

Guidance For Guardrail Design Applications

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Energy Absorbing Guardrail Terminal Platform Grading

1. The purpose of the guardrail terminal platform is to reproduce to the extent practical the physical conditions under which the terminal unit was tested for its MASH test level certification.
2. The grading of the platform (from the platform's edge *perpendicular* to the roadway) must not be any steeper than a 4:1 slope even if it requires grading down to the toe of the slope. (See EAGRT platform details) This is to minimize the possibility of inducing lateral (side to side) instability to an errant vehicle.
3. The algebraic difference of the approach grade (from the platform's edge *parallel* to the roadway slopes) compared to either the platform's grade or the slope the approach grade ties into, must not exceed 10%. This is to minimize the possibility of inducing longitudinal (front to back) instability to the errant vehicle.
4. The above criteria are to allow the vehicle to remain stable if it leaves the pavement. It is essential that the approach grading for the platform blend smoothly from its edge to the roadway slope. **In no circumstance should the platform be compromised such that the platform itself could induce instability to the errant vehicle.**
5. The "preferred design" should be used whenever possible and is *required* on roadways such as Interstates. For other types of roadways, if the preferred design cannot be accommodated due to right-of-way, environmental, or other constraints, then the "alternative design" should be used. If the constraints are still such that the "alternative design" cannot be accommodated, then the "minimum acceptable design" (below) must be provided. The "minimum acceptable design" is only appropriate if the other platform designs cannot be provided.
6. The "minimum acceptable design" for guardrail platforms without actually constructing a platform is to provide smooth grading with 4:1 or flatter slopes perpendicular to the roadway approaching, adjacent to, and behind the terminal for its entire length.

Energy Absorbing Guardrail Terminal

EAGRTs should be tapered up to a maximum of 25:1 to obtain 2.5 foot offset from the edge of pavement to allow for the widths of the impact heads and to minimize nuisance hits, specifically from plow trucks. The specific taper is the *maximum* allowed *between* the edge of pavement and the EAGRTs. If an EAGRT is used on the end of a tapered rail section, the EAGRT must still be installed up to a 25:1 maximum taper with respect to the travel way, regardless of the flare rate of the standard beam rail.

Guardrail Transitions from 31-inch Rail Height to Match to 27-inch High Guardrail Terminals or Bridge Approach Units

There may be situations where standard beam guardrail, set at 31 inches high, will need to be connected to guardrail terminals that have only been crash tested at 27 inches high or bridge approach units that are 27 inches high. This may reflect an existing or new installation. In those circumstances, transition the change in height over a 50 feet (minimum) length of the standard rail that is connected to the guardrail terminal or bridge approach unit (transition subsidiary to the 606 Items.)

MASH approved terminals (Softstop, MSKT, and MAX-Tension) as well as several NCHRP 350 approved terminals (SKT 350, ET 2000/ET Plus, and X-Tension) terminal units are approved up to a height of 31 inches. The MELT, ELT, and CRT terminals have not been approved at a 30 or 31 inch height.