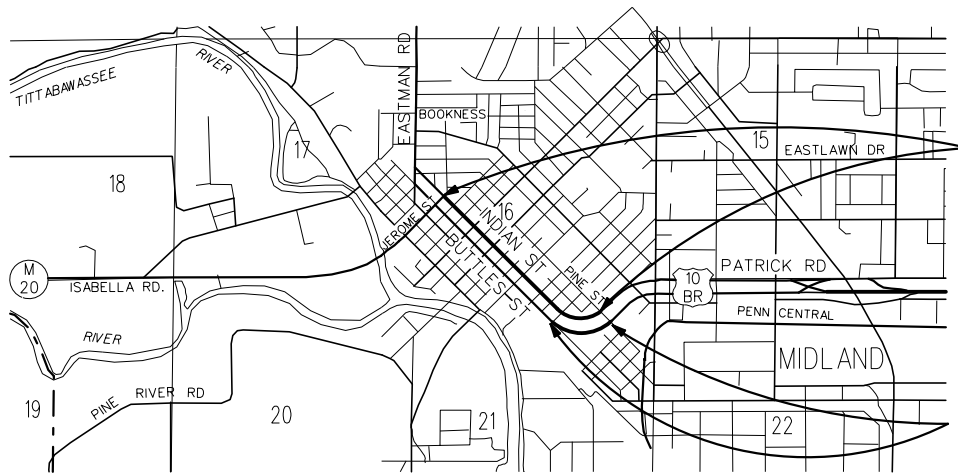


MICHIGAN DEPARTMENT OF TRANSPORTATION

US-10 BR CITY OF MIDLAND MIDLAND COUNTY

SECTION	CONTROL SEC	JOB NO.	FEDERAL	
			PROJECT	ITEM
1	56023	19-5602		

ROAD	YEAR	TRAFFIC DATA			SPEED DATA		LIMITS
		ADT	DHV	COMM	DESIGN	POSTED	
US-10 BR EB	2019	11958	1107	8%	50	45	POB TO POE
US-10 BR WB	2019	11760	1169	8%	50	45	POB TO POE



US-10 BR WB (INDIAN ST.)
MICHIGAN PROJECT
CONTROL SECTION 56023
JOB NUMBER 19-5602
P.O.B. STA 15+90 (M.P. 0.000)
P.O.E. STA 61+52 (M.P. 0.867)

US-10 BR EB (BUTTES ST.)
MICHIGAN PROJECT
CONTROL SECTION 56023
JOB NUMBER 19-5602
P.O.B. STA 52+47 (M.P. 0.685)
P.O.E. STA 66+33 (M.P. 0.950)



COUNTY KEY

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION. PHYSICAL ROAD NUMBER (PR#) & MILEPOST (MP) DATA ARE FROM MICHIGAN GEOGRAPHIC FRAMEWORK VERSION # 19

MILES: 1.13
CONTRACT FOR:
HMA COLD MILLING AND HMA OVERLAY



PAUL C. AJEGBA, P.E. - DIRECTOR

DATE: 08/05/2019
DESIGN UNIT: MYERS
TSC: MT. PLEASANT

TITLE SHEET
US-10 BR

DRAWING	SHEET
	SECT 1

LOG OF PROJECT

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C.S. 56023

J.N. 19-5602

PROGRESS SCHEDULE

Work may begin immediately after receiving approval from MDOT. Work must be completed by September 27th, 2019. Notice must be provided to Jason Potts at 989-737-0211 three (3) working days prior to beginning any work.

JOB LOCATION

US-10 BR EB

Begins in the City of Midland, Midland County on Buttles St. from Haley St. easterly to Pine St.

Begin Station

P.O.B. = Station 52+47

C.S. = 56023

C.S. Mile Point 0.685 / P.R. 3560054 Mile Point 0.002

End Station

P.O.E. = Station 66+33

C.S. = 56023

C.S. Mile Point 0.950 / P.R. 3560054 Mile Point 0.267

Location Length = 0.265 miles

US-10 BR WB

Begins in the City of Midland, Midland County on Indian St. from Jerome St. easterly to Pine St.

Begin Station

P.O.B. = Station 15+90

C.S. = 56023

C.S. Mile Point 0.000 / P.R. 885605 Mile Point 0.185

End Station

P.O.E. = Station 61+52

C.S. = 56023

C.S. Mile Point 0.867 / P.R. 884809 Mile Point 0.099

Location Length = 0.864 miles

DESCRIPTION OF WORK

The work shall consist of a 1.5" uniform cold mill and Single Course HMA overlay for the entire width of the pavement from the POB to the POE.

The Midland County Road Commission will take possession of the millings. They will truck them off site as part of the construction operation. For coordination with the trucking, contact Sam SanMiguel at: (989) 859-9992.

LOG OF PROJECT

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C.S. 56023

J.N. 19-5602

Drainage structures and monument boxes that are low within the resurfacing limits shall be adjusted at the discretion of the Engineer. Upon completion of Dr Structure Cover, Adj, Case 1 and the monument box adjustments, the existing roadbed shall be covered with HMA, 5E3, High Stress.

Traffic will be maintained as described in the Maintaining Traffic section contained in this proposal.

INTERSECTION MILE POINTS (FOR REFERENCE ONLY)

US-10 BR – C.S. 56023

Pine St. (EB)	0.958	(Sta 66+73)
Pine St. (WB)	0.867	(Sta 61+12)
Haley St. (EB)	0.683	(Sta 52+37)
Jerome St. (WB)	0.000	(Sta 16+30)

ESTIMATED QUANTITIES

The quantities included in the summations below are approximate and for reference only. Contractor will be responsible for verifying quantities before bidding by site inspection and plan review. If any major discrepancies are noted, contractor must contact Mike Loynes at (989) 773-7756.

This project is a Maintenance funded project, which means that there will be absolutely no overpayment or extras. All material, labor and mobilization shall be included in the bid.

MDOT will have the low bid reviewed and approved for funding. MDOT reserves the right to reject any bid that appears to be unqualified. Before award, MDOT may request a site and plan review meeting with the low bid contractor.

Items of Work (for information only)

Maintaining Traffic	1	LS
Dr Structure Cover, Adj, Case 1	10	Ea
Cold Milling HMA Surface	23,792	Syd
HMA, 5E3, High Stress	1,963	Ton
Pavt Mrkg, Ovly Cold Plastic, 6 inch, Crosswalk	648	Ft
Pavt Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar	144	Ft
Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym	2	Ea
Pavt Mrkg, Ovly Cold Plastic, Thru and Lt Turn Arrow Sym	2	Ea
Pavt Mrkg, Ovly Cold Plastic, Thru Arrow Sym	2	Ea
Pavt Mrkg, Waterborne, 4 inch, White	3074	Ft
*Witness, Log, Layout, \$1000.00	1	Dlr

* Note: There are existing “ONLY” pavement markings within the project limits. They will not be replaced as part of this project.

LOG OF PROJECT

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C.S. 56023

J.N. 19-5602

MAINTAINING TRAFFIC

Traffic Restrictions

Maintaining traffic will be accomplished traffic shifts utilizing Maintaining Traffic Typical M0020a, M0080a, and M0760a. Additionally, traffic shall be maintained according to Sections 104.07, 104.11, and 812 of the 2012 Standard Specifications for Construction, including any Supplemental Specifications, and as specified herein.

Sign covers shall be placed over any regulatory, warning, or construction signs that are not applicable during construction.

The Contractor shall not create any unsafe conditions within the Construction Influence Area (CIA) that form a hazard for motorists. The CIA shall extend as far as the required advanced construction signing, or any other signs pertaining to this location. Extra caution should be used when delineating the work zone overnight to protect the roadway users.

No work shall be performed, or lane closures allowed during the Labor Day holiday period. Labor Day holiday periods shall be defined as beginning on Thursday at noon until Tuesday at normal starting time.

The Contractor shall maintain traffic on all intersecting driveways at all times. Crossroads shall remain open to traffic at all times. Additional traffic regulators shall be used at unsignalized intersections and driveways, as directed by the Engineer. Payment for these items shall be included in the lump sum price for the project.

All lanes shall be flush with each other at the end of each workday.

Traffic will not be allowed on any cold milled surface other than for crossing. Maintenance of the cold milled surface is the responsibility of the Contractor, and any costs associated with such maintenance shall be included in the lump sum price for the project.

All work shall be conducted at night between the hours of 8:00 PM and 6:00 AM. No weekend work unless approved by the Engineer. All lanes and shoulders shall be open to traffic unless work is in progress which prohibits opening of lanes due to safety or other reasons approved by the Engineer.

Once work is initiated that includes any lane restrictions, that work shall be continuous until completed.

The storage restrictions in section 812.03.G.5 of the 2012 Standard Specifications for Construction will be strictly adhered to. The Contractor shall not park any vehicle or store any material on public recreational property.

Daily maintenance of traffic control items will not be paid for separately but will be

LOG OF PROJECT

Page 5 of 9

C.S. 56023
J.N. 19-5602

included in the lump sum price for the project.

GENERAL NOTES

SPECIFICATIONS FOR CONSTRUCTION

The improvements covered by these plans shall be done in accordance with the MDOT 2012 Standard Specifications for Construction.

RECREATIONAL PROPERTIES

The Contractor shall not park any vehicles or store any equipment on public recreational property. Access to the recreational properties must also be maintained at all times. Non compliance, even without the knowledge and approval of MDOT personnel, can result in penalties up to and including termination of the construction contractor and loss of federal funding for the project. Should there be any questions regarding this requirement, contact the MDOT Environmental Section at (517) 373-8350.

MISS DIG/UNDERGROUND UTILITY NOTIFICATION

For the protection of underground utilities and in conformance with Public Act 174 of 2013, the Contractor shall contact MISS DIG System, Inc. by phone at 811 or 800-482-7171 or via the web at either elocate.missdig.org for single address or rte.missdig.org, a minimum of 3 business days prior to excavating, excluding weekends and holidays.

ADJUSTING MONUMENT BOXES

All government corners on this project shall be preserved, whether shown or not. It may be necessary to place or adjust monument boxes, as required.

NOTES APPLYING TO STANDARD PLANS

Where the following items are called for on the plans, they are to be constructed according to the Standard Plan or Special Detail given below opposite each item unless otherwise indicated.

Monument Boxes	R-11-E
Pavement Arrow & Message Details	PAVE-900-F
Longitudinal Line Types and Placement	PAVE-905-D
Pavement Markings for Non-Signalized Intersections	PAVE-930-C
Left Turn Lane Markings	PAVE-935-D
Right Turn Lane and Island Pavement Markings	PAVE-940-C
Intersection, Stop Bar and Crosswalk Marking	PAVE-945-C
Ground Driven Sign Supports for Temporary Signs	*WZD-100-A
Temporary Traffic Control Devices.....	*WZD-125-E

* *indicates Special Detail*

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J.N. 19-5602

PUBLIC UTILITIES

123.Net, Inc 24700 Northwestern Highway, Suite 700 Southfield, Michigan 48075 Ph: 248-228-8202 (W) Attn: Ryan Duda	Telecom
ACD Telecom, Inc. 1800 N. Grand River Ave Lansing, Michigan 48906 Ph: 517-999-3279(W) Attn: Bee Leinbach	Cable
Agri-Valley Services Corporation 38 S. Main St, P.O. Box 650 Pigeon, Michigan 48755 Ph: 888-453-4258 (W) Attn: Barb Main	Telecom
AT&T 136 E. 4th St. Clare, Michigan 48617 Ph: 989-980-4266(W) Attn: Chris Latty	Telecom
Charter Communications 7372 Davison Rd Davison, Michigan 48423 Ph: 810-658-5140(W) Attn: David Kelly	Cable
City of Midland 333 W. Ellsworth Midland, Michigan 48640 Ph: 989-837-3352(W) Attn: Josh Fredrickson	Water
Consumers Energy 2400 Weiss Street Saginaw, Michigan 48602 Ph: 989-791-5353(W) Attn: Greg Squanda	Electric

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J.N. 19-5602

Consumers Energy 1945 West Parnall Road, P12-208A Jackson, Michigan 49201 Ph: 517-788-0817(W) Attn: Pete Mulhearn	Electric
Consumers Energy 2400 Weiss Street Saginaw, Michigan 48602 Ph: 989-791-5885(W) Attn: Kyle Skrabut	Gas
Consumers Energy 1945 West Parnall Road, P23-228 Jackson, Michigan 49201 Ph: 517-788-0998(W) Attn: Timothy Coppernoll	Gas
DOW Chemical Co. 921 Building Midland, Michigan 48667 Ph: 989-636-6779(W) Attn: Martin Hill	Other
Everstream 1781 Holloway Drive Holt, MI 48842 Ph: 517-742-4020 (W) Attn: Clarise Jackson	Telecom
Lynx Network Group 4798 Campus Drive, Suite 111 Kalamazoo, MI 49008 Ph: 866-819-5969(W) Attn: Jacob Stiel	Telecom
Merit Networks 1000 Oakbrooke Dr., Suite 200 Ann Arbor, Michigan 48104 Ph: 734-527-5777(W) Attn: Nick Andrus	Telecom
Midland County Drain Commissioner 220 West Ellsworth Street, Room 229-30 Midland, Michigan 48640 Ph: 989-832-6772(W) Attn: Doug Enos	County Drain

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J.N. 19-5602

Midland County Educational Service Agency

3917 Jefferson Avenue

Midland, Michigan 48640

Ph: 989-249-8752(W)

Attn: Jim Mallory

Telecom

Pigeon Telephone Company

7575 Pigeon Road, P.O. Box 650

Pigeon, Michigan 48755

Ph: 989-453-4343(W)

Attn: Doug Freeman

Telecom

US Signal Company

201 Ionia Avenue, SW

Grand Rapids, Michigan 49503

Telecom

Windstream KDL

800 N. Durand Rd

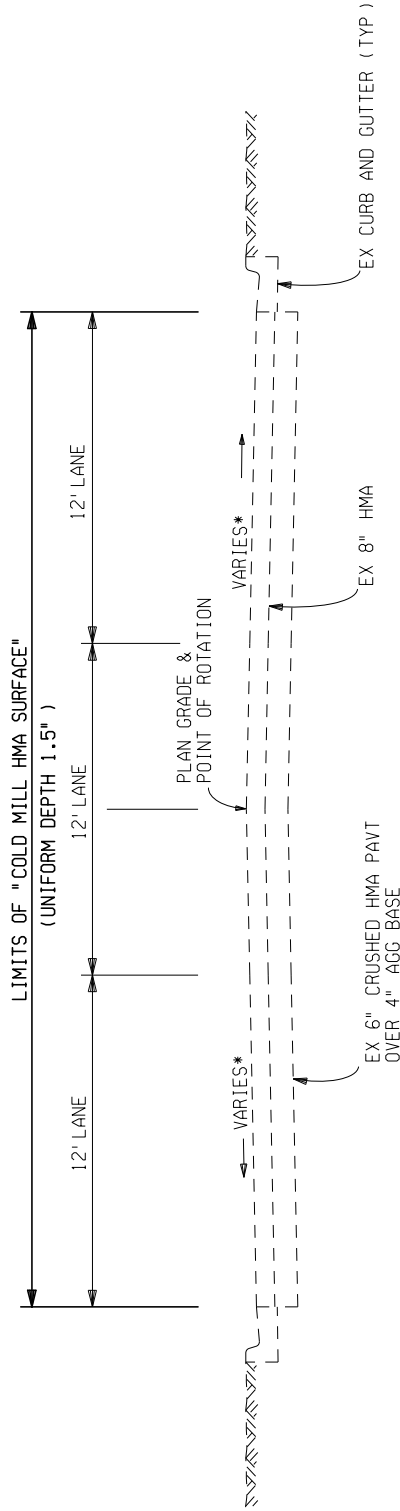
Corunna, MI 48817

Ph: 812-253-1553 (W)

Attn: Chris Rogers

Telecom

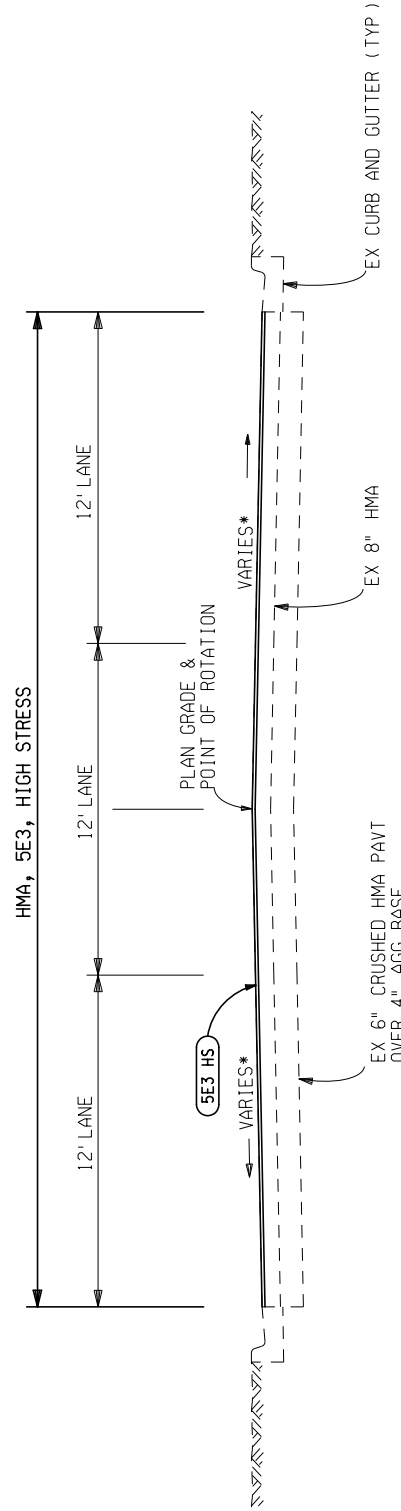
US-10 BR



EXISTING US-10 BR

TO APPLY: STA 15+90 TO STA 61+52 - WESTBOUND
 STA 52+47 TO STA 66+33 - EASTBOUND

US-10 BR



PROPOSED US-10 BR

TO APPLY: STA 15+90 TO STA 61+52 - WESTBOUND
 STA 52+47 TO STA 66+33 - EASTBOUND

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE LBS PER SYD	PERFORMANCE GRADE	REMARKS
5E3 HS	HMA, 5E3, HIGH STRESS	165	70-28P	TOP COURSE AWI = 260
	* BOND COAT	0.05-0.15 GAL		

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	JUNE 2006	SHEET 1 OF 2
CHECKED BY: BMM	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"

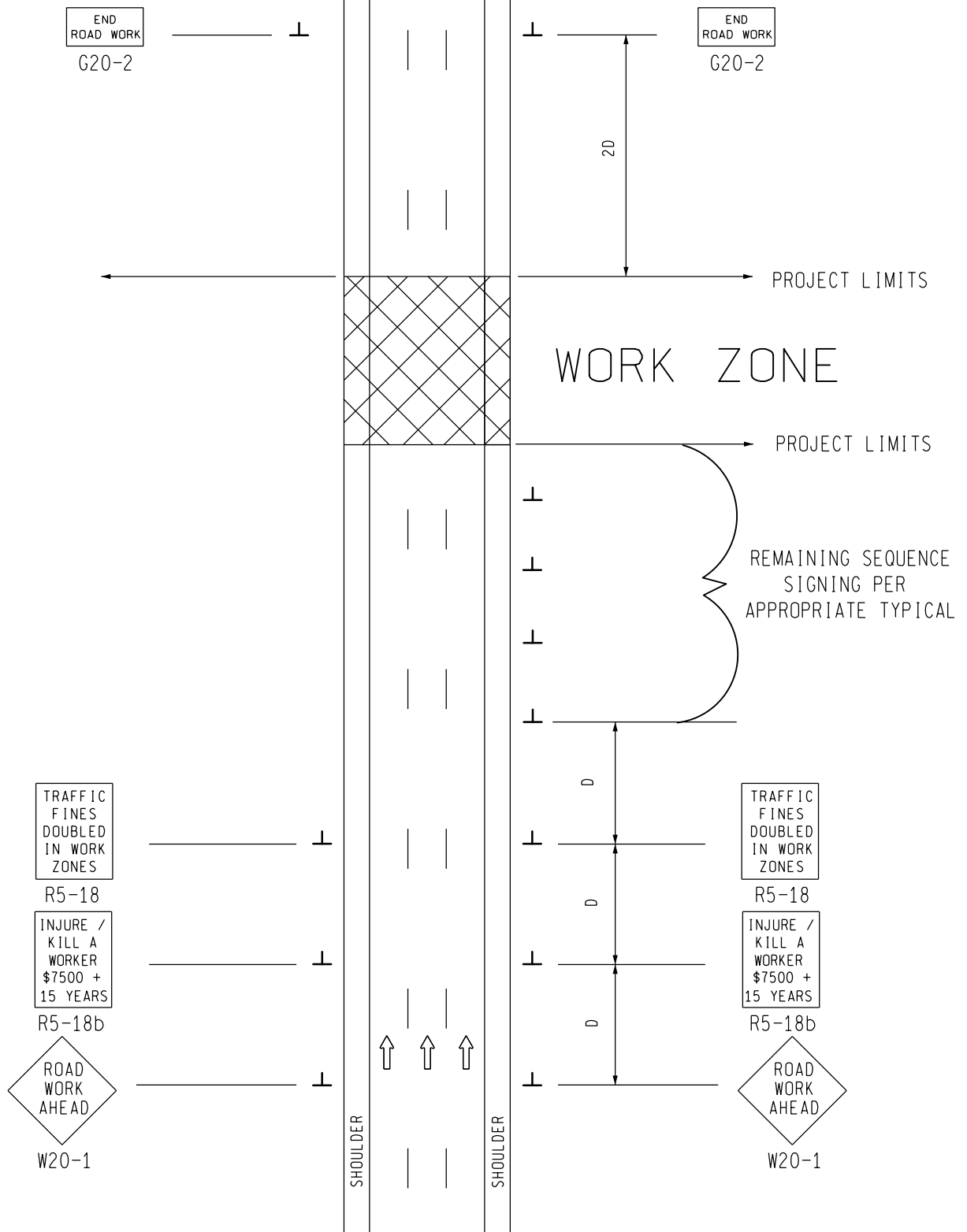
SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	230
50	279
55	329
60	411
65	476
70	542

* 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			

SIGN PLACEMENT
IS THE SAME FOR
BOTH DIRECTIONS



SIGN = 96 ft x 2 - TYPE B
FOR ONE DIRECTION OF TRAFFIC
W20-1 QUANTITY INCLUDED WITH
APPROPRIATE TYPICAL FOR
SEQUENCE SIGNING

NOT TO SCALE


<p>TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL</p>	<p>TYPICAL ADVANCE SIGNING TREATMENT FOR INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS WHERE ALL TRAFFIC CONTROL DEVICES ARE REMOVED AT END OF EACH WORK DAY ON A DIVIDED ROADWAY</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/M0080a.dgn REV. 10/13/2011</p>		

NOTES

30. THE APPROPRIATE ADVANCE SIGNING SEQUENCE(S), (M0030a THROUGH M0080a) SHALL BE USED ON ALL PROJECTS.
35. THESE SIGNS ARE INTENDED TO BE USED WITHIN THE LIMITS OF THE TEMPORARY SEQUENCE SIGNING AS IS SHOWN ON 1 OF 2. THESE SIGNS ARE NOT TO BE INTERMINGLED WITH ANY OTHER TEMPORARY SEQUENCE SIGNING EXCEPT AS SHOWN.

SIGN SIZES

G20-2	-	48" x 24"
R5-18	-	48" x 60"
R5-18b	-	48" x 60"
W20-1	-	48" x 48"

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL ADVANCE SIGNING TREATMENT FOR INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS WHERE ALL TRAFFIC CONTROL DEVICES ARE REMOVED AT END OF EACH WORK DAY ON A DIVIDED ROADWAY		
	DRAWN BY: CON:AE:djf	OCTOBER 2011	M0080a
CHECKED BY: BMM:CRB	PLAN DATE:		
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0080a.dgn REV. 10/13/2011			

NOT TO SCALE

END ROAD WORK

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.

END ROAD WORK

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.

SPEED LIMIT
X X

R2-1

PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.

SPEED LIMIT
X X

R2-1

PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.

SPEED LIMIT
X X

R2-1

WORK ZONE BEGINS

R5-18c



W4-2

LEFT LANE CLOSED AHEAD

W20-5



W20-1

KEY

- • • CHANNELIZING DEVICES
- ← LIGHTED ARROW PANEL
- TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT

SHOULDER

SHOULDER

WORK AREA VARIES

B

3L

L

D

D

D

D

D

D

SIGN = 232 ft ± 2 - TYPE B
TOTAL FOR BOTH STAGES
PLUS ADDITIONAL R2-1's
THROUGHOUT WORK AREA

MDOT
Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC
TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR
A ONE-LANE CLOSURE ON A DIVIDED
ROADWAY THAT CAN BE CONVERTED TO A
TWO-LANE CLOSURE, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf
CHECKED BY: BMM:CRB

OCTOBER 2011
PLAN DATE:

M0760a

SHEET
1 OF 3

NOT TO SCALE

END ROAD WORK

END ROAD WORK

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.

PLACE THIS SIGN ALONG WITH THE ADVANCE WORK ZONE SIGNING AS DEPICTED ON THE APPROPRIATE TYPICAL M0030a-M0080a.

SPEED LIMIT
X X

R2-1

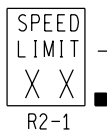
PLACE THROUGHOUT WORK AREA AS INDICATED AND AFTER ALL MAJOR CROSSROADS IF PERMANENT SIGNS ARE NOT IN PLACE.



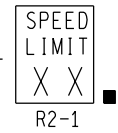
W4-2



W4-2



R2-1



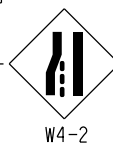
R2-1

WORK ZONE BEGINS
R5-18c

WORK ZONE BEGINS
R5-18c



W4-2



W4-2

LEFT TWO LANES CLOSED AHEAD
W20-5a

LEFT TWO LANES CLOSED AHEAD
W20-5a



W20-1



W20-1

SHOULDER

SHOULDER

KEY

- • • CHANNELIZING DEVICES
- ← LIGHTED ARROW PANEL
- ⇒ TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT

NOT TO SCALE

MDOT
Michigan Department of Transportation
TRAFFIC AND SAFETY
MAINTAINING TRAFFIC
TYPICAL

TYPICAL TEMPORARY TRAFFIC CONTROL FOR
A TWO-LANE CLOSURE ON A DIVIDED
ROADWAY, CONVERTED FROM A ONE-LANE
CLOSURE, NO SPEED REDUCTION

DRAWN BY: CON:AE:djf
CHECKED BY: BMM:CRB

OCTOBER 2011
PLAN DATE:

M0760a

SHEET
2 OF 3

FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0760a.dgn REV. 10/26/2011


NOTES

- 1B. D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M0020a FOR "D," "L," AND "B" 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.
- 4E. THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES SHOULD BE EQUAL IN FEET TO THE POSTED SPEED IN MILES PER HOUR ON TAPER(S) AND TWICE THE POSTED SPEED IN THE PARALLEL AREA(S).
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.
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"
R2-1 REGULATORY - 48" x 60"
R5-18c REGULATORY - 48" x 48"

NOT TO SCALE

 TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL	TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON A DIVIDED ROADWAY THAT CAN BE CONVERTED TO A TWO-LANE CLOSURE, NO SPEED REDUCTION		
DRAWN BY: CON:AE:djf	OCTOBER 2011	M0760a	SHEET
CHECKED BY: BMM:CRB	PLAN DATE:		3 OF 3
FILE: PW RD/TS/Typicals/Signs/MT NON FWY/M0760a.dgn REV. 10/26/2011			

SIGN MATERIAL SELECTION TABLE

SIGN SIZE	SIGN MATERIAL TYPE		
	TYPE I	TYPE II	TYPE III
≤ 36" X 36"		X	X
>36" X 36" ≤ 96" TO WIDE		X	
> 96" WIDE TO 144" WIDE	X	X	
> 144" WIDE	X		


TYPE I ALUMINUM EXTRUSION
 TYPE II PLYWOOD
 TYPE III ALUMINUM SHEET

ROUNDING OF CORNERS IS NOT REQUIRED FOR TYPE I OR II SIGNS.
 VERTICAL JOINTS ARE NOT PERMITTED.
 HORIZONTAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE NOT PERMITTED.

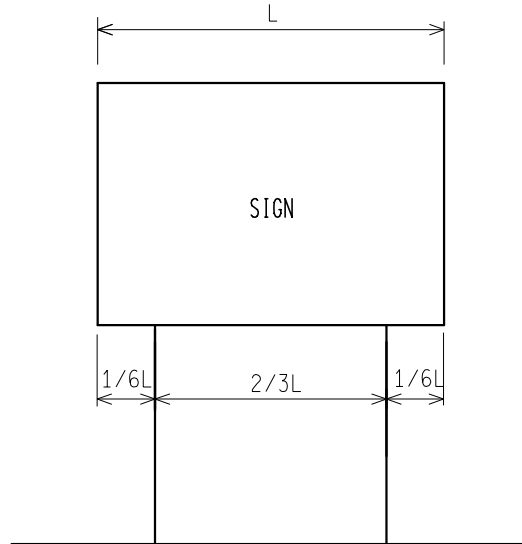
POST SIZE REQUIREMENTS TABLE

SIGN AREA (ft ²)	POST TYPE		
	U-CHANNEL STEEL	SQUARE TUBULAR STEEL	WOOD
≤ 9	1 - 3 lb/ft*	1 - 2" 12 or 14 GA*	N/A
9 ≤ 20	2 - 3 lb/ft	2 - 2" 12 or 14 GA	1 - 4" X 6"*
> 20 ≤ 30	N/A	N/A	2 - 4" X 6"
> 30 ≤ 60	N/A	N/A	2 - 6" X 8"
> 60 ≤ 84	N/A	N/A	3 - 6" X 8"

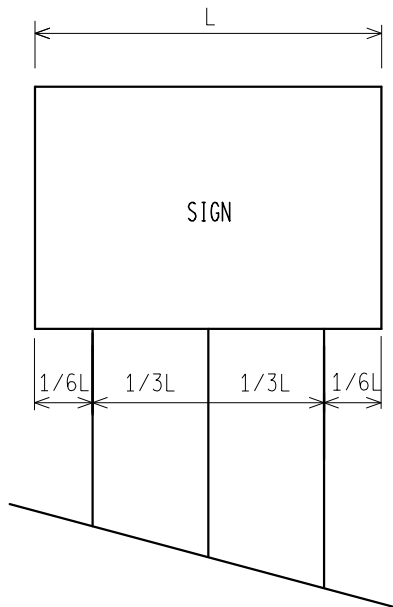
*SIGNS 4 FEET AND GREATER IN WIDTH REQUIRE 2 POSTS.
 SIGNS GREATER THAN 8 FEET IN WIDTH REQUIRE 2 OR 3 WOOD
 POSTS DEPENDING ON AREA OF SIGN.
 A MAXIMUM OF 2 POSTS WITHIN A 7' PATH IS PERMITTED.

 PREPARED BY DESIGN DIVISION	DEPARTMENT DIRECTOR Kirk T. Steudle APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS		
	DRAWN BY: <u>CON/ECH</u> CHECKED BY: <u>AUG</u>	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	_____ F.H.W.A. APPROVAL	<u>11/2/2017</u> PLAN DATE

2 POST SIGN SUPPORT SPACING



3 POST SIGN SUPPORT SPACING



* FOR ALL 11' AND 12' LONG SIGNS ON 3 WOOD SUPPORTS, SPREAD POSTS SO AS TO HAVE A 8' MIN. TO 9' MAX. DISTANCE BETWEEN OUTSIDE POSTS.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN

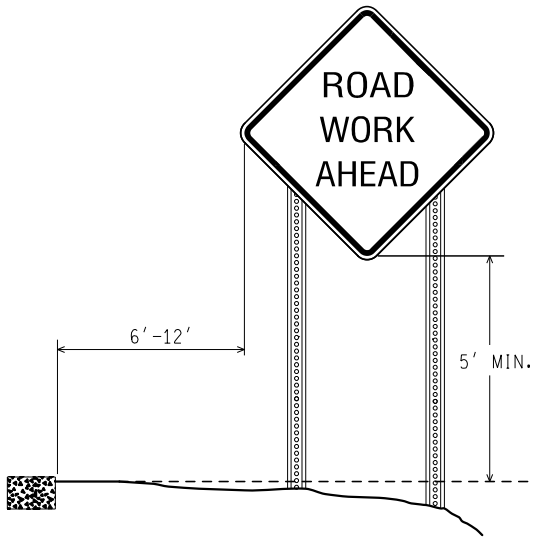
F.H.W.A. APPROVAL

11/2/2017
PLAN DATE

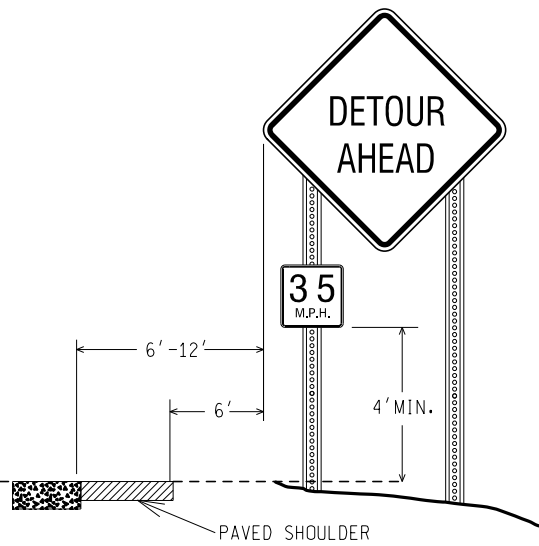
WZD-100-A

SHEET
2 OF 11

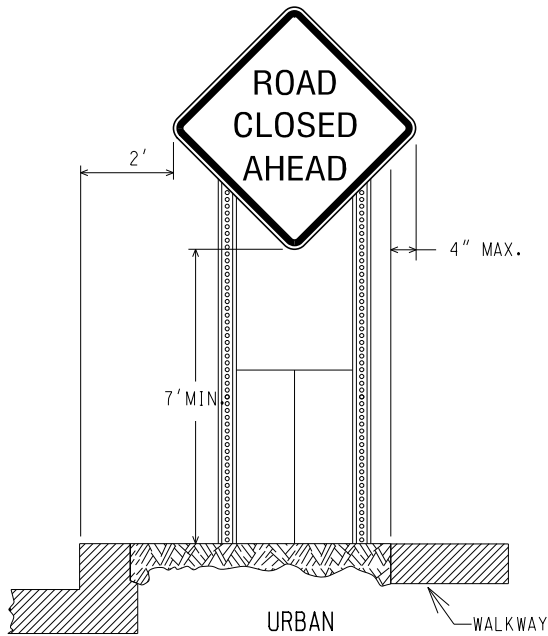
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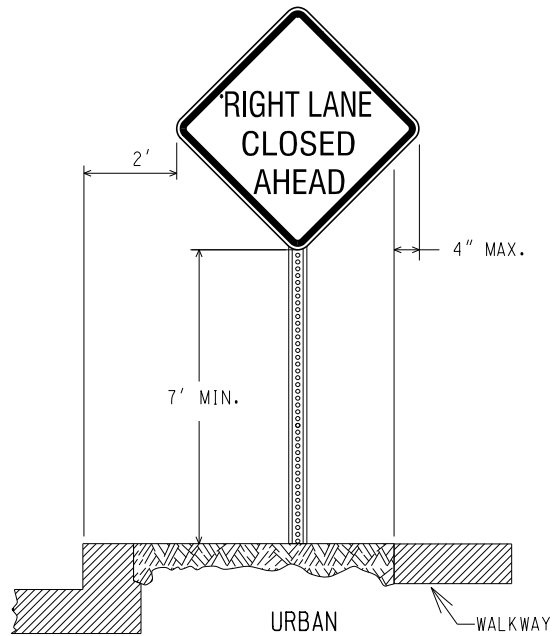
RURAL



RURAL WITH ADVISORY SPEED PLATE



(CURBED AREAS OR WHERE WALKWAYS ARE PRESENT)



(CURBED AREAS OR WHERE WALKWAYS ARE PRESENT)

BOTTOM HEIGHT AND OFFSET

NOT TO SCALE

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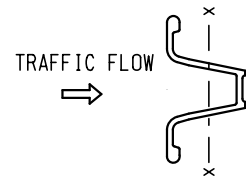
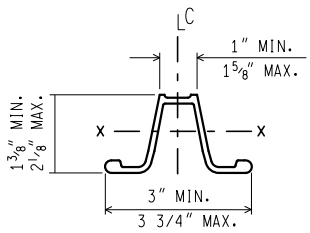
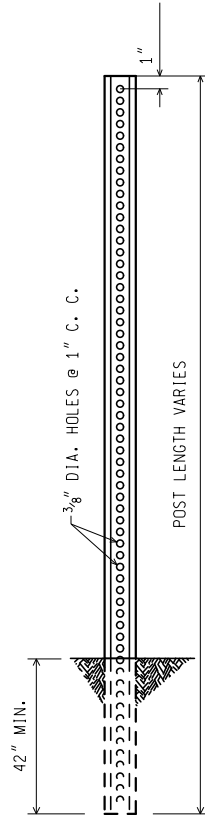
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WEIGHT = 3 lbs/ft
 SECT. MOD. X.-X. = 0.31 CUBIC INCHES MIN.

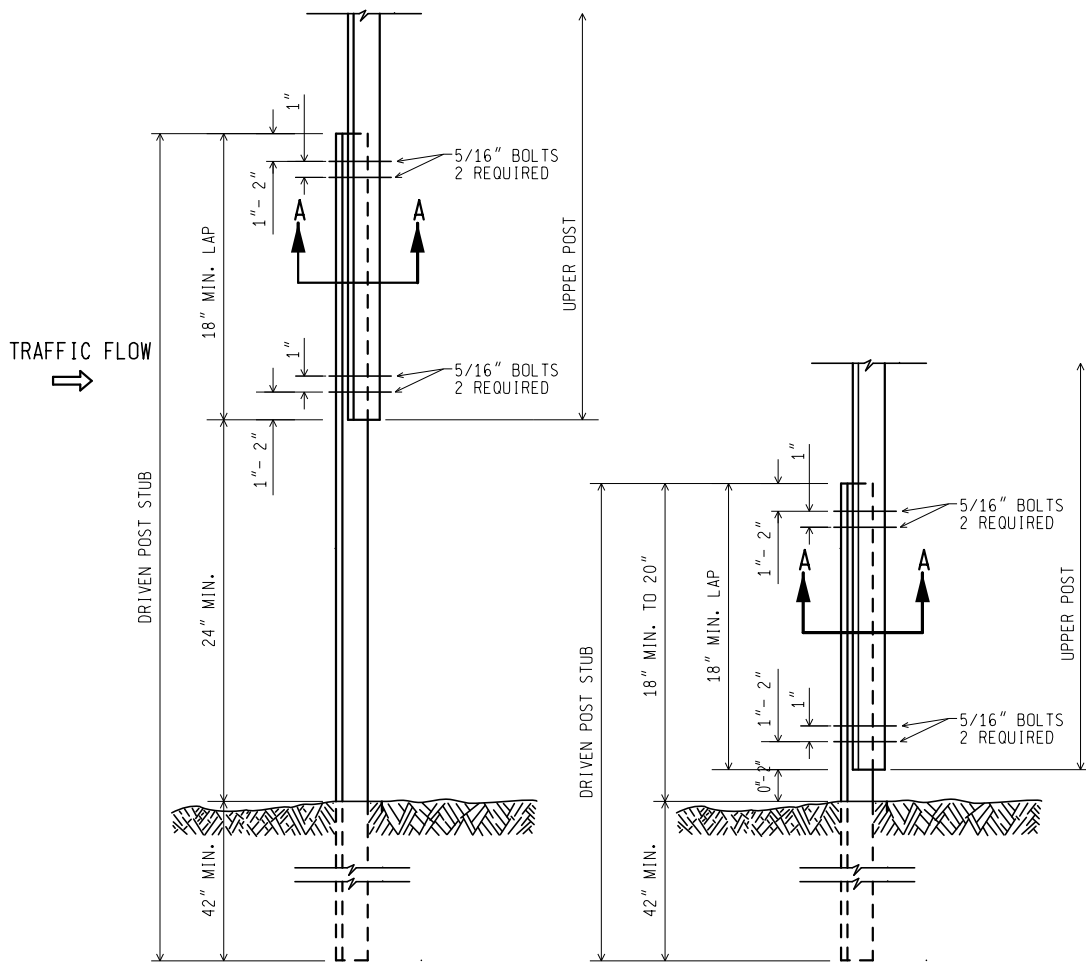
3 lb. U - CHANNEL STEEL POST
 (NO SPLICE)

MOUNT SIGN ON OPEN FACE OF
 U - CHANNEL STEEL POST

NOT TO SCALE

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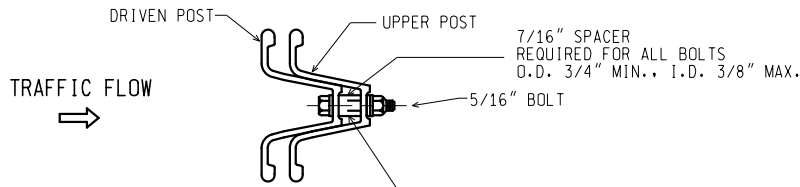
3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

MOUNT SIGN ON OPEN FACE OF
UPPER U - CHANNEL STEEL POST

NOT TO SCALE

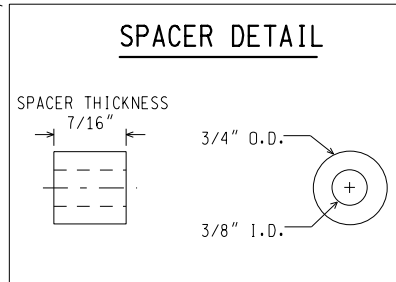
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 5 OF 11
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SECTION A-A

7/16" SPACER
 REQUIRED FOR ALL BOLTS
 O.D. 3/4" MIN., I.D. 3/8" MAX.



NOTES:

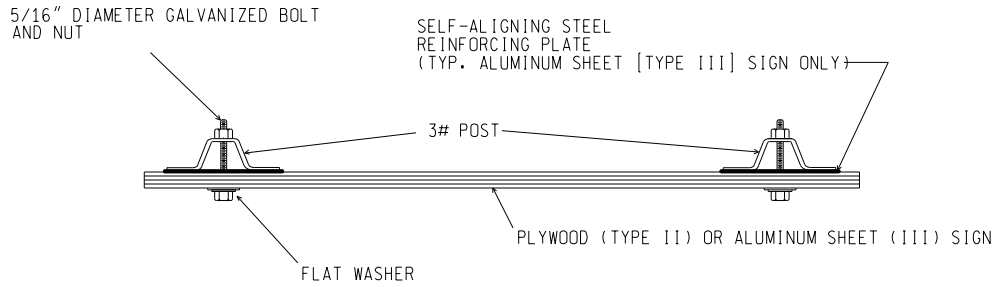
1. THE SPACER THICKNESS SHALL BE 1/16" LESS THAN THE GAP BETWEEN THE POST WHEN POSITIONED IN THE UNBOLTED CONFIGURATION.
2. THE EXTERIOR BOLT (CLOSEST TO LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN A PREPUNCHED HOLE 1" TO 2" FROM THE END OF THE LAP.
3. THE INTERIOR BOLT (FARTHEST FROM LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN THE NEXT PREPUNCHED HOLE.
4. THE DRIVEN POST SHALL ALWAYS BE MOUNTED IN FRONT OF THE UPPER POST WITH RESPECT TO THE ADJACENT ONCOMING TRAFFIC, REGARDLESS OF THE DIRECTION THE SIGN IS FACING.
5. THE SPLICE LAP SHALL BE FASTENED BY FOUR-5/16" DIA. GALVANIZED A449 BOLTS (SAE J429 GRADE 5) OR GALVANIZED A325 BOLTS.

3 lb. U - CHANNEL STEEL POST
 (WITH SPLICE)

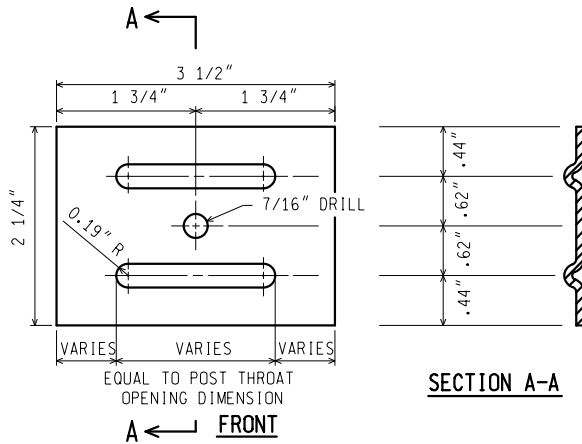
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 6 OF 11
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SIGN TO 3 lb. POST CONNECTION



NOTES: (FOR STEEL SIGN REINF' PLATE)

1. MATERIAL: 12 GAUGE CARBON STEEL.
2. TOLERANCE ON ALL DIMENSIONS $\pm 0.0625"$
3. FINISH-AFTER STAMPING AND PUNCHING, GALVANIZE ACCORDING TO CURRENT SPECIFICATIONS FOR ZINC (HOT GALVANIZE) COATINGS ON PRODUCTS FABRICATED FROM PLATES OR STRIPS

STEEL SIGN REINFORCING PLATE
REQUIRED FOR TYPE III SIGNS ONLY

3 lb. U - CHANNEL STEEL POST SIGN CONNECTION

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN

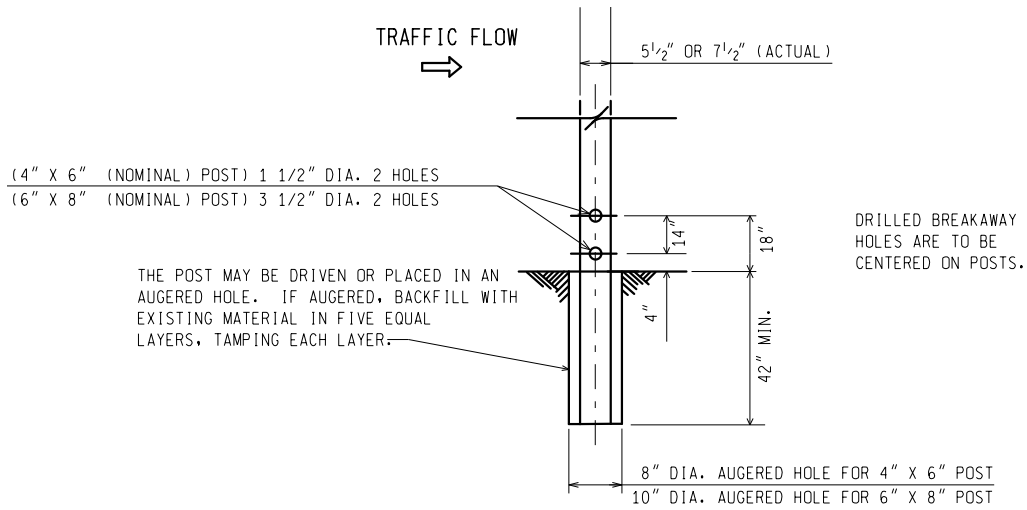
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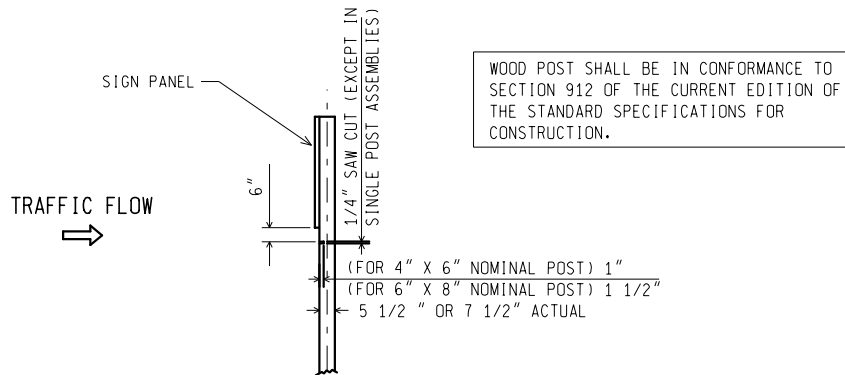
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WOOD POST BREAKAWAY HOLES/
DIRECT EMBEDMENT DETAILS



SAW CUT DETAIL
(MULTIPLE POST INSTALLATIONS)

WOOD POST DETAILS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN

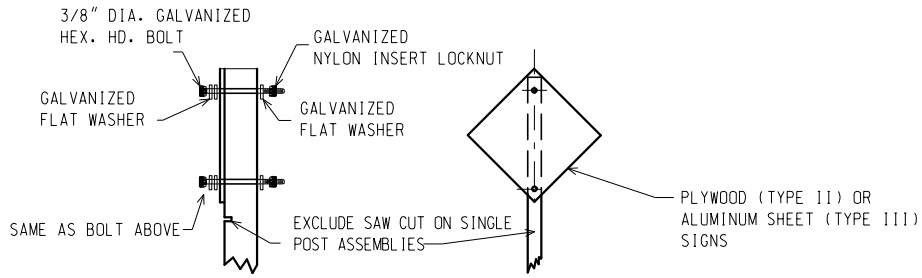
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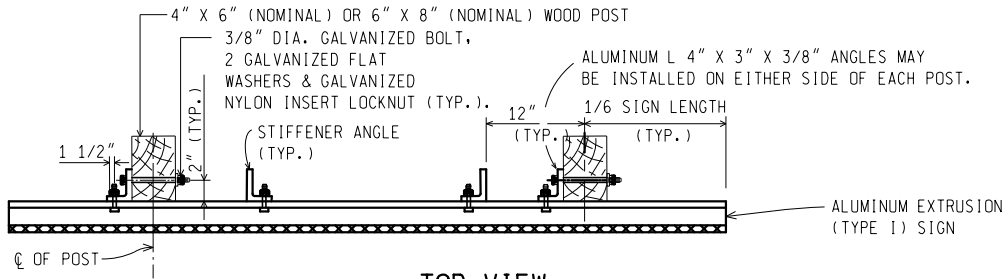
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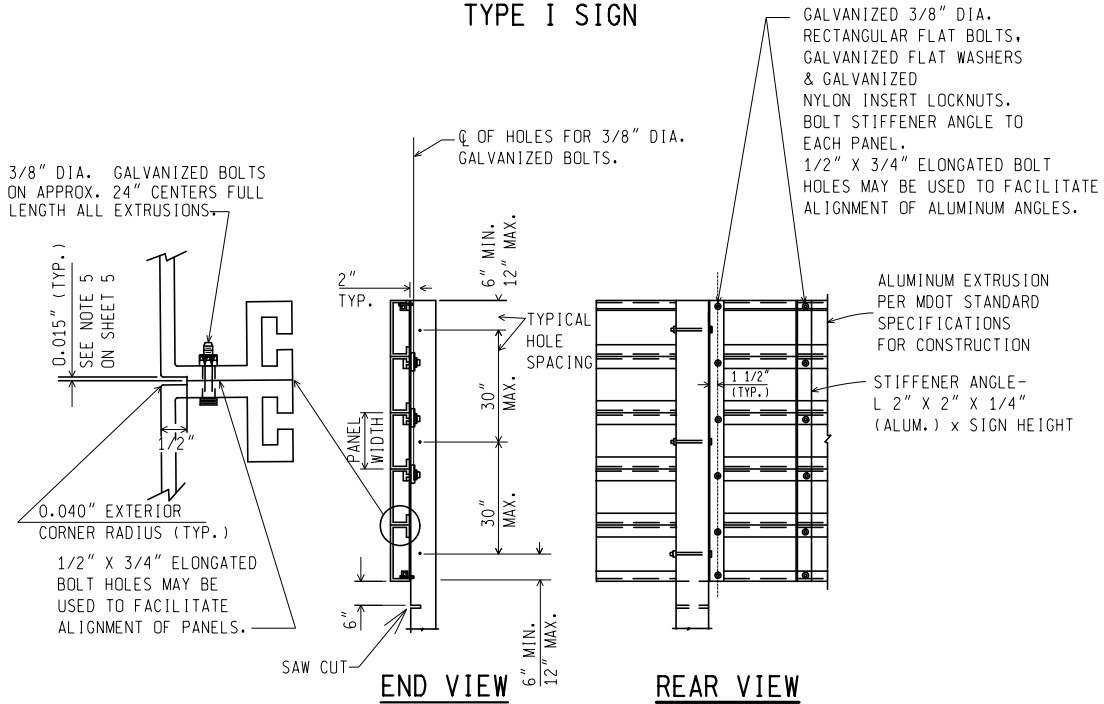
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TYPE II AND TYPE III SIGNS



**TOP VIEW
TYPE I SIGN**



TYPE I SIGN - ERECTION DETAILS

WOOD POST CONNECTIONS

NOT TO SCALE

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BUREAU OF DEVELOPMENT STANDARD PLAN

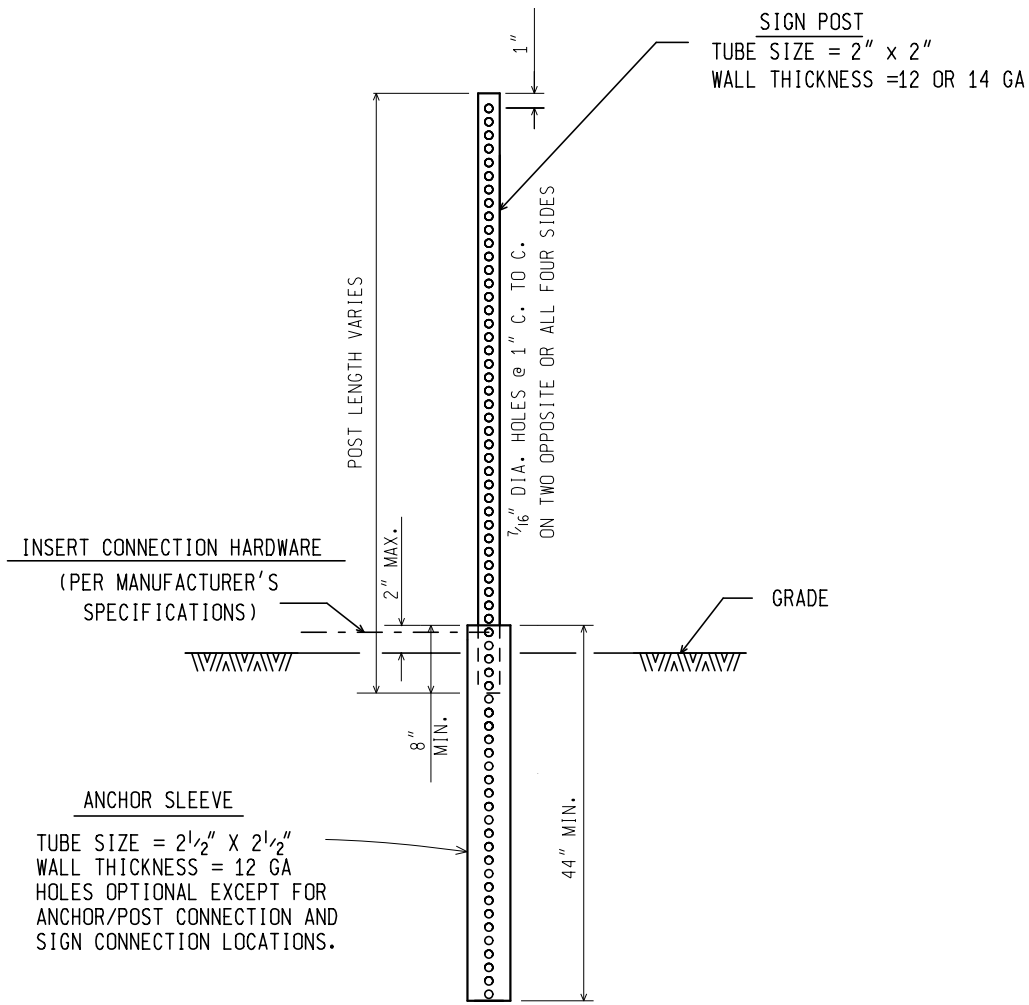
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SQUARE TUBULAR STEEL POST

NOT TO SCALE

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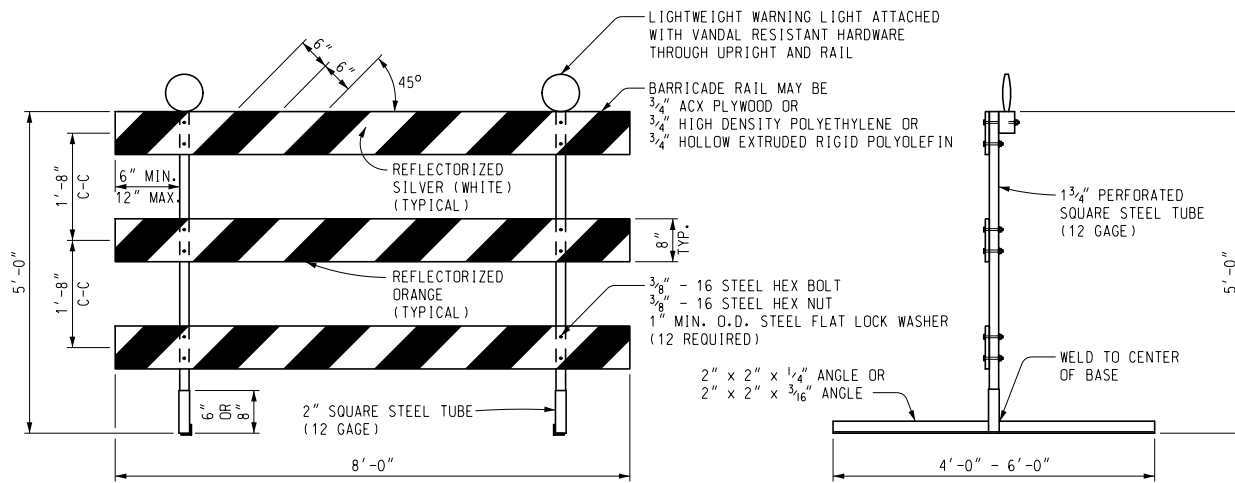
GENERAL NOTES:

1. A MAXIMUM OF TWO POSTS WITHIN A 7 FOOT PATH IS PERMITTED.
2. ALL SIGN POSTS SHALL COMPLY WITH NCHRP 350.
3. ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 42".
4. BRACING OF POST IS NOT PERMITTED.
5. SIGN SHALL BE LEVEL, AND UPRIGHT FOR THE DURATION OF INSTALLATION.
6. ERECT POSTS SO THE SIGN FACE AND SUPPORTS DO NOT VARY FROM PLUMB BY MORE THAN 3/16" IN 3'. PROVIDE A CENTER-TO-CENTER DISTANCE BETWEEN POSTS WITHIN 2 PERCENT OF PLAN DISTANCE.
7. NO MORE THAN ONE SPLICE PER POST, AS SHOWN, WILL BE PERMITTED.
8. POST TYPES SHALL NOT BE MIXED WITHIN A SIGN SUPPORT INSTALLATION.
9. NO VERTICAL JOINTS ARE PERMITTED IN SIGN. NO HORIZONTAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE PERMITTED IN SIGN
10. REMOVE SIGN POSTS AND/OR POST STUBS IN THEIR ENTIRETY WHEN NO LONGER REQUIRED.
11. ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING TEMPORARY SUPPORTS REQUIRED TO INSTALL, MAINTAIN, RELOCATE, AND/OR REMOVE THE TEMPORARY SIGN, INCLUDING SUPPORTS, ARE CONSIDERED TO BE INCLUDED IN THE COST OF THE TEMPORARY SIGN.
12. SAW CUTS IN WOOD POSTS ARE TO BE PARALLEL TO THE BOTTOM OF THE SIGN.
13. POSTS SHALL NOT EXTEND MORE THAN 4" ABOVE TOP OF SIGN.
14. TEMPORARY WOOD SUPPORTS DO NOT REQUIRE PRESERVATIVE TREATMENT.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 11 OF 11
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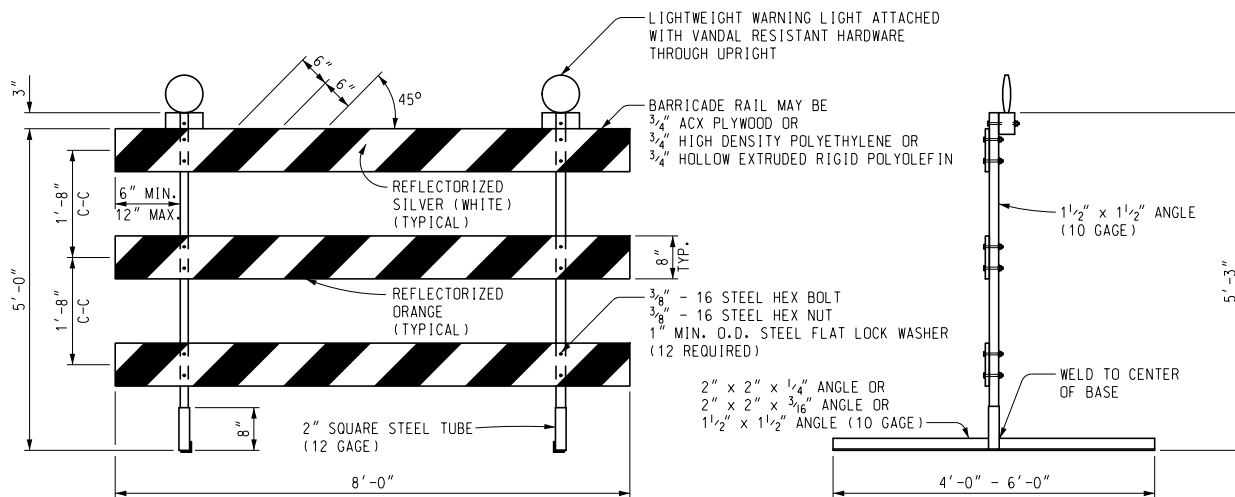
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FRONT ELEVATION

SIDE VIEW

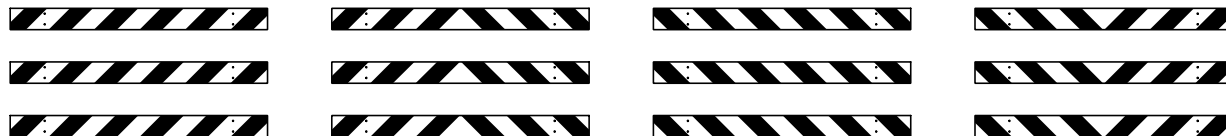
PERFORATED SQUARE STEEL TUBE OPTION



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



PREPARED BY
DESIGN DIVISION

DRAWN BY: ECH

CHECKED BY: MWB

DEPARTMENT DIRECTOR
Kirk T. Steudle

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES
ENGINEER OF DEVELOPMENT

APPROVED BY: _____
(SPECIAL DETAIL)
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

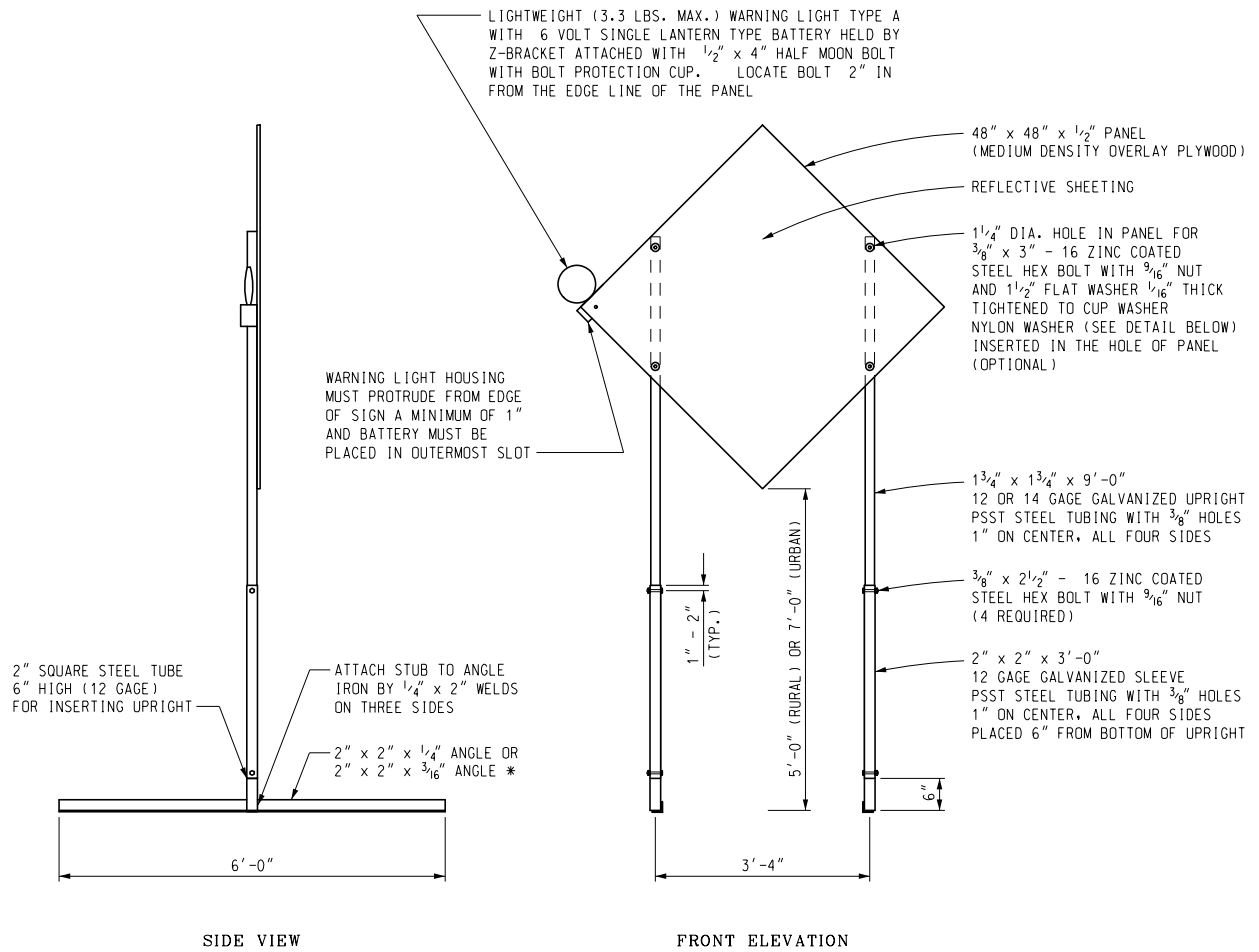
**Temporary
Traffic Control Devices**

F.H.W.A. APPROVAL

1/18/11
PLAN DATE

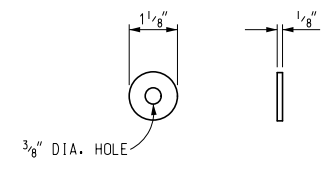
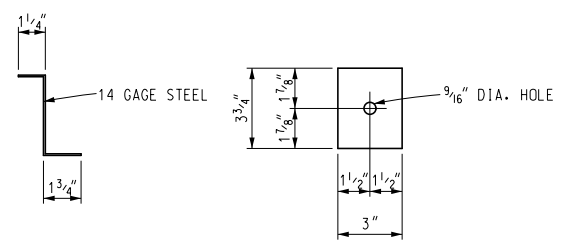
WZD-125-E

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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.



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

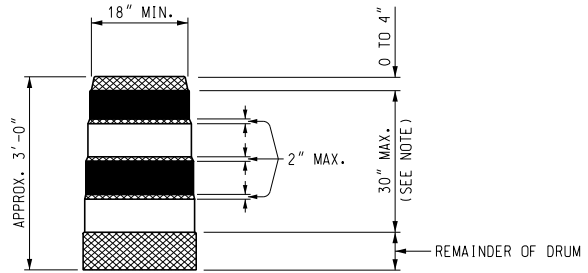
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	SPECIAL DETAIL F.H.W.A. APPROVAL	1/18/11 PLAN DATE	WZD-125-E	SHEET 2 OF 3
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- 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 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 DEVELOPMENT STANDARD PLAN

(SPECIAL DETAIL)
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1/18/11
 PLAN DATE

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