

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

1. Follow the steps below to determine when YIELD signs should be installed on entrance ramps:

YIELD SIGN WARRANT CHECKLIST

Mainline design * speed (A) MPH

Entrance ramp design speed ** (B) MPH

Length of acceleration lane (from Figure 2) (C) FT

Grade of acceleration lane (D) % UP/DOWN

Grade adjustment factor (if > 2%) from Table 1 (E)

Minimum required length of acceleration lane = (C)x(E) (F) FEET

Measured length of acceleration lane (from Figure 1) (G) FEET

Is the measured length of the acceleration lane greater than the minimum required length (G > F)?

YES - Yield sign not required
NO - go to step 2

*If design speed is unknown, add 10 mph to the posted speed to approximate design speed

**If the ramp speed is not posted, use the mainline posted speed

2. Follow the steps below to determine when YIELD AHEAD and NO MERGE AREA signs should be installed:

YIELD AHEAD/NO MERGE AREA SIGN WARRANT CHECKLIST

Use Figure 3 to determine required signing

Length of acceleration lane (G)

Ramp speed (B)

Intersecting point of (G) and (B) (circle)

ZONE 1 - YIELD only
ZONE 2 - YIELD with YIELD AHEAD
ZONE 3 - YIELD with YIELD AHEAD and NO MERGE AREA

GENERAL NOTES:

YIELD signs shall be placed opposite the physical gore, on the right side of the entrance ramp.

YIELD AHEAD signs may be placed on the right or left side of the entrance ramp, depending on ramp geometry and line of sight.

YIELD sign(s), with the approval of the Assistant District Engineer - Traffic, shall be replaced with STOP sign(s) on the right side (both sides) of the approach if no acceleration lane exists for temporary entrance. Also, a temporary stop line shall be placed across the ramp at the desired stop location as determined by the Engineer.

Adjustment Factors to Acceleration Lanes with Greater than 2% Grades

TABLE 1

Mainline Design Speed (mph)	Entrance Ramp Design Speed (mph)								All Speeds	
	20	30	40	50	20	30	40	50	3% - 4% Downgrade	5% - 6% Downgrade
	3% - 4% Upgrade				5% Upgrade					
40	1.3	1.3	-	-	1.5	1.5	-	-	0.7	0.6
45	1.3	1.35	-	-	1.5	1.6	-	-	0.675	0.575
50	1.3	1.4	1.4	-	1.5	1.7	1.9	-	0.65	0.55
55	1.35	1.45	1.45	-	1.6	1.8	2.05	-	0.625	0.525
60	1.4	1.5	1.5	1.6	1.7	1.9	2.2	2.5	0.6	0.5
65	1.45	1.55	1.6	1.7	1.85	2.05	2.4	2.75	0.6	0.5
70	1.5	1.6	1.7	1.8	2.0	2.2	2.6	3.0	0.6	0.5

(source: Exhibit 10-71. A Policy on Design of Highways and Streets. AASHTO 2001)

FIGURE 1
Placement of YIELD and YIELD AHEAD Signs on Entrance Ramps to Expressways and Freeways

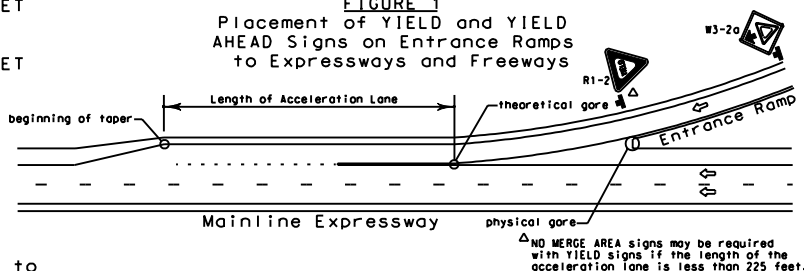


FIGURE 2

Minimum Length of Acceleration Lanes with Grades Less than 2%

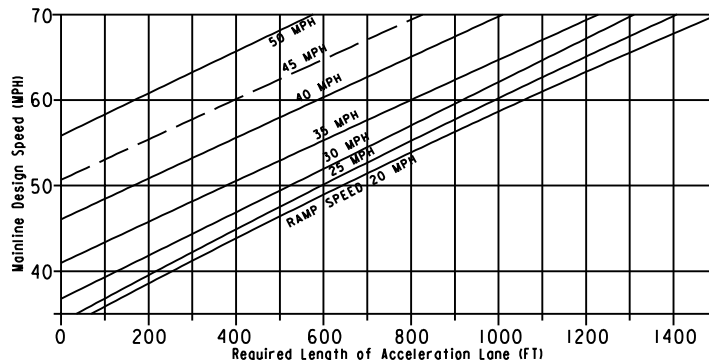
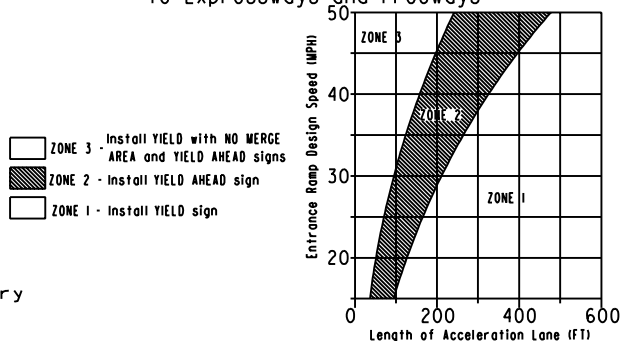


FIGURE 3

Warrants for YIELD Signs on Entrance Ramps to Expressways and Freeways



SPECIFICATION 104	CATEGORY CODE ITEMS
APPROVED 	DIRECTOR - OFFICE OF TRAFFIC AND SAFETY
	APPROVAL • SHA REVISIONS APPROVAL 8-20-03 REVISED REVISED REVISED
	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION APPROVAL 9-23-03 REVISED REVISED REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
WARRANTS FOR YIELD SIGNS
ON ENTRANCE RAMPS
CONVERGING WITH EXPRESSWAYS/FREEWAYS

STANDARD NO.

MD 104.01-31