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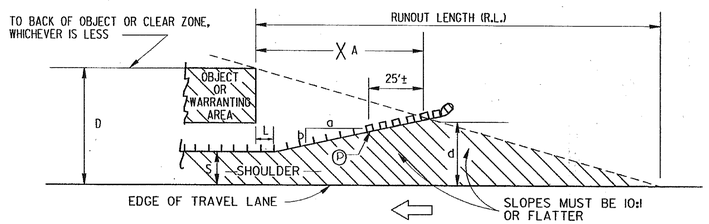
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	NHS-M001-00(993)	95	110

GUARDRAIL LENGTHS OF ADVANCEMENT AT FIXED OBJECTS OR AT WARRANTING FILL SLOPES TYPICAL

(FLARED)



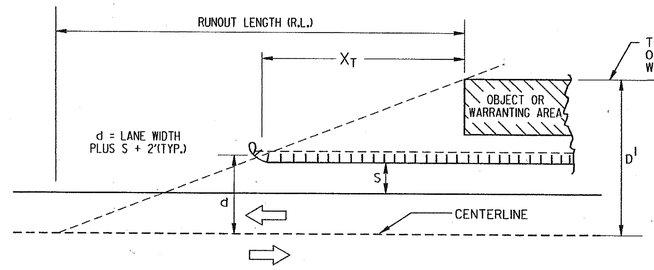
S = USUABLE SHOULDER WIDTH PLUS 2 FT. (TYP.)

$$X_A = \frac{D+(a/b)L-S}{a/b + D/RL}$$

$$d = D - \frac{D}{RL}(X_A)$$

DESIGN SPEED (MPH)	FLARE RATE a:b
70	15:1
60	13:1
50	11:1
40	9:1

(STANDARD)

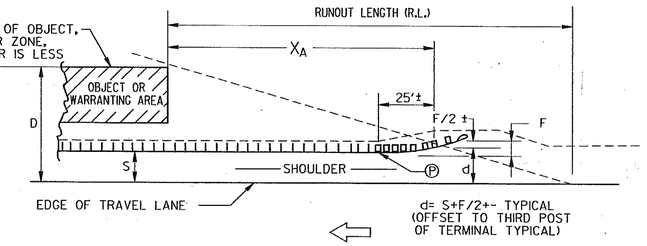


DESIGN SPEED (MPH)	Runout Length (RL) in feet			
	OVER 6000 (A.D.T.)	2000-6000 (A.D.T.)	800-2000 (A.D.T.)	UNDER 800 (A.D.T.)
70	480	440	400	360
60	400	360	330	300
50	320	290	260	240
40	240	220	200	180
30	170	160	140	130

$$X_T = R.L. \times \frac{D' - d'}{D'}$$

(TRAILING END)

S = USUABLE SHOULDER WIDTH PLUS 2 FT. (TYP.)



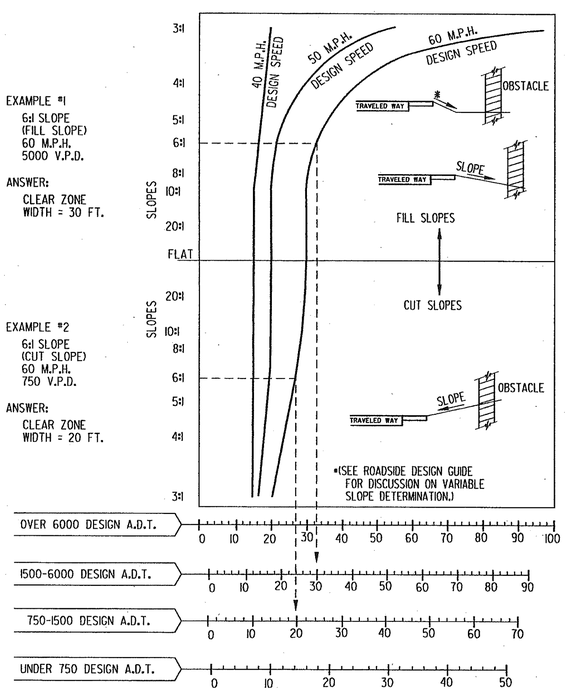
$$X_A = R.L. \times \frac{D-d}{D}$$

(APPROACH END)

F = FLARE OF TERMINAL (ZERO FOR NON-FLARED TERMINAL)

Ⓟ = POINT OF BEGINNING TERMINAL (TYP.)

CLEAR ZONE DISTANCES



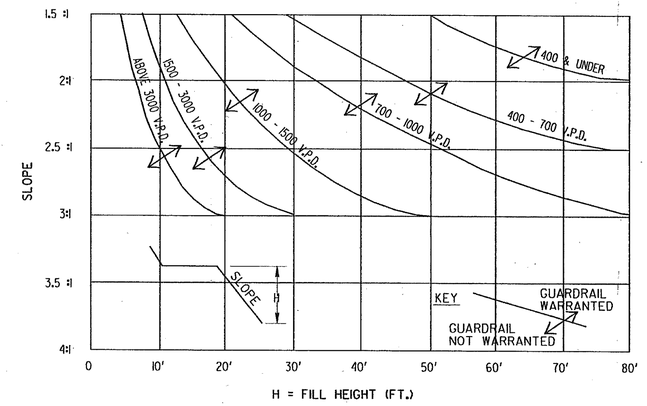
CLEAR ZONE DISTANCES (FT) CHART

HORIZONTAL CURVE ADJUSTMENTS

DEGREE OF CURVE	K (CURVE CORRECTION FACTOR) DESIGN SPEED						
	40	45	50	55	60	65	70
2.0	1.08	1.10	1.12	1.15	1.19	1.22	1.27
2.5	1.10	1.12	1.15	1.19	1.23	1.28	1.33
3.0	1.11	1.15	1.18	1.23	1.28	1.33	1.40
3.5	1.13	1.17	1.22	1.26	1.32	1.39	1.46
4.0	1.15	1.19	1.25	1.30	1.37	1.44	
4.5	1.17	1.22	1.28	1.34	1.41	1.49	
5.0	1.19	1.24	1.31	1.37	1.46		
6.0	1.23	1.29	1.36	1.45	1.54		
7.0	1.26	1.34	1.42	1.52			
8.0	1.30	1.38	1.48				
9.0	1.34	1.43	1.53				
10.0	1.37	1.47					
15.0	1.54						

C.Z.C. = (K) (C.Z.W.)
Where: C.Z.C.= Clear zone on outside of curves 2 degrees or more.
C.Z.W.= Clear zone on tangents, curves less than 2 degrees and inside of any curve. (See chart at left)

FILL HEIGHT / SLOPE WARRANTS



NOTE:
FILL HEIGHT/SLOPE EXTRAPOLATIONS WHICH FALL ABOVE AND TO THE RIGHT OF CURVE INDICATES GUARDRAIL IS WARRANTED FOR THE FILL EMBANKMENT.

		DATE	DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA
		REVISION	STANDARD GUARDRAIL WARRANT GUIDES LENGTHS OF ADVANCEMENT CLEAR ZONE DISTANCES FILL HEIGHT EMBANKMENTS
			NOT TO SCALE — DEC., 1999
		BY	DES. ___ (SUBMITTED) STATE ROAD & AIRPORT DESIGN ENGR. DRW. ___ TRA. ___ (APPROVED) CHIEF ENGINEER CHK. ___
			NUMBER 4000W

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