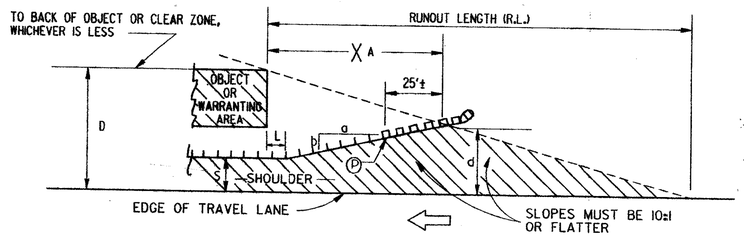
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	NHS-M000-00(438)	70	

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

(FLARED)



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

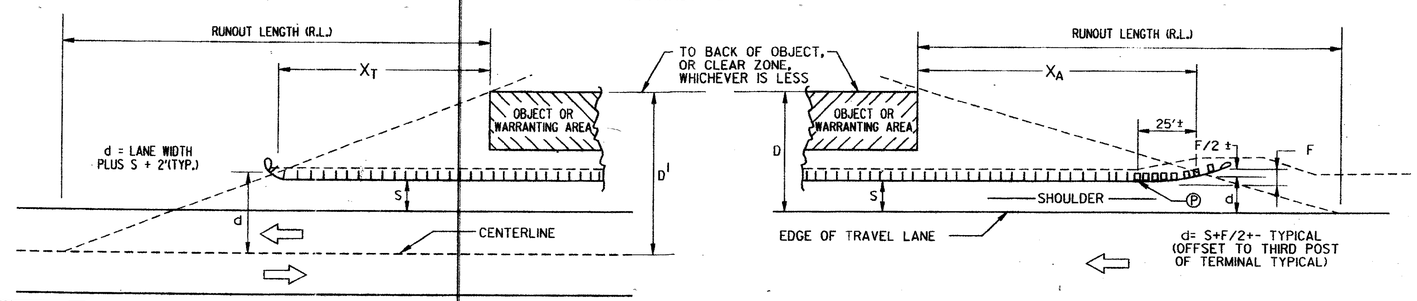
$$X_A = \frac{D+(a/b)L-S}{a/b + D/RL}$$

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

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

DESIGN SPEED (MPH)	RUNOUT LENGTH (RL) FOR CURVY			
	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

(STANDARD)



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

(TRAILING END)

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

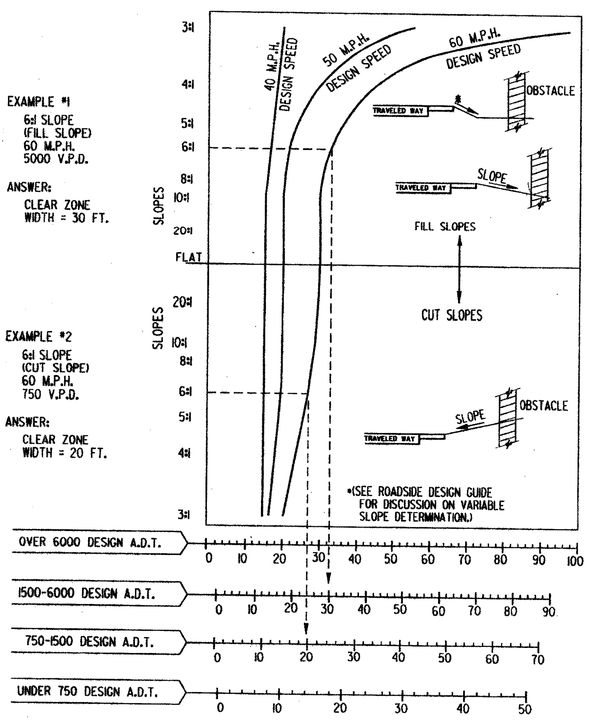
$$X_A = R.L. \times \frac{D-d}{D}$$

(APPROACH END)

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

Ⓟ = POINT OF BEGINNING TERMINAL (TYP.)

CLEAR ZONE DISTANCES



CLEAR ZONE DISTANCES (FT) CHART

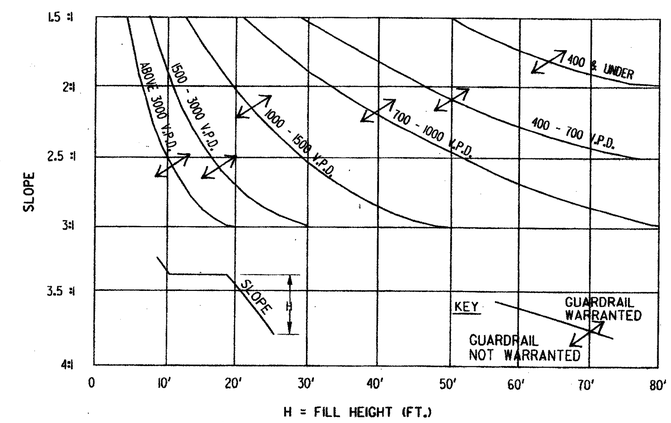
HORIZONTAL CURVE ADJUSTMENTS

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.= CALCULATED FOR CURVE 2 WITH DESIGN SPEED.
C.Z.W.= CALCULATED FOR TANGENT, FILL HEIGHT 0 (SEE CLEAR ZONE DISTANCE CHART)

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.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD

GUARDRAIL WARRANT GUIDES
LENGTHS OF ADVANCEMENT
CLEAR ZONE DISTANCES
FILL HEIGHT EMBANKMENTS

NOT TO SCALE — DEC., 1999

DATE | REVISION | BY

DES. ____ (SUBMITTED) STATE ROAD & AIRPORT DESIGN ENGR.
DRW. ____
TRA. ____ (APPROVED) CHIEF ENGINEER
CHK. ____

NUMBER 4000W