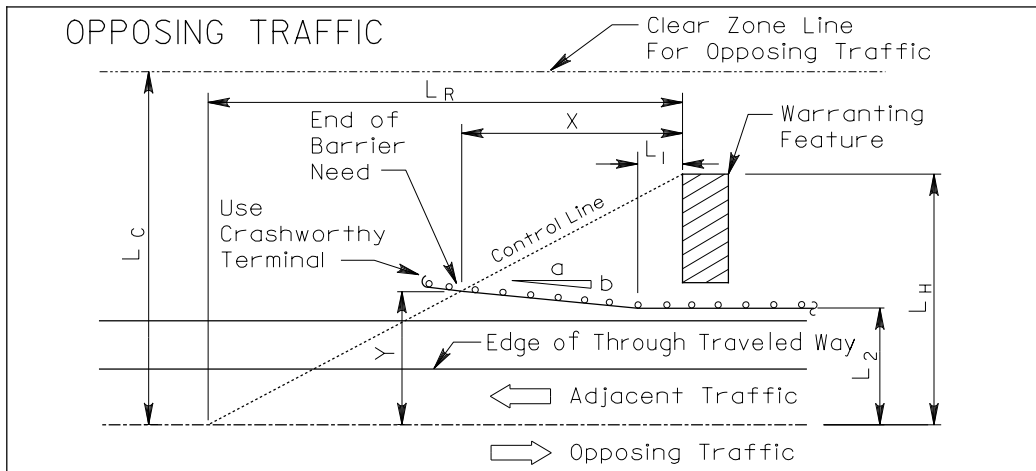
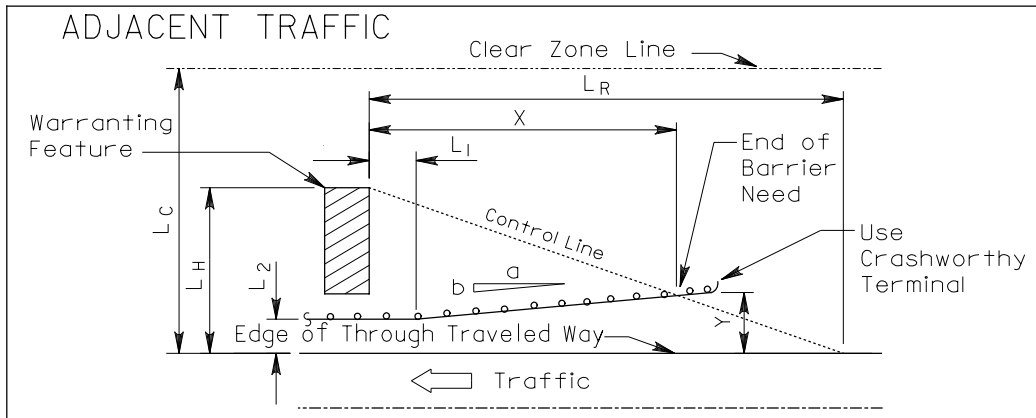


BARRIER LENGTH OF NEED (TANGENT ALIGNMENT)

602-1

REFERENCE SECTIONS
602.1.2, 602.5.1, & 603.6



Design Speed (mph)	Flare Rate (a:b)		Runout Length, L _R (ft) Per Design Year ADT				Formulas
	Concrete Barrier	MCS Guardrail	Over 10,000 veh/day	5,000-10,000 veh/day	1,000-5,000 veh/day	Under 1,000 veh/day	
75	20:1	7:1	415	380	335	290	<p>X = Length of Need L_R = Runout Length L_C = Required Clear Zone L_H = Lateral Offset to Back of Warranting Feature L₂ = Lateral Offset to Face of Barrier (see Figure 301-3) L₁ = Varies (Typically measured to the end of a full panel of guardrail)</p> <p>If L_H < L_C: $X = \frac{L_H + (b/a)L_1 - L_2}{(b/a) + L_H/L_R}$ Y = L_H - X(L_H/L_R)</p> <p>If L_H > L_C: Substitute L_C in the above formulas.</p>
70	20:1	7:1	360	330	290	250	
65	19:1	7:1	330	290	250	225	
60	18:1	7:1	300	250	210	200	
55	16:1	7:1	265	220	185	175	
50	14:1	7:1	230	190	160	150	
45	12:1	7:1	195	160	135	130	
40	10:1	7:1	160	130	110	100	
35	9:1	7:1	135	110	95	85	
30	8:1	7:1	110	90	80	70	