



GRADING NOTES

If necessary, modify the earthwork shown in the plans and as staked to provide these minimum grading requirements at guardrail installations. The engineer will pay for this work using standard grading bid items as provided in the plans.

- Ensure the cross-slope of the earthwork in the area approaching a guardrail installation, the area around the (1)terminal and the area of the guardrail flare is a 1V:10H surface or flatter. If Type I End Anchorages are used, extend this grading envelope through the clear-zone to the upstream beginning of the terminal.
- Ensure cross slope of grading from roadway to the barrier (2)face is 1V:10H or flatter. Extend 1V:10H a minimum of 2 ft. [610] behind guardrail posts.
- (3) Ensure the area immediately behind and beyond the terminal is traversable and free from fixed object hazards or is at least similar in character to upstream, unshielded slopes located within the clear-zone. Ensure a slope of 1V:4H or flatter; if not practical, use a maximum slope of 1V:3H. Extend the traversable slope for a distance X beyond post 3 of the end terminal.

If not shown on the plans, calculate X from the formula $X = (CZ - Y) (L_{p}) / (CZ)$ below:

DESIGN SPEED		L _R Runout Length								
		ADT OVER 10,000		ADT 5,000 to 10,000		ADT 1,000 to 5,000		ADT Under 1000		
mph	[km/h]	ft	[m]	ft	[m]	ft	[m]	ft	[m]	
80	130	470	143	430	131	380	116	330	101	
70	110	360	110	330	101	290	88	250	76	
60	100	300	91	250	76	210	64	200	61	
50	80	230	70	190	58	160	49	150	46	
40	60	160	49	130	40	110	34	100	30	
30	50	110	34	90	27	80	24	70	21	

- "X" can be found graphically by moving up stream of the (4)hazard the longitudinal distance L_{R} , shown in the table above, plotting the design trajectory from the edge of traveled way to the far extreme (width) of the hazard (or the clear zone width, whichever is less). The trajectory should intersect the guardrail at post 3 of the terminal (the point where the guardrail redirects). The distance back to the hazard from post 3 is "X".
- (5) For tangent guardrail installations where the face of the Guardrail at the impact head of the terminal is less than 4 ft. [1.2 m] from the shoulder break point, realign the guardrail and terminal as shown in detail on SHEET 1 of this standard plan.

Designed by: WBW

Drawn by: TWS

Checked by: WBW Previous Dwg. No.

606-6Å



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		L - Runout Longth									
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mph	[km/h]	ft	[m]	ft	[m]	ft	[m]	ft	[m]		
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606-6A











(HS8) 3/4" x 8" [19 x 203] (A325) + 2 HARDENED WASHERS (F436) + 1 NUT (A194-2HM)

STANDARD HARDWARE AND POSTS (SEE BOX BEAM FABRICATION STANDARD PLAN)

STANDARD PLAN NUMBER

sued by: ENGINEERING SERVICES

Issued: MARCH 2022

606-6**B**







STANDARD PLAN NUMBER 606-6**B** SHEET 11 of 11 ssued by: ENGINEERING SERVICES Issued: MARCH 2022