

EXAMPLE #1
6:1 SLOPE (FILL SLOPE)
100 km/h
5000 ADT

ANSWER:
CLEAR ZONE
WIDTH = 9 m.

EXAMPLE #2
6:1 SLOPE (CUT SLOPE)
100 km/h
750 ADT

ANSWER:
CLEAR ZONE
WIDTH = 6 m.

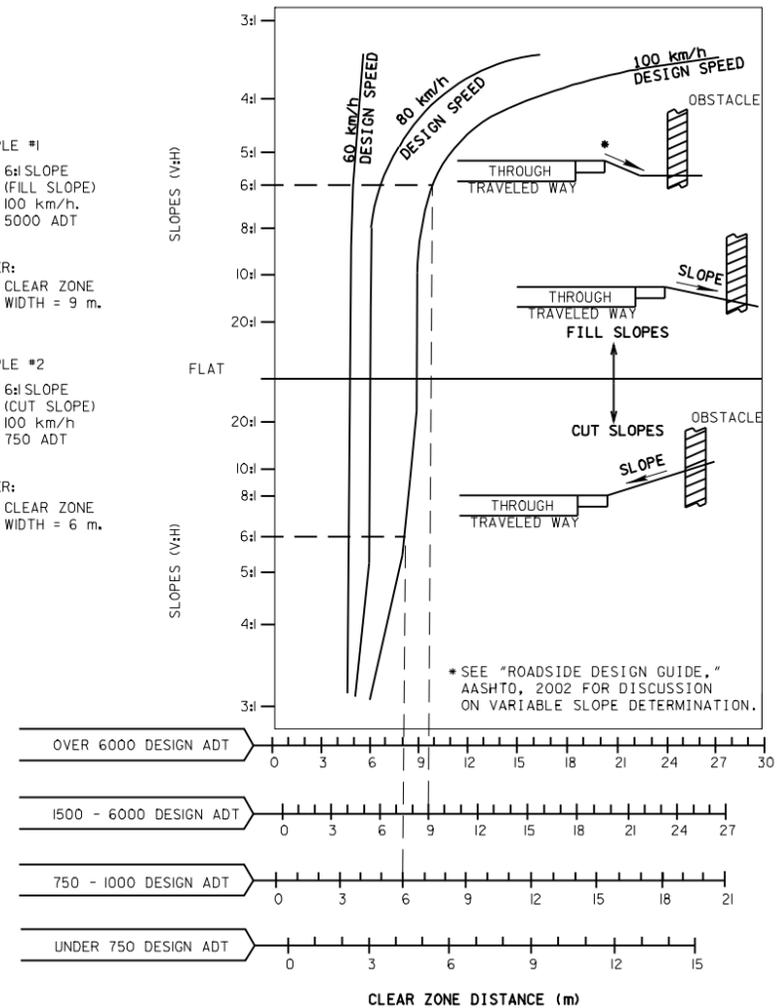


FIGURE A. CLEAR ZONE DISTANCE

DESIGN SPEED	DESIGN ADT	FORESLOPES			BACKSLOPES		
		6:1 OR FLATTER	5:1 TO 4:1	3:1	3:1	5:1 TO 4:1	6:1 OR FLATTER
60 km/h OR LESS	UNDER 750	2.0-3.0	2.0-3.0	④	2.0-3.0	2.0-3.0	2.0-3.0
	750 - 1500	3.0-3.5	3.5-4.5	④	3.0-3.5	3.0-3.5	3.0-3.5
	1500 - 6000	3.5-4.5	4.5-5.0	④	3.5-4.5	3.5-4.5	3.5-4.5
	OVER 6000	4.5-5.0	5.0-5.5	④	4.5-5.0	4.5-5.0	4.5-5.0
70-80 km/h	UNDER 750	3.0-3.5	3.5-4.5	④	2.5-3.0	2.5-3.0	3.0-3.5
	750 - 1500	3.5-4.5	5.0-6.0	④	3.0-3.5	3.5-4.5	4.5-5.0
	1500 - 6000	5.0-5.5	6.0-8.0	④	3.5-4.5	4.5-5.0	5.0-5.5
	OVER 6000	6.0-6.5	7.5-8.5	④	4.5-5.0	5.5-6.0	6.0-6.5
90 km/h	UNDER 750	3.5-4.5	4.5-5.5	④	2.5-3.0	3.0-3.5	3.0-3.5
	750 - 1500	5.0-5.5	6.0-7.5	④	3.0-3.5	4.5-5.0	5.0-5.5
	1500 - 6000	6.0-6.5	7.5-9.0	④	4.5-5.0	5.0-5.5	6.0-6.5
	OVER 6000	6.5-7.5	8.0-10.0③	④	5.0-5.5	6.0-6.5	6.5-7.5
100 km/h	UNDER 750	5.0-5.5	6.0-7.5	④	3.0-3.5	3.5-4.5	4.5-5.0
	750 - 1500	6.0-7.5	8.0-10.0③	④	3.5-4.5	5.0-5.5	6.0-6.5
	1500 - 6000	8.0-9.0	10.0-12.0③	④	4.5-5.5	5.5-6.5	7.5-8.0
	OVER 6000	9.0-10.0③	11.0-13.5③	④	6.0-6.5	7.5-8.0	8.0-8.5
110 km/h	UNDER 750	5.5-6.0	6.0-8.0	④	3.0-3.5	4.5-5.0	4.5-5.0
	750 - 1500	7.5-8.0	8.5-11.0③	④	3.5-5.0	5.5-6.0	6.0-6.5
	1500 - 6000	8.5-10.0③	10.5-13.0③	④	5.0-6.0	6.5-7.5	8.0-8.5
	OVER 6000	9.0-10.5③	11.5-14.0③	④	6.5-7.5	8.0-9.0	8.5-9.0

ADAPTED FROM TABLE 3.1 OF THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002.

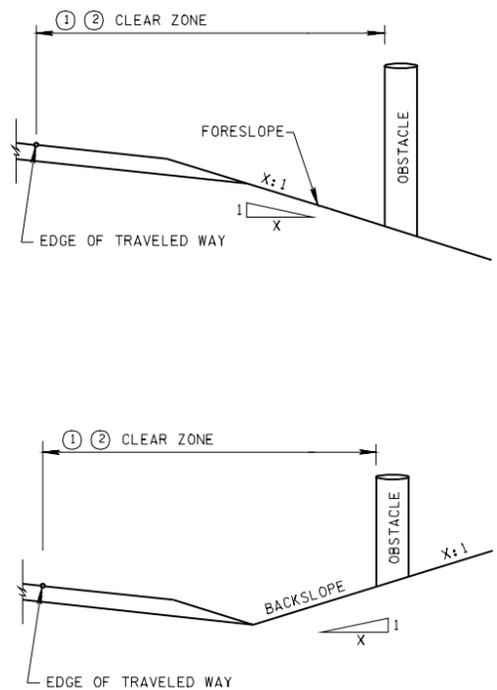


FIGURE B. FORESLOPE AND BACKSLOPE DIAGRAMS ⑥

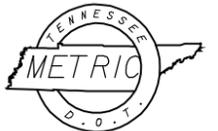
RADIUS (m)	DESIGN SPEEDS (km/h)					
	60	70	80	90	100	110
900	1.1	1.1	1.1	1.2	1.2	1.2
700	1.1	1.1	1.2	1.2	1.2	1.3
600	1.1	1.2	1.2	1.2	1.3	1.4
500	1.1	1.2	1.2	1.3	1.3	1.4
450	1.2	1.2	1.3	1.3	1.4	1.5
400	1.2	1.2	1.3	1.3	1.4	-
350	1.2	1.2	1.3	1.4	1.5	-
300	1.2	1.3	1.4	1.5	1.5	-
250	1.3	1.3	1.4	1.5	-	-
200	1.3	1.4	1.5	-	-	-
150	1.4	1.5	-	-	-	-
100	1.5	-	-	-	-	-

ADAPTED FROM TABLE 3.2 OF THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002.
CZc = (Lc)(Kcz)
WHERE CZc = CLEAR ZONE ON OUTSIDE OF CURVATURE, (METER)
Lc = CLEAR ZONE DISTANCE, (METER)
Kcz = CURVE CORRECTION FACTOR

NOTE: THE CLEAR ZONE CORRECTION FACTOR IS APPLIED TO THE OUTSIDE OF CURVES ONLY. CURVES FLATTER THAN 900 METERS DO NOT REQUIRE AN ADJUSTED CLEAR ZONE.

FOOTNOTES

- CLEAR ZONE IS DEFINED IN THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002, 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 UPON THE TRAFFIC VOLUMES AND SPEEDS, AND ON THE ROADSIDE GEOMETRY. SEE THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002, FOR MORE DETAILED INFORMATION.
- CLEAR ZONE DISTANCES ARE RELATED TO DESIGN SPEED AND TRAFFIC VOLUME AS SHOWN IN TABLE A.
- 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. CLEAR ZONES MAY BE LIMITED TO 9 METERS FOR PRACTICALITY AND TO PROVIDE A CONSISTENT ROADWAY TEMPLATE IF PREVIOUS EXPERIENCE WITH SIMILAR PROJECTS OR DESIGNS INDICATES SATISFACTORY PERFORMANCE.
- SINCE RECOVERY IS LESS LIKELY ON THE UNSHIELDED, TRAVERSABLE 3:1 SLOPES, FIXED OBJECTS SHOULD NOT BE PRESENT IN THE VICINITY OF THE TOES OF THESE SLOPES. RECOVERY OF HIGH-SPEED VEHICLES THAT ENCR OACH BEYOND THE EDGE OF THE SHOULDER MAY BE EXPECTED TO OCCUR BEYOND THE TOE OF THE 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. WHILE THE APPLICATION MAY BE LIMITED BY SEVERAL FACTORS, THE FORESLOPE PARAMETERS THAT MAY ENTER INTO DETERMINING A MAXIMUM DESIRABLE RECOVERY AREA ARE COVERED IN DETAIL IN THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002.
- 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.
- SEE THE "ROADSIDE DESIGN GUIDE," AASHTO, 2002 FOR COMPOSITE ROADSIDE SECTIONS AND DISCUSSION ON OUTSIDE DITCHES AND CHANNELS.



ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

CLEAR ZONE CRITERIA

06-JUN-2003 08:53 8TIME\$ 8DATE\$ \\JJD0NF13\VOLUN\SHARED\STANDDRAM\METRIC2003\dm01s12.dgn