

PERMANENT PAVEMENT MARKING PLAN

NOTES & GUIDELINES

GENERAL INFORMATION:

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.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A AGENCY PLACED YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO 3 INCHES FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

JUST PRIOR TO THE PLACEMENT OF PAVEMENT MARKINGS THE ROAD SURFACE SHALL BE CLEANED AND FREE OF CONTAMINATION AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE.

APPLY ALL PAVEMENT MARKINGS AS RECOMMENDED BY THE MATERIAL MANUFACTURER.

PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

REFER TO SPECIAL PROVISIONS OR SPEC BOOK FOR GROUND IN/RECESSED PAVEMENT MARKING APPLICATION REQUIREMENTS.

CONTRAST MARKINGS:

STANDARD LINEAR PAVEMENT MARKINGS, CROSSWALK MARKINGS AND PAVEMENT MESSAGES WITH 1.5 INCH NON REFLECTIVE BLACK BORDERS.

PAINT:

GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 8 LBS/GAL. IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR AND PAVEMENT SURFACE TEMPERATURES IS 50°F OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OF DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

EPOXY:

THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE.

THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE.

APPLY EPOXY MARKINGS WITH A MINIMUM THICKNESS OF 20 MILS, GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 25 LB/GAL. THE "NO-TRACKING" CONDITION SHALL BE DETERMINED ON AN APPLICATION OF SPECIFIED THICKNESS TO THE PAVEMENT AND COVERED WITH GLASS BEADS AT THE RATE OF AT LEAST 25 LB/GAL.

PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR AND PAVEMENT SURFACE TEMPERATURES ARE 40°F OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OF DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

PREFORMED MARKINGS:

MANUFACTURER CERTIFICATIONS ARE REQUIRED FOR MATERIALS, AND WRITTEN CERTIFICATION SHALL BE PRESENT AT ANYTIME UPON REQUEST OF ENGINEER OR OTHER STATE PERSONAL.

DO NOT USE INLAY MATERIAL TO PIECE TOGETHER INDIVIDUAL LETTERS, SYMBOLS, OR CROSSWALKS. UTILIZE PRECUT KITS PROVIDED BY THE MANUFACTURER. TWO STRIPS OF 18" LINE MATERIAL MAY BE USED TO FORM CROSSWALK BLOCKS OF 36" WIDTH.

DO NOT USE NARROWER MATERIAL TO PIECE TOGETHER WIDER LINES.

IF THERE IS A CRACK OR JOINT IN ROAD SURFACE. (FOR TAPE LAY OVER CRACK OR JOINT THEN CUT TAPE IN EACH SIDE OF CRACK OR JOINT) FOR THERMO MAKE A DEEP SCORE IN THE MATERIAL ONCE IT IS SET BUT NOT ENTIRELY MOLED DOWN).

PREFORM TAPE LAY APPLICATION:

MAT TEMPERATURE SHALL BE CHECKED USING THERMOMETER TO MAKE SURE THE INLAY IS BEING DONE IN THE PROPER TEMPERATURE RANGE. THE TEMPERATURE SHOULD MEASURE BETWEEN 150°F (ASPHALT FIRM ENOUGH TO WALK) AND 200°F. APPLICATION BELOW 120°F MAY NOT GET PROPER INLAY. INLAYS ARE NOT PERMITTED AFTER SEPTEMBER 15th AS THE ASPHALT COOLS TOO FAST AT THIS TIME OF THE YEAR.

NO PRIMER IS TO BE USED FOR INLAY APPLICATIONS. DO NOT PLACE LANE LINES ON AN ASPHALT SURFACE. ROLLING OF ALL THE MARKINGS SHOULD BE LENGTHWISE IN THE DIRECTION THEY WERE APPLIED. FOR CROSSWALKS AND STOP BARS, INITIAL TAMPING WITH THE TAMPING CART IS RECOMMENDED USING ONLY 100 LBS. WEIGHT.







USE COMPACTION ROLLER TO EMBED (INLAY) MARKINGS INTO PAVEMENT SURFACE. USE MINIMUM SPEED AND WATER ON ROLLER. DO NOT USE VIBRATOR. IF MARKING BUCKLES OR DISTORTS SEVERELY IN FRONT OF ROLLER, MAT TEMPERATURE OR ROLLER SPEED MAY BE TOO HIGH.

BITUMINOUS PAVEMENT SURFACES WHERE PAVEMENT MARKINGS CANNOT BE INLAID IN THE HOT MAT SHALL HAVE A RECESS GROUND IN FOR THE PLACEMENT OF DURABLE REFLECTORIZED PAVEMENT MARKINGS. SEE CONTRUCTION SPECIFICATIONS.

PERMANENT PAVEMENT MARKING PLAN INDEX

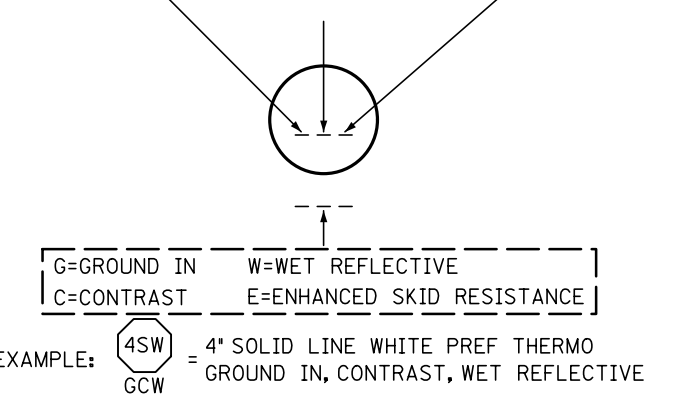
- 0 PERM PAVEMENT MARKING TITLE AND TABULATION
- 0-0 DETAILS
- 0-0 TYPICALS

SYMBOLS & MATERIALS LEGEND

-  CROSSWALK BLOCK
-  PAVEMENT MESSAGE (LEFT ARROW)
-  CIRCLE-EPOXY
-  SQUARE-PREF TAPE
-  TRIANGLE-PAINT
-  OCTAGON-PREF THERMO

STRIPING KEY

1ST DIGIT WIDTH 4", 8", ETC.	2ND DIGIT PATTERN	3RD DIGIT COLOR
	S - SOLID	W - WHITE
	B - BROKEN	Y - YELLOW
	T - DOTTED	B - BLACK
	D - DOUBLE	
	K - DOUBLE BROKEN	
	H - DOUBLE DOTTED	



DESIGNER'S NOTES:

REMOVE ALL UNNECESSARY MATERIAL NOTES FROM TITLE SHEET.

THIS SPACE MAY BE USED FOR PERMANENT PAVEMENT MARKING TABULATIONS SHEET.

I HEREBY CERTIFY THAT SHEETS 000 THROUGH 000 OF THIS PLAN WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: ENGR NAME HERE LICENSE #

DATE: **DATE** SIGNATURE: _____

DESIGNER TECH NAME HERE

TITLE: **PERMANENT PAVEMENT MARKING TITLE SHEET**

FOR REFERENCE ONLY

PLOTTED/REVISED: 15-JAN-2019

DISTRICT #: Metro
 I/PLOT NAME: PMSamplePlan
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<u>PAVEMENT MARKING TABULATION</u>		
ITEM	UNIT	QUANTITY
PAVEMENT MESSAGE PAINT	SQ FT	
PAVEMENT MESSAGE PAINT GR IN	SQ FT	
PAVEMENT MESSAGE EPOXY	SQ FT	
PAVEMENT MESSAGE EPOXY CONT	SQ FT	
PAVEMENT MESSAGE PREF TAPE	SQ FT	
PAVEMENT MESSAGE PREF TAPE GR IN (WR)	SQ FT	
PAVEMENT MESSAGE PREF THERMO	SQ FT	
PAVEMENT MESSAGE PREF THERMO GR IN	SQ FT	
4" SOLID LINE PAINT	LIN FT	
8" BROKEN LINE PAINT GR IN	LIN FT	
8" SOLID LINE PAINT (WR)	LIN FT	
8" DOTTED LINE PAINT GR IN (WR)	LIN FT	
4" BROKEN LINE EPOXY	LIN FT	
8" SOLID LINE EPOXY GR IN	LIN FT	
4" SOLID LINE EPOXY (WR)	LIN FT	
4" DOUBLE SOLID LINE EPOXY CONT	LIN FT	
4" DOUBLE SOLID LINE EPOXY GR IN CONT	LIN FT	
4" BROKEN LINE PREF TAPE	LIN FT	
4" BROKEN LINE PREF TAPE (GR IN)	LIN FT	
8" DOTTED LINE PREF TAPE (CONT)	LIN FT	
8" DOTTED LINE PREF TAPE (WR)	LIN FT	
8" DOTTED LINE PREF TAPE (WR) CONT	LIN FT	
8" DOTTED LINE PREF THERMO GR IN	LIN FT	
8" DOTTED LINE PREF THERMO GR IN CONT	LIN FT	
CROSSWALK EPOXY	LIN FT	
CROSSWALK PREF TAPE GR IN	SQ FT	
CROSSWALK PREF THERMO (WR)	SQ FT	
CROSSWALK PREF THERMO ESR GR IN CONT	SQ FT	
PAVEMENT MARKING REMOVAL	LIN FT	
PAVEMENT MARKING REMOVAL	SQ FT	
PAVEMENT MARKING SPECIAL	LIN FT	
PAVEMENT MARKING SPECIAL	SQ FT	
MOBILE RETROREFLECTOMETER MEASUREMENTS	LIN FT	

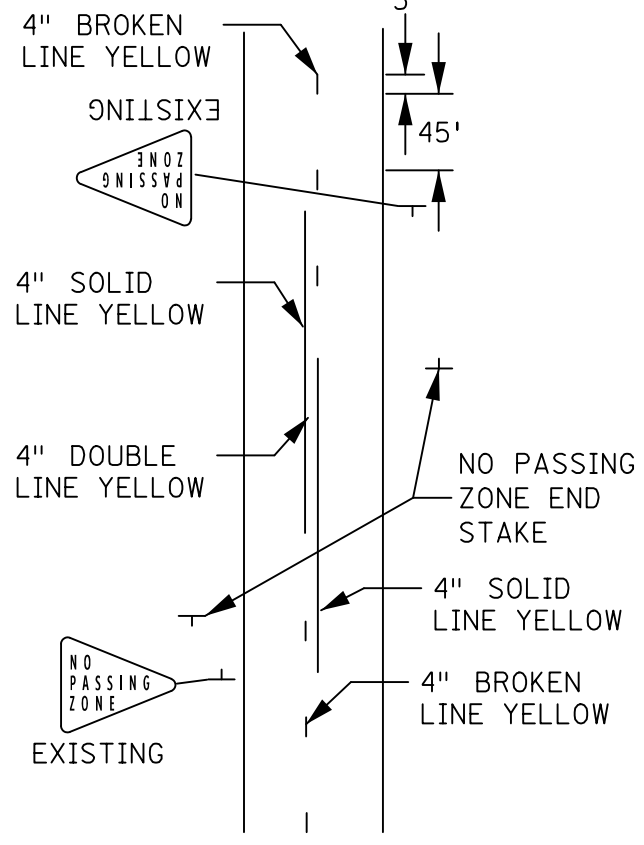
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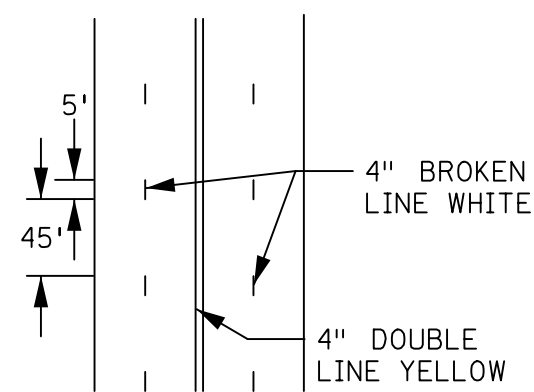
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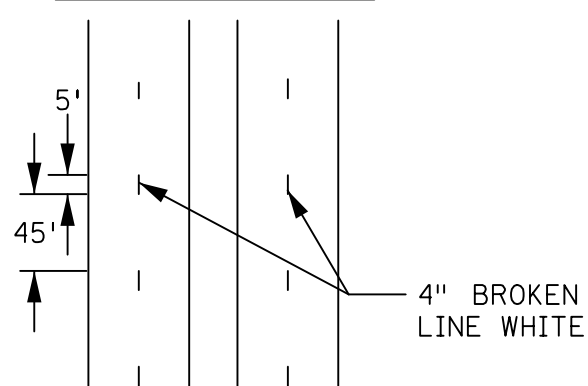
TWO LANE, TWO WAY



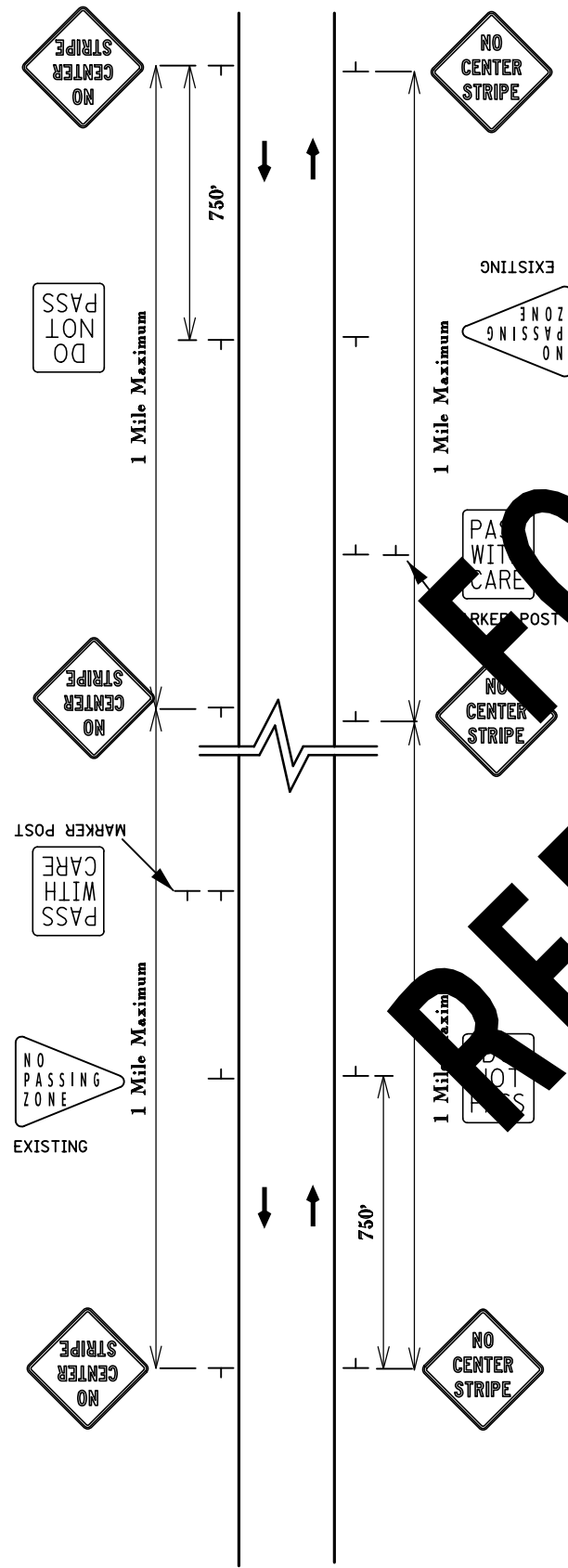
MULTI-LANE, UNDIVIDED



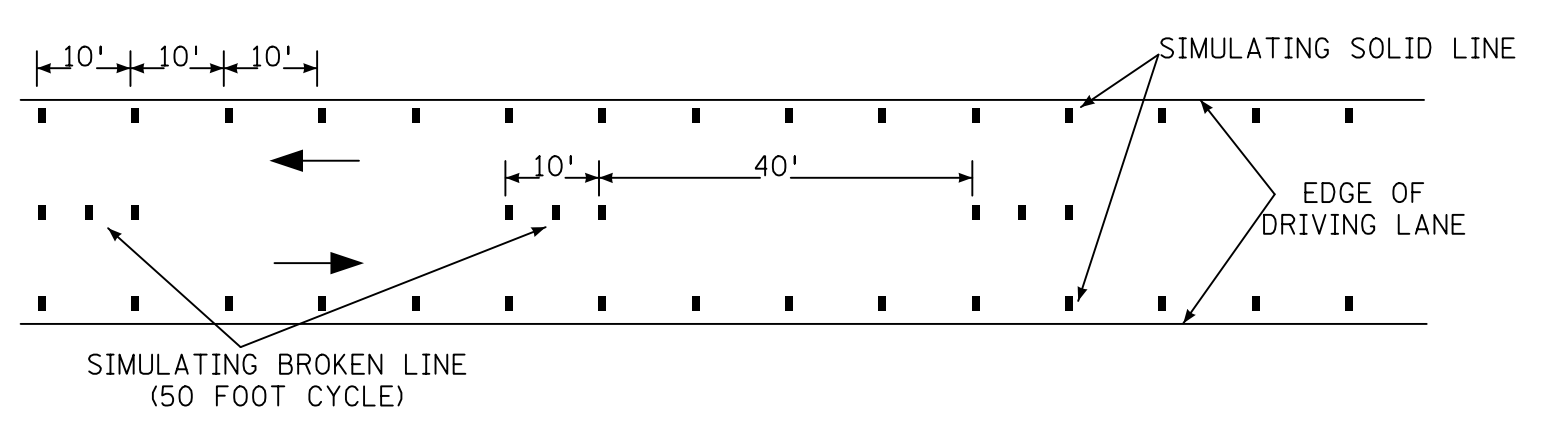
MULTI-LANE, DIVIDED



TWO LANE, TWO WAY WITHOUT MARKINGS LESS THAN 400 ADT



SIMULATING A SOLID LINE AND A BROKEN LINE (50 FOOT CYCLE) WITH TRPM'S



USING TRPM'S AS INTERIM PAVEMENT MARKING

WHEN TRPM'S ARE USED TO SIMULATE A LINE THE FOLLOWING GUIDELINE APPLIES:
 SKIP STRIPE - USES 7 TRPM'S PER 10' SKIP STRIPE ON 5' CENTERS WITH A 40' GAP
 SOLID LINE - USES TRPM'S ON 5' 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' CENTER.

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.
 IN 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 SHALL BE A MINIMUM OF 10' IN LENGTH. DOTTED LINE CYCLE SHALL BE 3' LINE 12' GAP UNLESS SPECIFIED OTHERWISE IN THE PLAN.
 IN ALL PROJECTS GREATER THAN 300' IN LENGTH, BUT LESS THAN 1.25 MILES IN LENGTH, THE INTERIM MARKINGS SHALL MATCH THE CYCLE LENGTH AT EITHER END OF THE PROJECT. THE INTERIM SKIP STRIPE SHALL BE 5' IN LENGTH. DOTTED LINE CYCLE SHALL BE 3' LINE 12' GAP UNLESS SPECIFIED OTHERWISE IN THE PLAN.

ALL INTERIM MARKINGS SHALL BE PLACED PRIOR TO REMOVING LANE CLOSURE OR OPENING THE ROADWAY TO TRAFFIC. INTERIM PAVEMENT MARKINGS SHALL CONSIST OF CENTER LINE (INCLUDING NO-PASSING ZONES), PAINTED ISLANDS (MINUS CROSSHATCHING), AND ALL LANE LINES (INCLUDING TURN LANE LINES). AND SHALL BE THE SAME WIDTH AS THE CORRESPONDING PERMANENT PAVEMENT MARKINGS.

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

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.

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

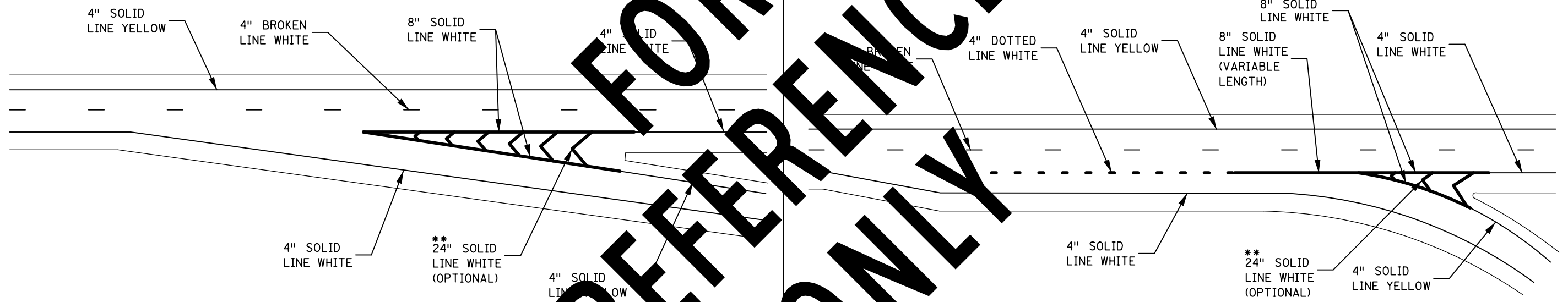
INTERIM PAVEMENT MARKINGS

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DOTTED AND CHANNELIZING LINE APPLICATIONS FOR EXIT RAMP WITH TAPERED DECELERATION LANE

DOTTED AND CHANNELIZING LINE APPLICATIONS FOR EXIT RAMP WITH PARALLEL DECELERATION LANE



FOR REFERENCE ONLY

DESIGNER'S NOTES:

- 4" DOTTED WHITE LANE LINE IS OPTIONAL IN THE DECELERATION LANE TAPER.
- ** SEE "CROSSHATCHING" TYPICAL FOR DESIGN AND PLACEMENT OF CROSSHATCHING.

DESIGNER'S NOTES:

- 4" DOTTED WHITE LANE LINE IS OPTIONAL IN THE DECELERATION LANE TAPER.
- ** SEE "CROSSHATCHING" TYPICAL FOR DESIGN AND PLACEMENT OF CROSSHATCHING.

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PAVEMENT MARKING TYPICALS

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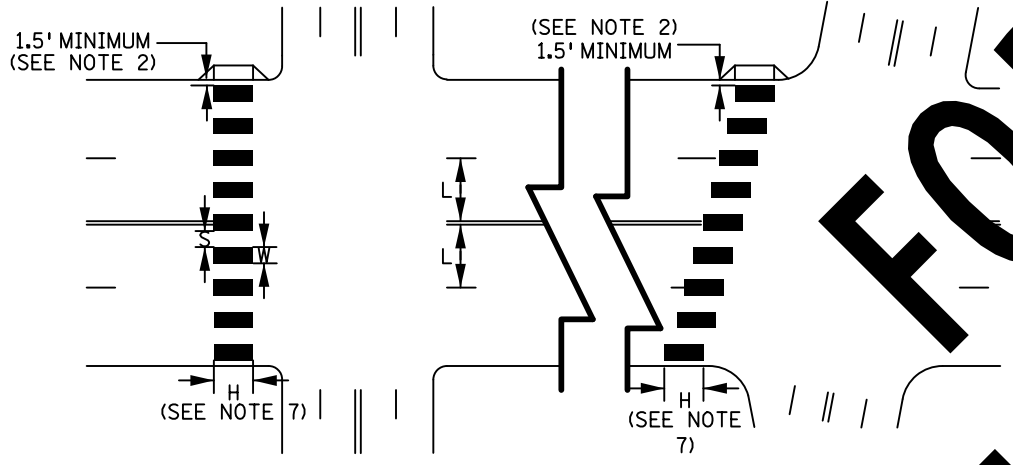
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LICENSED PROFESSIONAL ENGINEER

STATE PROJ. NO. 0000-000 (TH 000) SHEET NO. PMXX OF PMXX SHEETS

MARKINGS FOR PEDESTRIAN CROSSWALKS

(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREA	(S) WIDTH OF SPACE	ALTERNATE (W) WIDTH OF PAINTED AREA	ALTERNATE (S) WIDTH OF SPACE
9'	2.0'	2.5'	—	—
10'	2.5'	2.5'	2.0'	3.0'
11'	2.5'	3.0'	2.0'	3.5'
12'	3.0'	3.0'	2.5'	3.5'
13'	3.0'	3.5'	—	—



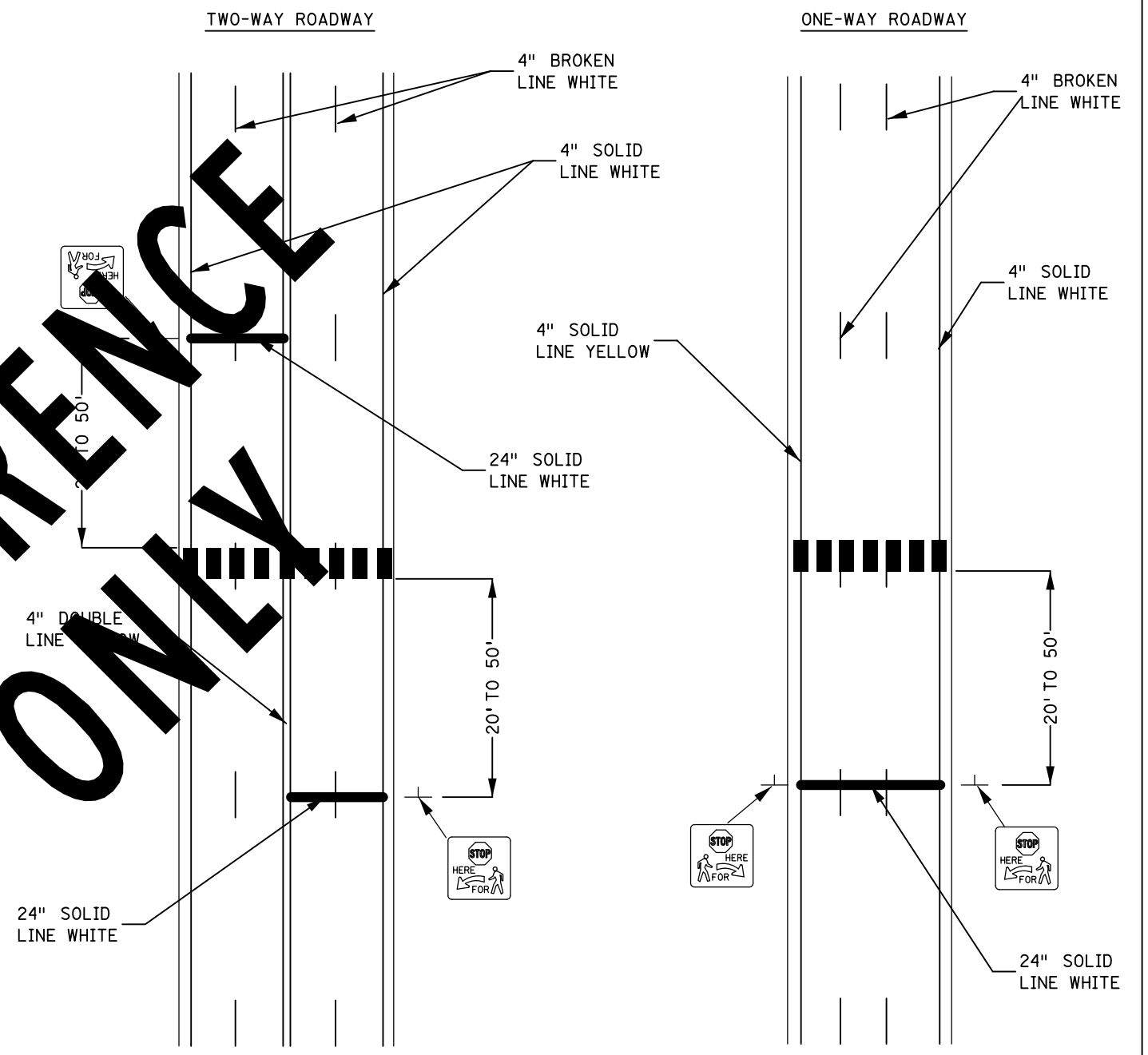
- NOTES:
1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
 2. A MINIMUM OF 1.5 FT. CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB FACE. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
 3. ON TWO LANE TWO WAY STREETS, USE SPACING SHOWN FOR AN 11 FT. INSIDE LANE.
 4. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MEDIAN SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
 5. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.
 6. THE BLOCKS SHALL BE PLACED SO THAT THEY ARE NOT LOCATED IN THE WHEEL PATH OF THE VEHICLES.
 7. THE BLOCKS SHALL BE A MINIMUM OF 6' LONG AND AT LEAST AS LONG AS THE TRUNCATED DOMES, FOR FANNED TRUNCATED DOMES THE BLOCKS SHALL BE AT LEAST AS LONG AS THE APPROACHING SIDEWALK OR SHARED USE PATH.
 8. THE ALTERNATE (W) AND (S) MAY BE USED WHEN BLOCKS LONGER THAN 6' (H) ARE USED.

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STOP LINE AT UNSIGNALIZED MID BLOCK CROSSWALKS

DESIGNER'S NOTES:
SEE "MARKINGS FOR PEDESTRIAN CROSSWALKS" TYPICAL FOR PLACEMENT AND DIMENSIONS OF CROSSWALKS.

NOTE:
SIGN LOCATION FOR REFERENCE ONLY.



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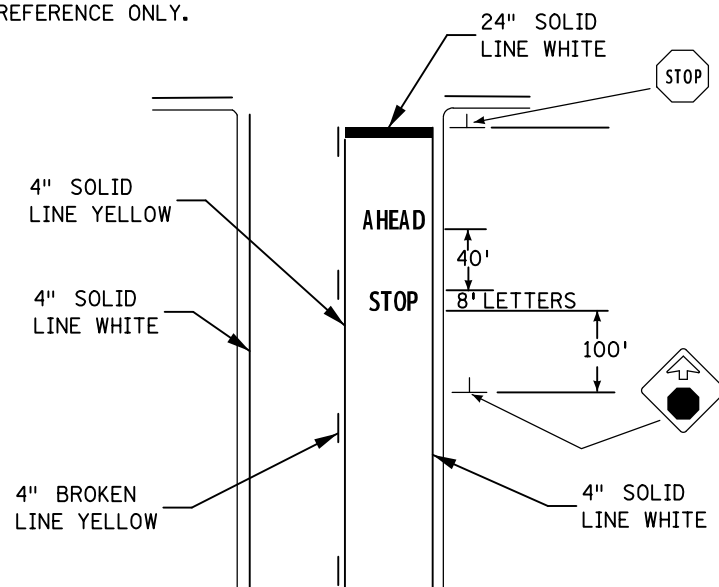
PAVEMENT MARKING TYPICALS

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STOP LINE AND "STOP AHEAD"

NOTE:
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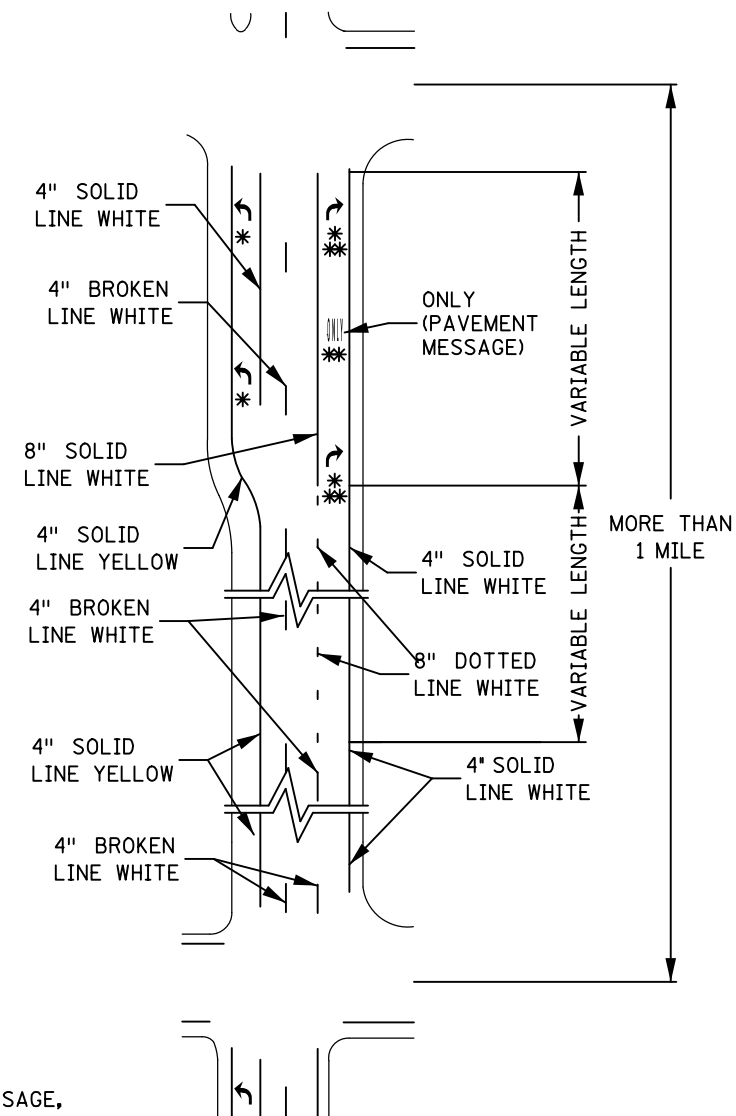
DESIGNER'S NOTES:

- DO NOT PLACE A STOP AHEAD PAVEMENT MESSAGE IF THE INTERSECTION HAS ADEQUATE LIGHTING.
- PLACE ONLY ONE SET OF STOP AHEAD PAVEMENT MESSAGES. IF A STOP AHEAD SIGN NEEDS TO BE PLACED MORE THAN 1000 FT FROM THE STOP SIGN, CONTACT THE DISTRICT TRAFFIC ENGINEER TO DETERMINE IF WHERE A SECOND SET OF "STOP AHEAD" PAVEMENT MESSAGES SHOULD BE PLACED.
- THE STOP LINE SHOULD ORDINARILY BE PLACED 4 FEET IN ADVANCE OF A PERPENDICULAR TO THE NEAREST CROSSWALK LINE. IN THE ABSENCE OF A MARKED CROSSWALK, THE STOP LINE SHOULD BE PLACED AT THE NEAREST STOPPING POINT, AND IN NO CASE NO MORE THAN 30 FT OR LESS THAN 4 FT FROM THE NEAREST EDGE OF THE INTERSECTING CURB LINE OR THE NEAR EDGE OF THE THRU LANE.
- IF A STOP LINE IS USED IN CONJUNCTION WITH A STOP SIGN, IT SHOULD ORDINARILY BE PLACED IN LINE WITH THE STOP SIGN. HOWEVER, IF THE SIGN CANNOT BE LOCATED EXACTLY WHERE VEHICLES ARE EXPECTED TO STOP, THE STOP LINE SHOULD BE PLACED AT THE STOPPING POINT.
- USE TABLE 7.4 IN THE (TEM) TO DETERMINE THE MINIMUM LENGTH OF A NO PASSING ZONE IN ADVANCE OF A STOP CONDITION.
- PAY FOR STOP LINE AS 24" SOLID LINE.

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MODIFIED:

APPLICATION OF AUXILIARY LANE-DROP MORE THAN 1 MILE BETWEEN INTERSECTIONS



DESIGNER'S NOTES:

- * SEE "TURN LANE WITH ARROW MESSAGE, OR WITH DOTTED LINE EXTENSION" TYPICALS FOR PLACEMENT AND NUMBER OF ARROWS OR OPTIONAL LANE LINE EXTENSIONS. (MNMUTCD SECTION 3B.20)
- ** TURN ARROWS REQUIRED, "ONLY" PAVEMENT MESSAGE RECOMMENDED. MNMUTCD 3B.20 PLACE "ONLY" PAVEMENT MESSAGE EQUAL DISTANCE BETWEEN TURN ARROWS

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PAVEMENT MARKING TYPICALS

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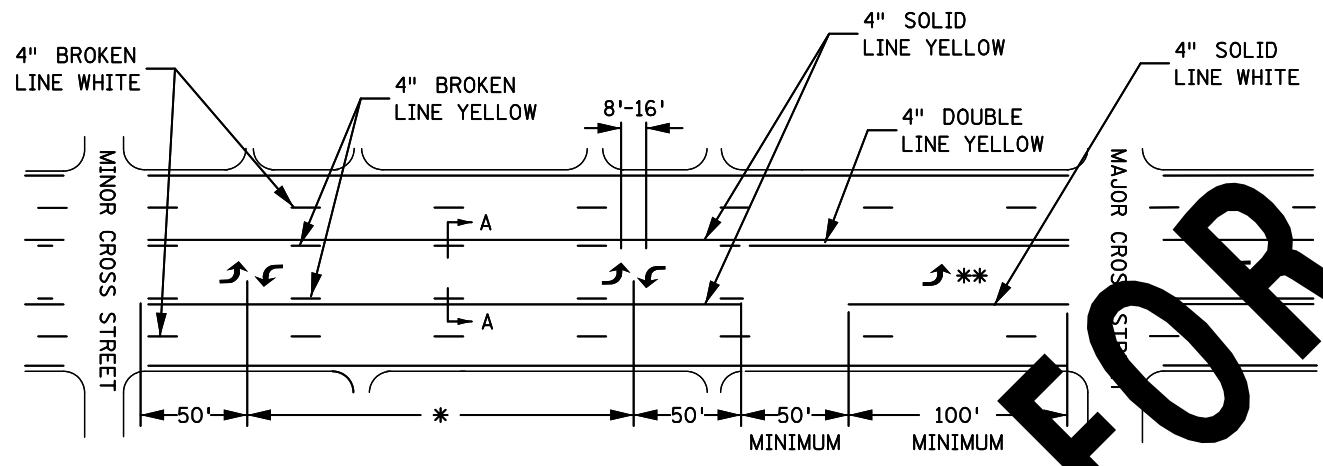
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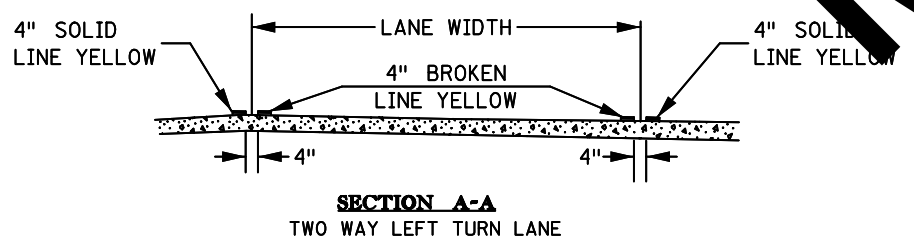
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TWO-WAY LEFT-TURN LANE

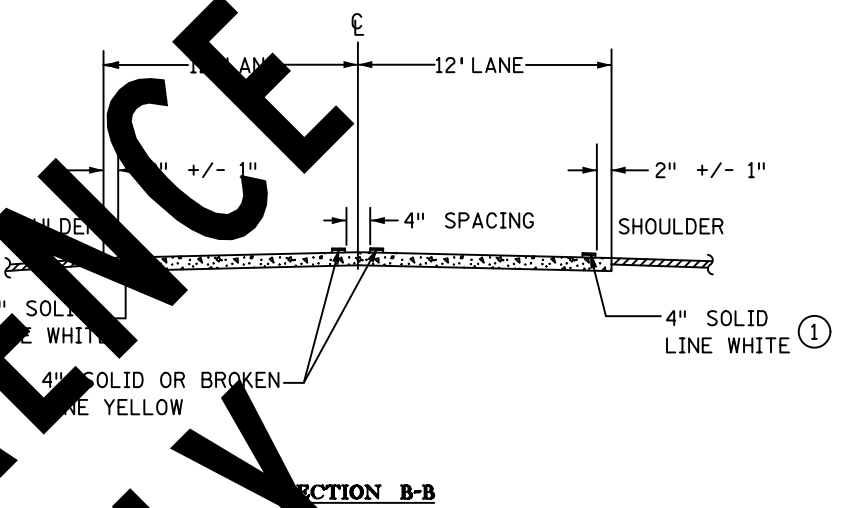


DESIGNER'S NOTES:
 SINGLE-DIRECTION LEFT-TURN ARROWS SHALL NOT BE USED IN LANES BORDERED ON BOTH SIDES BY TWO-WAY LEFT TURN LANE MARKINGS.
 * ~~BASED ON BASE CONDITION AND TRAFFIC VOLUMES.~~
 ** SEE "TURN LANE MESSAGE BOARD MESSAGE, OR WITH PORTABLE MESSAGE BOARD FOR PLACEMENT AND NUMBER OF ARROWS OR OPTIONAL LANE LINE EXTENSIONS. (MNMUTCD SECTION 3B.20)

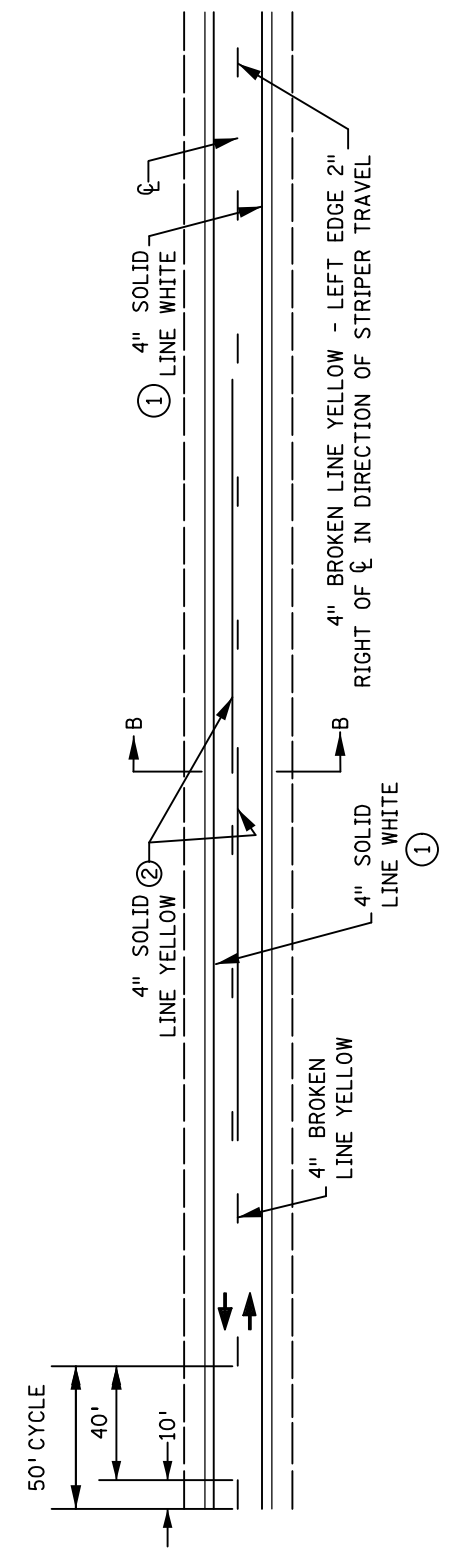


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TWO-LANE, TWO-WAY



DESIGNER'S NOTES:
 ① USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES.
 ② CONTACT TRAFFIC ENGINEER FOR NO PASSING ZONE SURVEY.



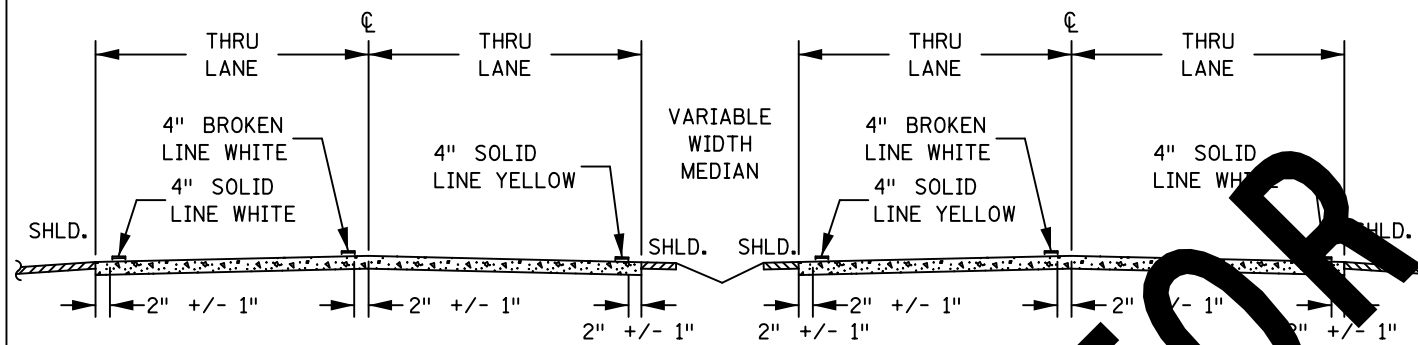
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PAVEMENT MARKING TYPICALS

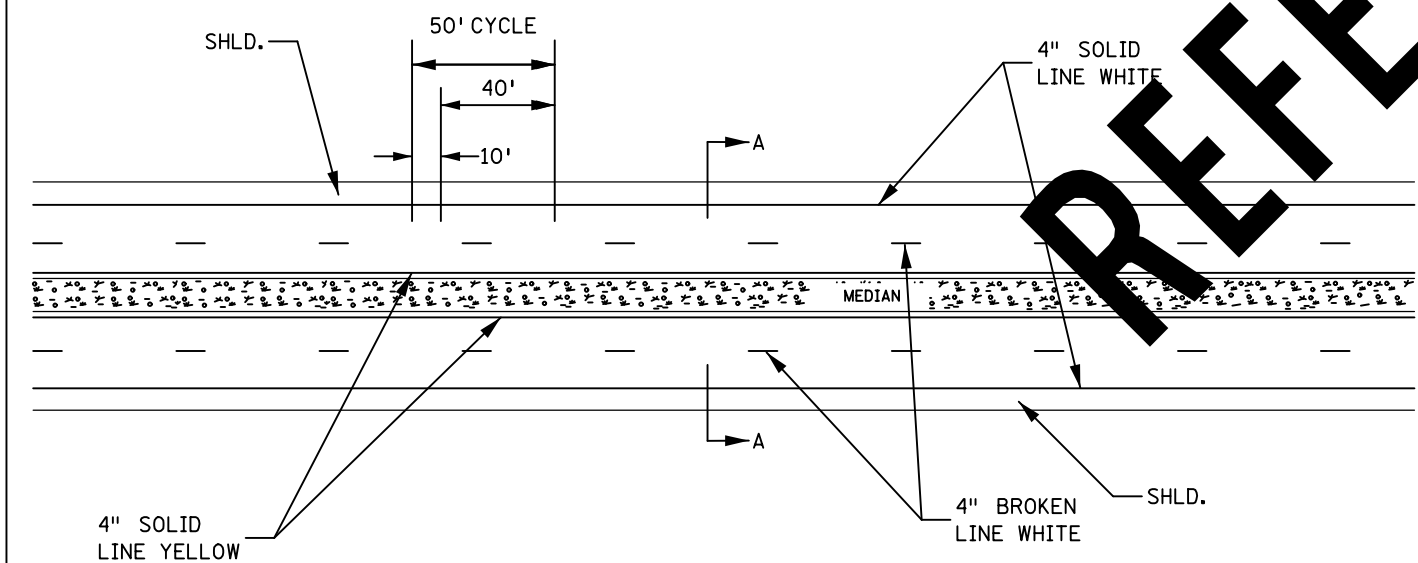
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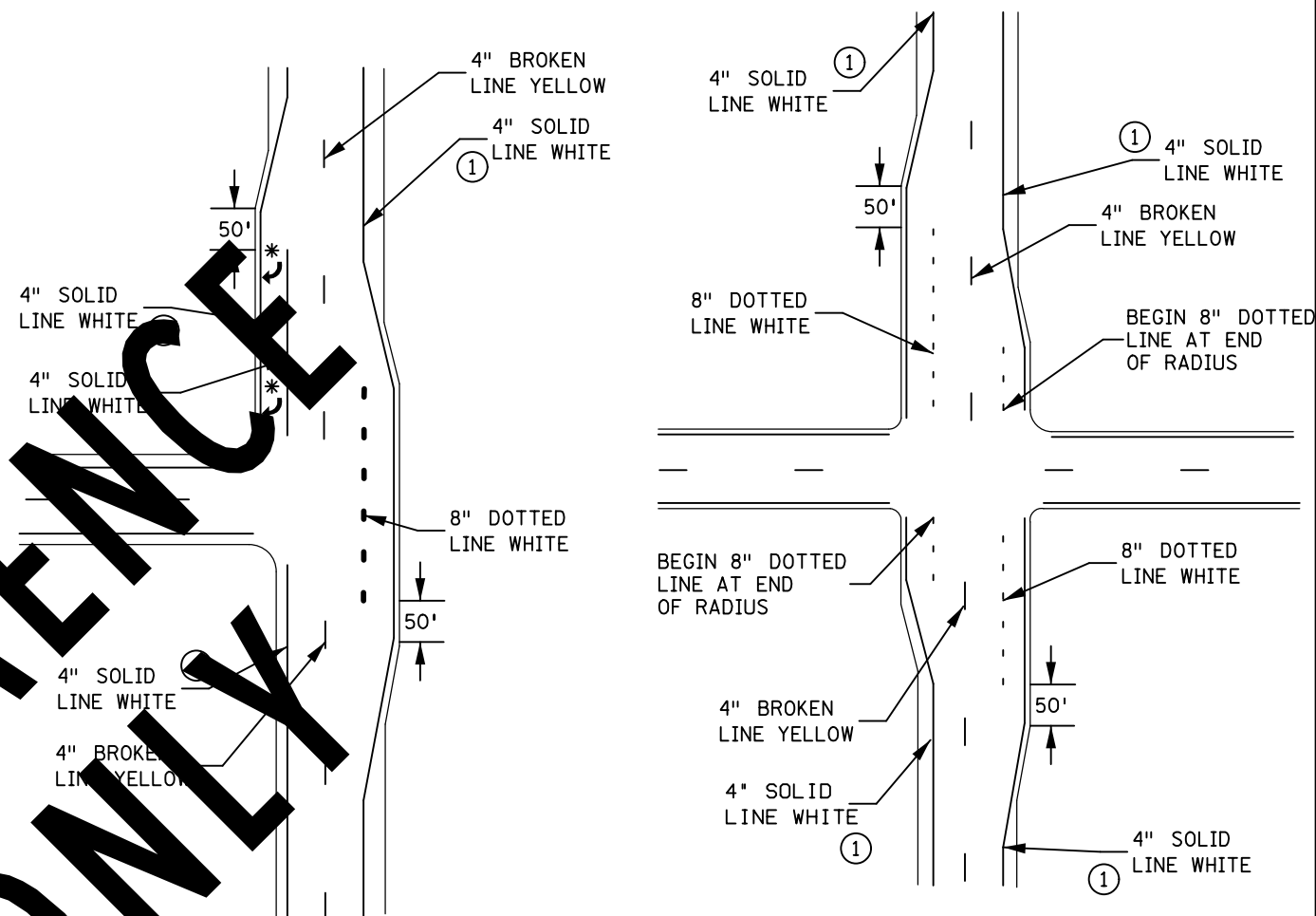
FOUR-LANE DIVIDED LANE



SECTION A-A
FOUR LANES



BYPASS LANE



DESIGNER'S NOTES:

NO PASSING ZONE STRIPING IS OPTIONAL AT THE DISCRETION OF THE DISTRICT TRAFFIC ENGINEER FOR RURAL INTERSECTIONS. NO PASSING ZONES AT INTERSECTIONS SHALL BE STRIPED FOR 500 FT ON BOTH SIDES OF THE INTERSECTION IF IT IS LOCATED WITHIN THE CITY LIMITS. NO PASSING ZONES AT INTERSECTIONS SHALL BE STRIPED IF LOCATED WITHIN ANY NO PASSING ZONE.

* SEE "TURN LANE MESSAGE PLACEMENT" TYPICAL FOR PLACEMENT AND NUMBER OF ARROWS OR OPTIONAL LANE LINE EXTENSIONS. (MNMUTCD SECTION 3B.20)

① MAY USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES.

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PAVEMENT MARKING TYPICALS

DRAWN BY: XXX

CHECKED BY: XXX

CERTIFIED BY _____ LIC. NO. _____ DATE {DATE}

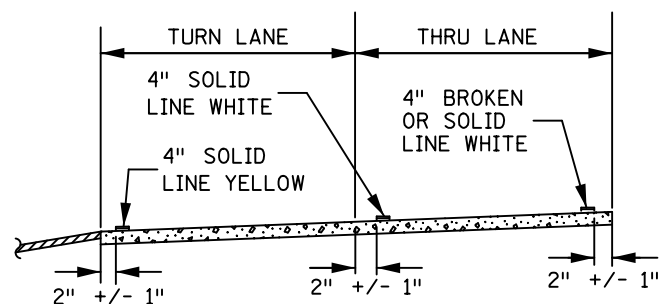
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PLOTTED/REVISED: 15-JAN-2019

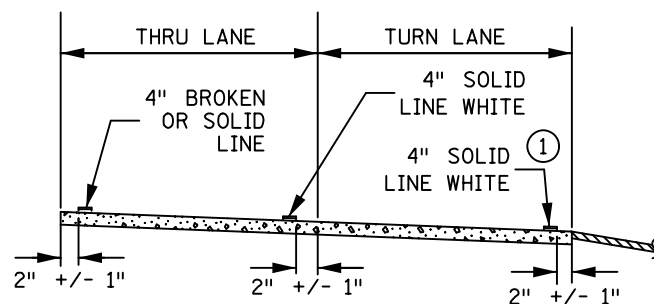
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TURN LANE ARROW MESSAGE

LEFT TURN LANE

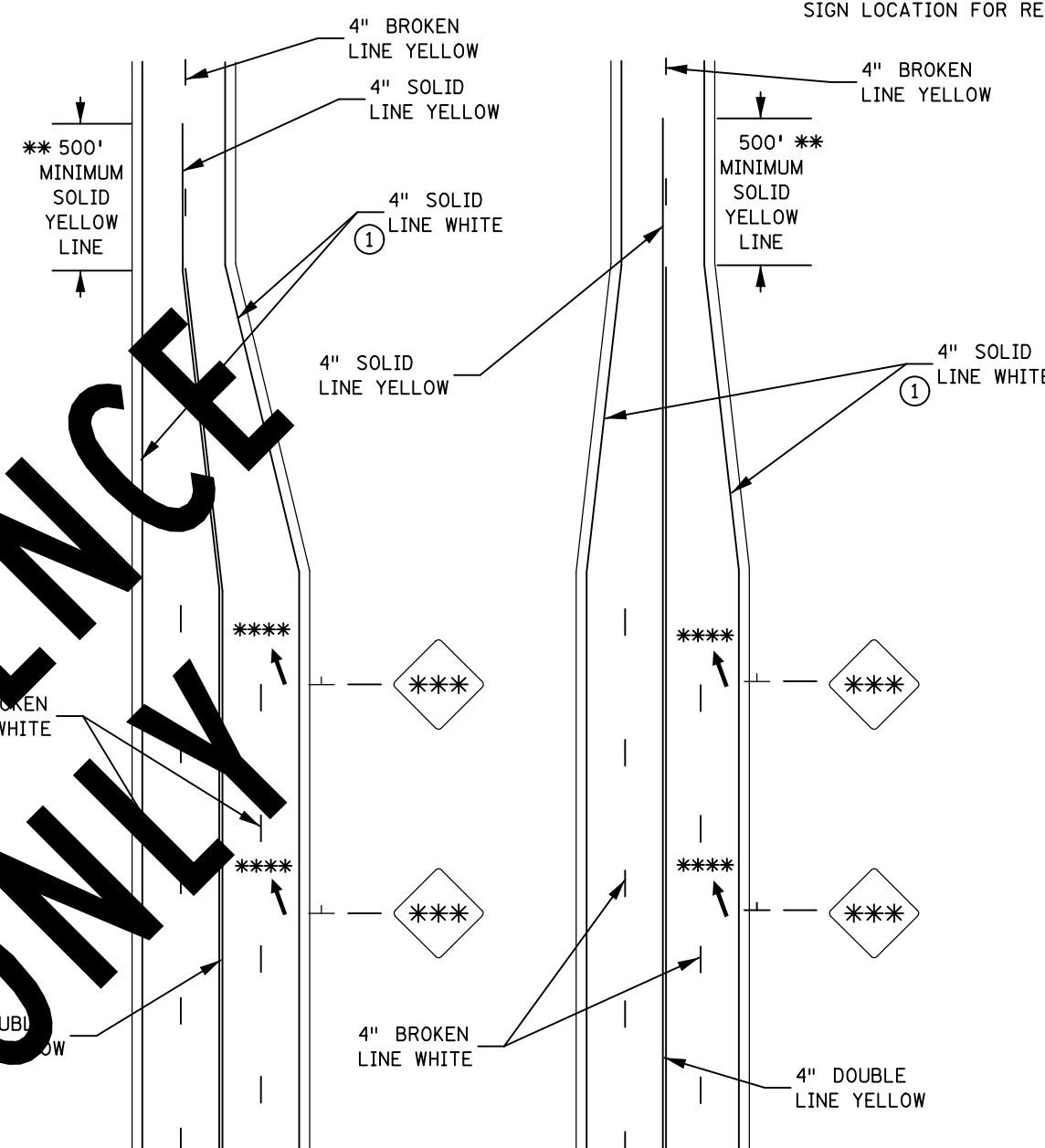


RIGHT TURN LANE



UNDIVIDED ROADWAY TRANSITION

NOTE:
SIGN LOCATION FOR REFERENCE ONLY.



DESIGNER'S NOTES:

- ① USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES. CONTINUE 4" OR 6" EDGE LINE THROUGH THE TURN LANE EDGE LINE.
- REFER TO (MNMUTCD SECTION 3B.20) FOR TURN LANE ARROW OR LINE EXTENSION OPTIONS.

NOTE:
END PAVEMENT MARKINGS AT BEGINNING OF RADIUS

DESIGNER'S NOTES:

- ** IF THE DISTANCE BETWEEN THE BEGINNING OF THE SOLID LINE YELLOW IS LESS THAN THE DISTANCES IN TABLE 7.5 FROM THE END OF A PRECEDING SOLID LINE YELLOW IN THE SAME LANE, THE SOLID LINE SHALL BE EXTENDED BETWEEN THEM.
- *** PLACE TRANSITION ARROWS ADJACENT TO LANE REDUCTION SIGNS. REFER TO SIGNING TYPICALS FOR SIGN DETAILS AND PLACEMENT.
- **** LANE REDUCTION TRANSITION ARROWS ARE OPTIONAL FOR SPEEDS LESS THAN 45 MPH.
- ① MAY USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES.

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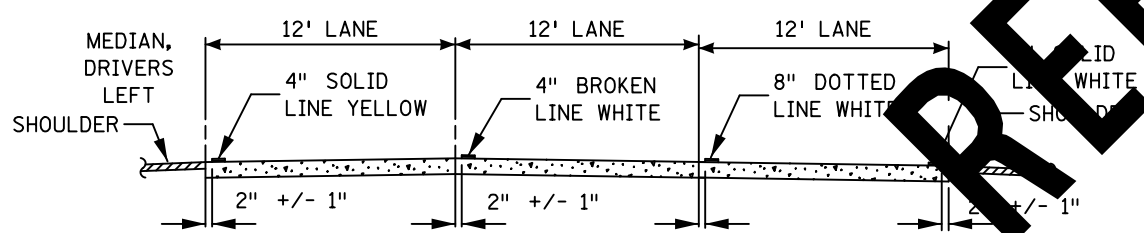
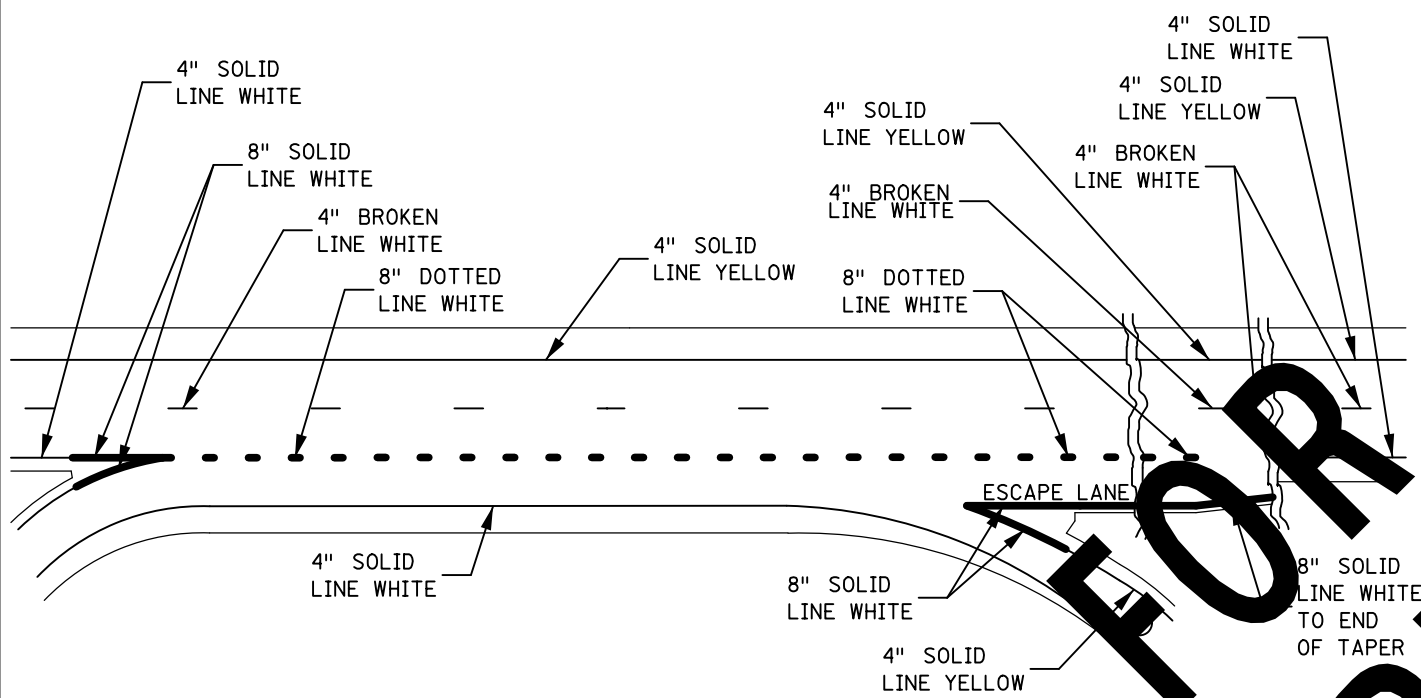
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PAVEMENT MARKING TYPICALS

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DISTRICT #: Metro
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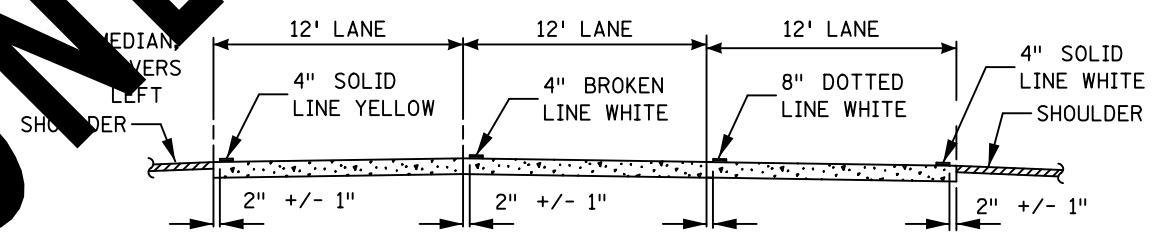
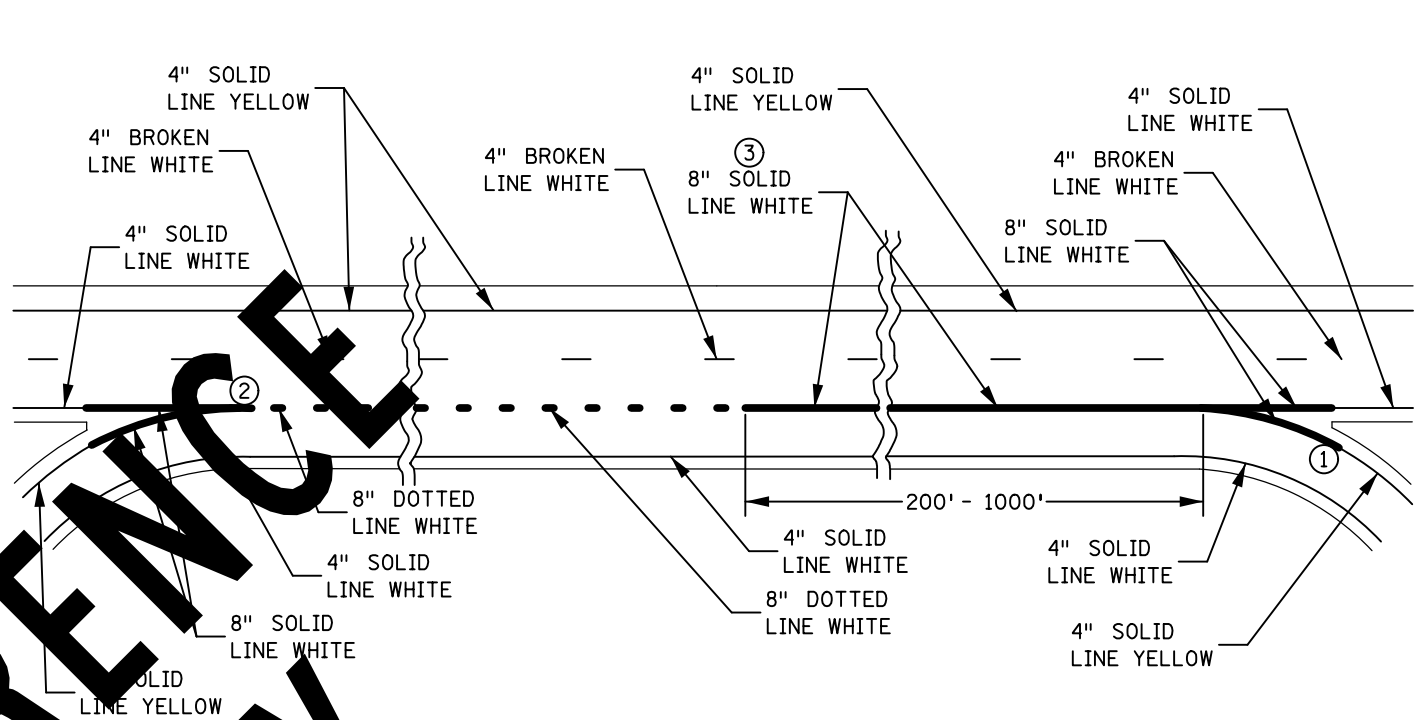
FREEWAY AND EXPRESSWAY AUXILIARY LANE BETWEEN RAMPS WITH ESCAPE LANE APPLICATION



DESIGNER'S NOTES:
 ① EXTEND 8" SOLID LINE WHITE 50' MIN. BEYOND THE GORE AREA TO COMPENSATE FOR SHARP CURVATURE.
 ON PAVEMENTS OVER 24' WIDE (I.E. 27') EDGE LINES WILL BE PLACED SO LANES ARE A MAXIMUM OF 12' WIDE.

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FREEWAY AND EXPRESSWAY AUXILIARY LANE 1/2 TO 1 MILE IN LENGTH BETWEEN RAMPS WITHOUT ESCAPE LANE APPLICATION



DESIGNER'S NOTES:
 ① EXTEND 8" SOLID LINE WHITE 50' MIN. BEYOND THE GORE AREA TO COMPENSATE FOR SHARP CURVATURE.
 ② EXTEND 8" SOLID LINE WHITE FOR 200' TO 300' AT DISCRETION OF DISTRICT TRAFFIC ENGINEER. ON CURVATURE OR FOR OTHER SITUATIONS WHERE NEEDED FOR BETTER DELINEATION.
 ③ EXTEND 8" SOLID LINE WHITE 200' TO 1000' FROM INTERSECTION OF GORE STRIPES, DEPENDING ON LENGTH OF LANE BEING DROPPED, AS DETERMINED BY DISTRICT TRAFFIC ENGINEER.
 ON PAVEMENTS OVER 24' WIDE (I.E. 27') EDGE LINES WILL BE PLACED SO LANES ARE A MAXIMUM OF 12' WIDE.

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FOR REFERENCE ONLY

PAVEMENT MARKING TYPICALS

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LICENSED PROFESSIONAL ENGINEER

PAVEMENT MARKING TYPICALS

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