

- c) For roadways with low volumes, it may not be practical to apply even the minimum values found in Table 3-1. Refer to Chapter 12 for additional considerations for low-volume roadways and Chapter 10 for additional guidance for urban applications.
- d) When design speeds are greater than the values provided, the designer may provide clear-zone distances greater than those shown in Table 3-1.

**U.S. Customary Units**

Design Speed (mph)	Design ADT	Foreslopes			Backslopes		
		1V:6H or flatter	1V:5H to 1V:4H	1V:3H	1V:3H	1V:5H to 1V:4H	1V:6H or flatter
≤40	UNDER 750 <sup>c</sup>	7-10	7-10	b	7-10	7-10	7-10
	750-1500	10-12	12-14	b	12-14	12-14	12-14
	1500-6000	12-14	14-16	b	14-16	14-16	14-16
	OVER 6000	14-16	16-18	b	16-18	16-18	16-18
45-50	UNDER 750 <sup>c</sup>	10-12	12-14	b	8-10	8-10	10-12
	750-1500	14-16	16-20	b	10-12	12-14	14-16
	1500-6000	16-18	20-26	b	12-14	14-16	16-18
	OVER 6000	20-22	24-28	b	14-16	18-20	20-22
55	UNDER 750 <sup>c</sup>	12-14	14-18	b	8-10	10-12	10-12
	750-1500	16-18	20-24	b	10-12	14-16	16-18
	1500-6000	20-22	24-30	b	14-16	16-18	20-22
	OVER 6000	22-24	26-32 <sup>a</sup>	b	16-18	20-22	22-24
60	UNDER 750 <sup>c</sup>	16-18	20-24	b	10-12	12-14	14-16
	750-1500	20-24	26-32 <sup>a</sup>	b	12-14	16-18	20-22
	1500-6000	26-30	32-40 <sup>a</sup>	b	14-18	18-22	24-26
	OVER 6000	30-32 <sup>a</sup>	36-44 <sup>a</sup>	b	20-22	24-26	26-28
65-70 <sup>d</sup>	UNDER 750 <sup>c</sup>	18-20	20-26	b	10-12	14-16	14-16
	750-1500	24-26	28-36 <sup>a</sup>	b	12-16	18-20	20-22
	1500-6000	28-32 <sup>a</sup>	34-42 <sup>a</sup>	b	16-20	22-24	26-28
	OVER 6000	30-34 <sup>a</sup>	38-46 <sup>a</sup>	b	22-24	26-30	28-30

**Notes:**

- a) When a site-specific investigation indicates a high probability of continuing crashes or when such occurrences are indicated by crash history, the designer may provide clear-zone distances greater than the clear zone shown in Table 3-1. Clear zones may be limited to 30 ft for practicality and to provide a consistent roadway template if previous experience with similar projects or designs indicates satisfactory performance.
- b) Because recovery is less likely on the unshielded, traversable 1V:3H fill slopes, fixed objects should not be present in the vicinity of the toe 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 slope should consider 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 1V:3H slope should influence the recovery area provided at the toe of slope. While the application may be limited by several factors, the foreslope parameters that may enter into determining a maximum desirable recovery area are illustrated in Figure 3-2. A 10-ft recovery area at the toe of slope should be provided for all traversable, non recoverable fill slopes.
- c) For roadways with low volumes it may not be practical to apply even the minimum values found in Table 3-1. Refer to Chapter 12 for additional considerations for low-volume roadways and Chapter 10 for additional guidance for urban applications.
- d) When design speeds are greater than the values provided, the designer may provide clear-zone distances greater than those shown in Table 3-1.

The designer may choose to modify the clear-zone distances in Table 3-1 with adjustment factors to account for horizontal curvature, as shown in Table 3-2. These modifications normally are considered only when crash histories indicate such a need, when a specific site investigation shows a definitive crash potential that could be significantly lessened by increasing the clear zone width, and when such increases are cost-effective. Horizontal curves, particularly for high-speed facilities, are usually superelevated to increase safety and provide a more comfortable ride. Increased banking on curves where the superelevation is inadequate is an alternate method of increasing roadway safety within a horizontal curve, except where snow and ice conditions limit the use of increased superelevation.