308.03.03 Effects of Roadside Terrain

The profile between the edge of traveled way and the barrier can have significant effects on the final placement of the barrier. The vehicle's wheels should remain in contact with the ground and its suspension system neither compressed or suspended at the moment of impact with the barrier. This holds true for all barrier systems. Locations of roadside curbs and slopes require particular attention when determining barrier design and placement.

Curbs - Guardrail/Curb combinations are highly discouraged in locations where high-speed and high angle impacts are likely to occur. Areas with no alternative but to use this combination shall use a curb less than 100 mm or, stiffen the guardrail to reduce deflection by bolting a w-beam to the back of the posts or by adding a rub rail.

Slopes - As previously mentioned, guardrail performance is affected by the vehicle's position at moment of impact. Crash tests show, roadside barriers perform most effectively when installed on slopes 1:10 or flatter.

308.03.04 Barrier Length Design

Runout Lengths (L_R) and Hazard Lateral Distance (L_H) - When designing the length of a barrier, the two primary factors that must be considered are:

- L_R - Runout Length
- L_H - Hazard Lateral Distance

The runout length (L_R) is the distance a vehicle needs to stop prior to colliding with a hazard once it has left the roadway. Its distance is measured from the point the vehicle is assumed to leave the roadway to the hazard ahead. Runout length requirements vary according to the roadway design speed. See Figure 300.04.

The lateral distance (L_H) is the distance between the edge of the travelled way to the far side of the hazard, if the hazard is a fixed object. If the hazard is an embankment, the lateral distance would be extended to the edge of the clear zone. If the hazard extends beyond the clear zone, the minimum lateral distance would be only to the edge of the clear zone.

After determining the runout length and lateral distance, the length of the barrier depends on the barrier tangent length, barrier lateral offset, and flare rate.

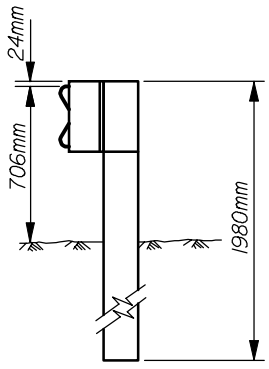
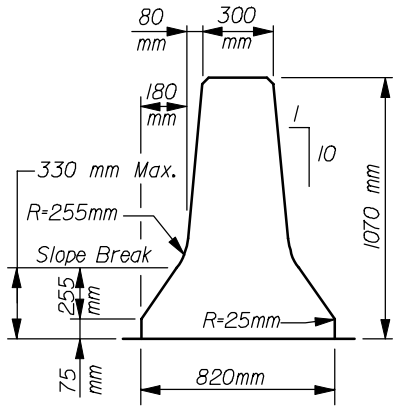
Barrier type	Metal-beam guardrail on strong posts	Tall Wall Concrete Safety Shape Barrier
General shape and dimensions		
Deflecion under impact	0.9m	0
Minimum distance from rail face to fixed object	1.0m	0

Figure 300.08
Roadside Barrier Types and Features