## **NOTES & GUIDELINES**

#### **GENERAL INFORMATION:**

- 1. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE DEVICES IN THIS TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED.
- 2. FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.
- 3. ALL DISTANCES ARE APPROXIMATE.
- 4. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH THE MN MUTCD.
- 5. AN ANNUAL FALL REVIEW OF ALL TRAFFIC CONTROLS WILL BE MADE TO PREPARE FOR WINTER MAINTENANCE OF THE PROJECT. THIS MAY INCLUDE ADJUSTMENTS OR EXCHANGE OF ONE TRAFFIC CONTROL DEVICE FOR ANOTHER. READJUSTMENTS MAY AGAIN BE REQUIRED IN THE SPRING.
- 6. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS TRAFFIC CONTROL PLAN THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.

### **SIGNING:**

- 1. ALL TRAFFIC CONTROL DEVICES, INCLUDING OVERHEAD SIGNS, ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION SHALL BE COVERED, REMOVED OR REVISED AS DIRECTED BY THE ENGINEER.
- 2. WHEN SIGNS ARE PLACED, THEY SHALL BE MOUNTED ON POSTS DRIVEN INTO THE GROUND AT THE PROPER HEIGHT AND LATERAL OFFSET AS SHOWN IN THE "TYPICAL TEMPORARY SIGN FRAMING & INSTALLATION DETAILS" IN THE PLAN. IF THIS IS NOT POSSIBLE, THEY WILL BE MOUNTED ON PORTABLE SUPPORTS AS APPROVED BY THE ENGINEER. WHEN THE SIGNS ARE REMOVED THE SIGN POSTS SHALL ALSO BE REMOVED AS SOON AS POSSIBLE.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA SIGNING NEEDED TO FACILITATE TRAFFIC SWITCHES OR FOR TRANSITIONING TRAFFIC FROM ONE STAGE TO ANOTHER.
- 4. ALL ORANGE WARNING AND ORANGE GUIDE SIGNS SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MODOT APPROVED PRODUCT LIST FOR "SHEETING FOR RIGID TEMPORARY WORK ZONE SIGNS, DELINEATORS, AND MARKERS".
- BARRICADES SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MODOT APPROVED PRODUCT LIST FOR "BARRICADE SHEETING",
- LONGITUDINAL DROPOFFS SHALL BE SIGNED AS SHOWN IN THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" FIELD MANUAL UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
- 7. THE CONTRACTOR SHALL COORDINATE THE PLACEMENT OF THE FINAL SIGNS TO ASSURE THAT THE FINAL SIGNS ARE PLACED AS NEEDED. OR PROVIDE TEMPORARY SIGNING AT THEIR EXPENSE UNTIL THE FINAL SIGNING IS PLACED.

### **PAVEMENT MARKING:**

- 1. THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.
- 2. OBLITERATE ANY CONFLICTING PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
- 3. TRANSITIONS AND TAPERS FOR TEMPORARY STRIPING SHALL BE WET REFLECTIVE OR SUPPLEMENTED WITH TEMPORARY RASIED PAVEMENT MARKERS AND SHOULD BE A MINIMUM OF 6" IN WIDTH.
- 4. INTERIM STRIPING SHALL CONSIST OF ALL CENTERLINE, NO PASSING ZONES, PAINTED ISLANDS, AND LANE LINES (INCLUDING TURN LANE LINES).
- TRPM'S (TEMPORARY RAISED PAVEMENT MARKERS) SHOULD BE USED TO SUPPLEMENT THE LONG TERM (MORE 5. THAN 3 DAYS) EDGELINES ON ALL TRANSITION AREAS.
- 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PLACEMENT OF TEMPORARY AND FINAL STRIPING. MODOT TRAFFIC PERSONNEL WILL ASSIST IN THE SPOTTING OF TRANSITION AREAS, GORES AND TAPERS.

#### **BARRIER & DELINEATION:**

1. THE CONTRACTOR SHALL FURISH. INSTALL AND MAINTAIN TOP MOUNTED BARRIER DELINEATORS WITH A MINIMUM OF 24 SQ. IN. OF REFLECTIVE SURFACE AREA AND BE PLACED AT 25'SPACES ON TOP OF THE BARRIER WHEN THE BARRIER IS WITHIN 10' OF TRAFFIC UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER. IF THE TRAFFIC ENGINEER REQUIRES SIDE MOUNTED BARRIER DELINEATORS, THEY WILL HAVE A MINIMUM OF 12 SQ. IN. OF REFLECTIVE SURFACE AREA AND BE PLACED AT 12.5' SPACES. IF A SMALLER APPROVED BARRIER DELINEATOR IS USED IT SHALL BE AT ONE HALF THE SPACING AND ONE HALF THE BID PRICE.

### **CONSTRUCTION INFORMATION SIGNING:**

- 1. THE CONTRACTOR SHALL USE CONSTRUCTION INFORMATION SIGNING AS SHOWN IN THE PLAN AND WHICH ARE TO BE USED AS FOLLOWS:
- 2. G20-X1 CLOSURE NOTICE SIGNS PAIRED WITH G20-X3 WORK ENDS SIGNS TO DISPLAY THE CORRECT START DATE AND AN ESTIMATED FINISH DATE AS APPROVED BY THE PROJECT ENGINEER.
- 3. G20-X2 WORK ZONE ADVANCE NOTICE SIGNS WITH THE CORRECT STARTING DATE DISPLAYED BEFORE WORK BEGINS. ONCE WORK BEGINS, THE START DATE LEGEND SHALL BE COVERED BY THE SUGGESTED PLAQUE CONTAINED IN THIS PLAN. IF NO ALTERNATE MESSAGE IS SUGGESTED OR IF DIRECTED BY THE PROJECT ENGINEER, THE CORRECT ESTIMATED FINISH DATE, MONTH, OR SEASON SHALL BE DISPLAYED.
- 4. CONSTRUCTION INFORMATION SIGNING NOT VISIBLE TO THE MOTORING PUBLIC ONCE WORK BEGINS WILL BE MOVED BY THE CONTRACTOR TO A SITE IN ADVANCE OF THE WORK ZONE OR CLOSURE AS DIRECTED BY THE PLAN OR PROJECT ENGINEER.

TRAF	FIC CONTROL DE	VICES & SYMBOLS LEGEND			INDEX	
<u>SYMBOL</u>	DESCRIPTION	₽	TR	AFFIC CO EET NO.	NTROL DESCRIPTIONS	
	AREA CLOSED TO	TRAFFIC / WORK AREA		1	TITLE SHEET	
F	TRAFFIC CONTROL	SIGN				
	TYPE C BARRICADE			2	PAY ITEM TABULATION SHEET	
0	DRUM-LIKE CHANNE	LIZER (TYPE B) = 🧕		3	TRAFFIC CONTROL TABULATION SHEET	
Ē	TYPE A FLASHING	WARNING LIGHT		4	SPECIAL SIGN DETAILS	
000	FLASHING ARROW E (4'X 8'UNLESS OT	BOARD TYPE C = ඉඉඉ HERWISE NOTED). එරින්		5	ADVANCED SIGNING	
	SOLID LINE PAVEN RAISED PAVEMENT	IENT MARKING WITH TEMPORARY MARKERS AT 10'SPACES		6	DETOURS	
<u> </u>	CONCRETE BARRIEF AT 30' SPACES	WITH DELINEATORS		7	ALTERNATE PEDESTRIAN ROUTE	
	IMPACT ATTENUAT	OR		8	STAGING	
5	PAVEMENT MESSAGE	E (LEFT ARROW SHOWN)				
<u>STRIP</u>	ING KEY			9	TYPICALS	
	CIRCLE - EPOXY					
<u></u>	TRIANGLE - PAINT					
<u>(</u> )	PENTAGON - REMOV PLAST	ABLE PREFORMED				
1S W] 4'' E>	ST DIGIT 2N IDTH PA ' OR 8" S B T D K K AMPLE: (4SW) =	D DIGIT TTERN - SOLID - SOLID - SOLID - SOLID - DOUBLE - DOUBLE	OF			
		SUPERVISION AND THAT I AM A DULY LICENSED PROF ENGINEER UNDER THE LAWS OF THE STATE OF MINNES	ESSIONAL OTA	DATE <u>5/31/2</u> DESIGNER <u>TECH</u>	2016 LIC. NO	
		T	TITLE	SHEET		
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# TRAFFIC CONTROL TABULATION

	ITEM	UNIT	STAGE ONE	STAGE_TWO	STAGE THREE	STA
ĺ	PORTABLE PRECAST CONC BARRIER DES 8337	LIN FT				
	RELOCATE PORT PRECAST CONC BAR DES 8337	LIN FT				
I	IMPACT ATTENUATOR BARRELS	EACH				
	RELOCATE IMPACT ATTENUATOR BARRELS	EACH				
ĺ	IMPACT ATTENUATOR ASSEMBLY	AMBY				
ĺ	RELOCATE IMPACT ATTENUATOR ASSEMBLY	AMBY				
I	TUBE DELINEATOR	EACH				
I	REPLACE TUBE DELINEATOR	EACH				
ĺ	TRAFFIC CONTROL	LUMP SUM				
I	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY				
I	MEDIAN BARRIER DELINEATOR	EACH				
ĺ	RAISED PAVEMENT MARKER TEMP.	EACH				
I	4" SOLID LINE PAINT	LIN FT				
I	4" BROKEN LINE PAINT	LIN FT				
I	8" DOTTED LINE PAINT (WR)	LIN FT				
	8" SOLID LINE PAINT (WR)	LIN FT				
	PAVEMENT MARKING REMOVAL	SQ FT				
	PAVEMENT MARKING REMOVAL	LIN FT				
ĺ	POLICE OFFICER	HOUR				
ĺ	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY				
I	WORKERS PRESENT SPEED LIMIT	UNIT DAY				
	DYNAMIC MERGE SYSTEM	UNIT DAY				
	TRAFFIC CONTROL SUPERVISOR	HOUR				
	TRAFFIC CONTROL SUPERVISOR	EACH				
	TRAFFIC CONTROL SUPERVISOR	LUMP SUM				
	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	LIN FT				
	REMOVABLE PREFORMED PLASTIC MASK (BLACK)	LIN FT				

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AGE FOUR	TOTAL
	11

# ITEM TABULATION CHART

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SHEETS

	<u>"R" SERIES</u>			
SIGN	SIGN NO.	COLOR	SIZE	
	R1-2	RED ON WHITE	36X36X36	
	R2-1	BLACK ON WHITE	26X30	
UUT UUE MAST TRIM UT	R3-7L	BLACK ON WHITE	30X30	
Marr Lat MAST Talk Mar	R3-7R	BLACK ON WHITE	30X30	
	R3-30AG	BLACK ON WHITE	36X30	
TRAIL CLOSED	R9-9a	BLACK ON WHITE	24X18	

	DEVICES					
ITEM	SIGN NO.	COLOR	SIZE			
Å	ΤΥΡΕ Α					
	TYPE B					
	TYPE C					
6000	ARROW BOARD		96" X 48"			
	AUDIBLE MESSAGE DEVICE					

TRAFFIC CONT	TROL TAI	BULATION	SHEET
	<u>"W" SER</u>	IES	
SIGN	SIGN NO.	COLOR	SIZE
ROAD WORK AFEAD	W20-1	BLACK ON ORANGE	48" × 48"
SHOULDER WORK	W21-5	BLACK ON ORANGE	48" × 48"

W21-X5R

W4-2R

W20-X3

W1-4R

W1-6

RIGHT LGANE CLOSED

MERGE

 $\overline{2}$ 

BLACK ON ORANGE

48" X 48"

48" X 48"

48" X 48"

48" X 48"

48" X 24"

<u>"G" SERIES</u>						
SIGN	SIGN NO.	COLOR	SIZE			
END ROAD WORK	G20-2A	BLACK ON ORANGE	48" X 24"			

<u>"M" SERIES</u>				

MISCELLANEOUS				

					TRAI	FFIC CO	NTROL	TABULATION	CHART	
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SPECIAL SIGN DETAILS

# SPECIAL SIGN DETAILS

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### SIGN DATA

SIGNS TO BE PLACED ON DRIVEN U-POSTS, SHALL BE PLACED IN ACCORDANCE WITH TABLE 1 OR TABLE 2 BELOW. IF THE TTC PLAN PLACES TTC DEVICES ADJACENT TO EXISTING STRUCTURES, THEN THEY SHOULD BE PLACED SLIGHTLY BEYOND THAT STRUCTURE, SO AS TO NOT COMPROMISE THAT STRUCTURE AND THE NEW DEVICE'S CRASHWORTHINESS (NO MORE THAN TWO U-POSTS WITHIN 84 INCHES, ALIGNED IN THE SAME PLANE). SIGN PANELS SHALL BE PLACED ON SIGN STRUCTURES TO MEET THE 5' MIN DEPICTED ON THE TYPICAL RURAL DESIGN DETAIL, THE 7' MIN DEPICTED ON THE TYPICAL URBAN DESIGN DETAIL, OR 7' MIN AND 9' MIN DEPICTED ON THE TYPICAL MOUNTING DETAIL ON THIS SHEET.

#### TABLE 1

STANDARD CONSTRUCTION SIGNS IN MN/DOT STANDARD SIGNS AND MARKINGS MANUAL

POSTS					
NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)		
2-U	18		13		
2-U	18		13		
2-U	24		13		
2-U	18		14		
2-U	30		14		
2-U	30		15		
2-U	42	1	16		
2-U	42	2	17		
2-U	54	2	16		
4-U	48	4	20		

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE. 2. SEE MN/DOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING HOLES.

TABLE 2

SPECIAL DESIGN CONSTRUCTION SIGNS

Έ	POSTS				
EIGHT (IN.)	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)	
78	2-U	42	2	20	
78	3-U	45	3	20	
78	4-U	45	4	20	

#### DESIGNER NOTE:

INCLUDE SPECIAL SIGN DETAILS IN THE TRAFFIC CONTROL PLAN IN TABLE TWO.

FOR TEMPORARY CONSTRUCTION SIGN FRAMING, THE CONTRACTOR MAY USE GRADE 5 ZINC PLATED BOLTS FOR ALL BOLTED CONNECTIONS, EXCEPT FOR THE KNEE BRACE CONNECTION TO THE REAR STUB POST, WHICH SHALL UTILIZE A 5/16 INCH STAINLESS STEEL BOLT AND NYLON INSERT LOCK NUT. ADDITIONAL SIGN FRAMING DETAILS CAN BE FOUND IN THE FRAME THE DETAILS AND ADDITIONAL SIGN FRAMING DETAILS CAN BE FOUND IN

IF THE CONTRACTOR ELECTS TO USE SOME OTHER TYPE OF SIGN SUPPORT (OTHER THAN U-CHANNEL SIGN POSTS) FOR MOUNTING CONSTRUCTION SIGNS, DETAILS OF THE PROPOSED SIGN STRUCTURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING THE SIGN STRUCTURE COMPONENTS. ANY SIGN STRUCTURE TO BE SUBMITTED TO THE ENGINEER SHALL BE AN FHWA ACCEPTED BREAKAWAY SIGN SUPPORT. SIGN STRUCTURE SHALL ALSO

GUIDE SIGNS SHOWN TO BE COVERED SHALL BE COVERED WITH THE SAME COLOR AS THE SIGN BACKGROUND. THE CONTRACTOR SHALL PLACE COVERS OR ADDITIONAL SIGNS USING A MINIMUM 1/8" PLASTIC SPACER BETWEEN THE INPLACE SIGN AND THE COVERING MATERIAL. HOLES WILL BE DRILLED IN THE COVER AND THE INPLACE SIGN AND SHALL BE PLACED IN ACCORDANCE TO THE SIGN PANEL DETAIL. SPACERS ARE REQUIRED. MID-PANEL SPACING

SHEET NO. OF



## SIMULATING A SOLID LINE AND A BROKEN LINE (50 FOOT CYCLE) WITH TRPMS



WHEN TRPMS ARE USED TO SIMULATE A LINE THE FOLLOWING GUIDELINE APPLIES:

SKIP STRIPE - USES 3 TRPM'S PER 10' SKIP STRIPE ON 5' CENTERS WITH A 40' GAP

SOLID LINE - USES TRPM'S ON 10' CENTERS ON TANGENTS, FLATTER GRADES AND CURVES UNDER 6 DEGREES. FOR CURVES OVER 6 DEGREES AND STEEP GRADES, THIS SPACING SHALL BE REDUCED TO 5' CENTERS.

#### **GENERAL NOTES:**

SEE SPECIAL PROVISIONS FOR INTERIM PAVEMENT MARKING GUIDELINES

THESE INTERIM PAVEMENT MARKING GUIDELINES APPLY TO ALL TEMPORARY TRAFFIC CONTROL ZONES OF AT LEAST 300' IN LENGTH ON TANGENT AND 50' ON CURVES OF 6 DEGREES OR GREATER.

- FOR ALL PROJECTS GREATER THAN 1.25 MILES IN LENGTH, INTERIM SKIP STRIPE PAVEMENT MARKINGS SHALL USE THE SAME CYCLE LENGTH AS FINAL PAVEMENT MARKINGS (50') AND 1. SHALL BE A MINIMUM OF 5'LENGTH.
- 2. ON PROJECTS GREATER THAN 300' IN LENGTH, BUT LESS THAN 1.25 MILES IN LENGTH, THE INTERIM MARKING SHALL MATCH THE CYCLE LENGTH AT EITHER END OF THE PROJECT. THE INTERIM STRIPE SHALL BE 5' IN LENGTH.
- 3. INTERIM STRIPING SHALL CONSIST OF ALL CENTERLINE, NO PASSING ZONES, PAINTED ISLANDS, AND LANE LINES (INCLUDING TURN LANE LINES).

ALL INTERIM MARKINGS SHALL BE PLACED PRIOR TO REMOVING LANE CLOSURE OR OPENING THE ROADWAY TO TRAFFIC.

FINAL MARKINGS AND ALL OTHER PAVEMENT MARKINGS INCLUDING EDGELINES, CHANNELIZING LINES, TURN LANE LINES, LANE REDUCTION TRANSITIONS, GORE MARKINGS AND OTHER LONGITUDINAL MARKINGS AND THE VARIOUS NON-LONGITUDINAL MARKINGS (STOP LINES, RAIL ROAD CROSSINGS, CROSSWALKS, WORDS, SYMBOLS, ETC) SHOULD BE PLACED WITHIN 14 CALENDAR DAYS OF OPENING ROAD TO TRAFFIC.

NOTE: WHEN FINAL MARKINGS ARE TO BE EPOXY AND PAINT IS USED FOR INTERIM SOLID LINES, A 10 MIL THICK LAYER APPLICATION OF A WATER-BASED TRAFFIC MARKING PAINT SHALL BE USED. WITH A 10 MIL LAYER OF PAINT APPLIED, BEADS SHOULD BE APPLIED AT A RATE OF 6 LBS/GAL. REMOVAL OF THE 10 MIL LAYER OF PAINT IS NOT REQUIRED PRIOR TO PLACING THE EPOXY.

### USING SIGNING AS INTERIM PAVEMENT MARKING

ON LOW VOLUME ROADS WITH AN ADT (AVERAGE DAILY TRAFFIC) OF LESS THAN 400 VEHICLES, THE SIGNS MAY BE USED IN LIEU OF PAVEMENT MARKINGS FOR UP TO 14 CALENDAR DAYS (SEE SECTION 5A.1 OF THE MMUTCD) OR AS DIRECTED BY THE PROJECT ENGINEER.

- IF NO INTERIM MARKINGS ARE USED A "NO CENTER STRIPE" SIGN (W8-12) SHALL BE USED FOR EACH 1. DIRECTION OF TRAVEL. THIS SIGN SHALL BE REPEATED AT MAJOR INTERSECTIONS OR ONE MILE INTERVALS. WHICHEVER IS GREATER.
- IF NOT ALREADY IN PLACE, A "DO NOT PASS" SIGN (R4-1) SHALL BE PLACED ON THE RIGHT SIDE 2. OF THE ROAD AT THE BEGINNING OF THE ZONE OPPOSITE OF THE "NO PASSING ZONE" SIGN (W14-3)

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## **PAVEMENT MARKINGS**

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