'4/2019 11:35:19 AM StandDraw\DESIGN

NOT TO SCALE

DESIGN SPEED	DESIGN ADT	FORESLOPES (H:V)			BACKSLOPES (H:V)		
		6:1 OR FLATTER	5:1 TO 4:1	3:1	6:1 OR FLATTER	5:1 TO 4:1	3:1
40 MPH OR LESS	UNDER 750 (7)	7 - 10	7 - 10	4	7 - 10	7 - 10	7 - 10
	750 - 1500	10 - 12	12 - 14	4	12 - 14	12 - 14	12 - 14
	1500 - 6000	12 - 14	14 - 16	4	14 - 16	14 - 16	14 - 16
	OVER 6000	14 - 16	16 - 18	4	16 - 18	16 - 18	16 - 18
45-50 MPH	UNDER 750 (7)	10 - 12	12 - 14	4	10 - 12	8 - 10	8 - 10
	750 - 1500	14 - 16	16 - 20	4	14 - 16	12 - 14	10 - 12
	1500 - 6000	16 - 18	20 - 26	4	16 - 18	14 - 16	12 - 14
	OVER 6000	20 - 22	24 - 28	4	20 - 22	18 - 20	14 - 16
55 MPH	UNDER 750 (7)	12 - 14	14 - 18	4	10 - 12	10 - 12	8 - 10
	750 - 1500	16 - 18	20 - 24	4	16 - 18	14 - 16	10 - 12
	1500 - 6000	20 - 22	24 - 30	4	20 - 22	16 - 18	14 - 16
	OVER 6000	22 - 24	26 - 32 ③	4	22 - 24	20 - 22	16 - 18
60 MPH	UNDER 750 (7)	16 - 18	20 - 24 9	4	14 - 16	12 - 14	10 - 12
	750 - 1500	20 - 24	26 - 32 9	4	20 - 22	16 - 18	12 - 14
	1500 - 6000	26 - 30	32 - 40 9	4	24 - 26	18 - 22	14 - 18
	OVER 6000	30 - 32 ③	36 - 44 9	4	26 - 28	24 - 26	20 - 22
65-70 MPH	UNDER 750 (7)	18 - 20	20 - 26 9	4	14 - 16	14 - 16	10 - 12
	750 - 1500	24 - 26	28 - 36 9	4	20 - 22	18 - 20	12 - 16
	1500 - 6000	28 - 32 ③	34 - 42 9	4	26 - 28	22 - 24	16 - 20
	OVER 6000	30 - 34 (3)	38 - 46 (9)	<u>(4)</u>	28 - 30	26 - 30	22 - 24

LEGEND

RECOMMENDED ENHANCED LATERAL OFFSET ADDITIONAL ROW AS REQUIRED (10)

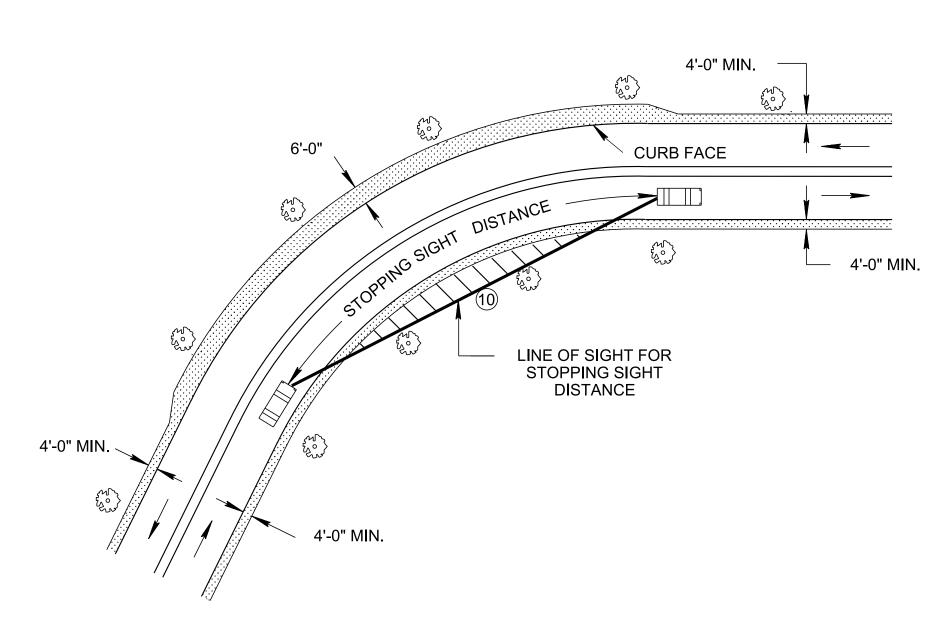


FIGURE B. MINIMUM LATERAL OFFSET FOR LOW SPEED URBAN ROADS (8)

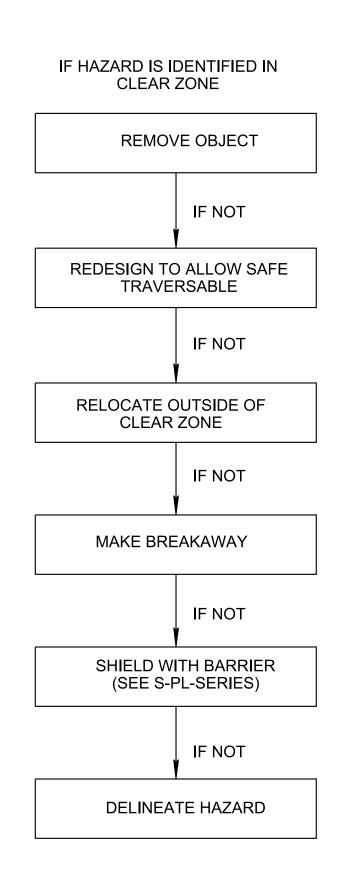


FIGURE A. **DESIGN OPTIONS FOR** HAZARDS IN CLEAR ZONE

TABLE B. HORIZONTAL CURVE CORRECTION FACTORS (Kcz) (5) **DESIGN SPEEDS (MPH)** RADIUS (FT) 40 45 70 2950 1.1 1.1 1.2 1.2 1.2 1.2 1.1 1.2 1.2 1.3 2300 1.1 1.2 1.2 1.3 1.1 1.2 1.2 1.3 1.4 1.1 1.2 1.2 1.3 1.3 1.3 1.4 1.2 1.2 1.3 1.3 1.4 1.4 1.5 1475 1.2 1.2 1.3 1.4 1315 1.4 1150 1.2 1.2 1.5 1.3 1.4 1.5 1.2 1.3 1.5 1.5 1.5 985 820 1.3 1.3 1.5 660 1.3 1.4 1.5 495 1.5 1.4 330 1.5 ADAPTED FROM TABLE 3.2 OF THE "ROADSIDE DESIGN GUIDE".

CZc = (Lc) (Kcz)

WHERE CZc = CLEAR ZONE ON OUTSIDE OF CURVATURE, (FEET) Lc = CLEAR ZONE DISTANCE, (FEET) (FROM TABLE-A) Kcz = CURVE CORRECTION FACTOR

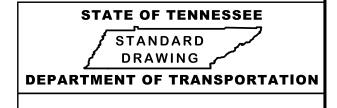
NOTE:

THE CLEAR ZONE CORRECTION FACTOR IS APPLIED TO THE OUTSIDE OF CURVES ONLY. CURVES FLATTER THAN 2950 FEET DO NOT REQUIRE AN ADJUSTED CLEAR ZONE.

AASHTO, 2011.

GENERAL NOTES

- (1) CLEAR ZONE IS DEFINED IN THE "ROADSIDE DESIGN GUIDE," AASHTO, 2011, AS THE TOTAL ROADSIDE BORDER AREA, STARTING AT THE EDGE OF THE TRAVELED WAY, AVAILABLE FOR SAFE USE BY ERRANT VEHICLES. THIS AREA MAY CONSIST OF A SHOULDER, A RECOVERABLE SLOPE, A NON-RECOVERABLE SLOPE, AND/OR A CLEAR RUN-OUT AREA. THE DESIRED WIDTH IS DEPENDENT ON THE TRAFFIC VOLUMES, SPEEDS, AND THE ROADSIDE GEOMETRY. SEE THE "ROADSIDE DESIGN GUIDE," AASHTO, 2011 FOR MORE DETAILED INFORMATION.
- (2) CLEAR ZONE DISTANCES ARE RELATED TO DESIGN SPEED, TRAFFIC VOLUME AND SLOPE CONDITIONS AS SHOWN IN TABLE A.
- (3) WHERE A SITE SPECIFIC INVESTIGATION INDICATES A HIGH PROBABILITY OF CONTINUING CRASHES, OR SUCH OCCURRENCES ARE INDICATED BY CRASH HISTORY, THE DESIGNER MAY PROVIDE CLEAR-ZONE DISTANCES GREATER THAN THE CLEAR ZONE SHOWN IN THE TABLE A.
- (4) BECAUSE RECOVERY IS LESS LIKELY ON THE UNSHIELDED, TRAVERSABLE (3:1), FILL SLOPES, FIXED OBJECTS SHOULD NOT BE PRESENT IN THE VICINITY OF THE TOES OF THESE SLOPES. RECOVERY OF HIGH-SPEED VEHICLES THAT ENCROACH BEYOND THE EDGE OF THE SHOULDER MAY BE EXPECTED TO OCCUR BEYOND THE TOE OF SLOPE. DETERMINATION OF THE WIDTH OF THE RECOVERY AREA AT THE TOE OF THE SLOPE SHOULD TAKE INTO CONSIDERATION RIGHT-OF-WAY AVAILABILITY, ENVIRONMENTAL CONCERNS, ECONOMIC FACTORS, SAFETY NEEDS, AND CRASH HISTORIES. ALSO, THE DISTANCE BETWEEN THE EDGE OF THE THROUGH TRAVELED LANE AND THE BEGINNING OF THE 3:1 SLOPE SHOULD INFLUENCE THE RECOVERY AREA PROVIDED AT THE TOE OF THE SLOPE. SEE THE ROADSIDE DESIGN GUIDE, AASHTO 2011 FOR MORE INFORMATION.
- (5) THESE MODIFICATIONS ARE NORMALLY CONSIDERED ONLY WHEN CRASH HISTORIES INDICATE A NEED OR A SPECIFIC SITE INVESTIGATION SHOWS A DEFINITE CRASH POTENTIAL THAT COULD BE SIGNIFICANTLY LESSENED BY INCREASING THE CLEAR-ZONE WIDTH, AND WHEN SUCH INCREASES ARE COST EFFECTIVE.
- (6) SEE THE "ROADSIDE DESIGN GUIDE," AASHTO, 2011, FOR COMPOSITE ROADSIDE SECTIONS AND DISCUSSION ON OUTSIDE DITCHES AND CHANNELS.
- 7) FOR ROADWAYS WITH LOW VOLUMES. IT MAY NOT BE PRACTICAL TO PROVIDE FULL CLEAR ZONE DISTANCE IN SUCH CASES PROVIDE MAXIMUM AMOUNT OF CLEAR ZONE THAT IS PRACTICAL.
- $oxed{(8)}\;\;$ CLEAR ZONE DISTANCES DO NOT APPLY TO LOW SPEED URBAN ROADS. IN SUCH CASES PROVIDE A MINIMUM LATERAL OFFSET FROM EDGE OF TRAVELED WAY TO CURB. (SEE FIGURE B)
- (9) USE 6:1 SLOPES ONLY ON ROADWAYS WITH DESIGN SPEEDS 60 MPH AND ABOVE. IF 6:1 IS IMPRACTICAL, CONSIDER SHIELDING AREA WITH BARRIER SYSTEM.
- (10) STOPPING SIGHT DISTANCE THROUGHOUT THE HORIZONTAL CURVE SHALL BE MAINTAINED. IN SOME CASES ADDITIONAL RIGHT OF WAY MAY BE REQUIRED TO INSURE THIS AREA IS KEPT CLEAR OF SIGHT OBSTRUCTIONS.



REV. 06-28-19: REVISED TABLE A AND B.

REDREW SHEET.

CLEAR ZONE **CRITERIA**

S-CZ-1

07-11-2013