

Q. How should you layout a tangent terminal at the end of a run of standard guardrail installation that has been flared at a flare rate that is consistent with the suggested flare rates for the barrier design shown in the AASHTO Roadside Design Guide? A previous recommendation for flare rates of tangent terminals was at a maximum of 25:1

A. Even though tangent terminals were tested parallel to the roadway, the nose of the terminal was also tested at a 15 degree impact angle (NCHRP 350 conditions test 3-32 & 3-33). The vehicle gated through the end of the system for this impact. This angle impact test demonstrated that the tangent terminal would perform well when impacted on the nose at an angle, with less energy absorption resulting in lesser occupant impact forces, when installed on the same flare as the line guardrail. A 15:1 flare rate has an angle of departure of approximately 3.8 degrees. Testing has shown that a flared terminal with an impact angle of approximately 26 degrees had adequate anchorage to redirect the 4400-lb (2000 kg) vehicle when impacted within the terminal length-of-need. The anchorage in the flared terminal is similar to the anchor system used by the tangent terminals.

Based on these tests, it is acceptable to install a tangent terminal at the end of a flared line of guardrail that is flared for Length of Need calculations on the same flare rate of the line guardrail that is 15:1 or flatter for Test Level 3 design conditions.

In order to install a tangent terminal at the end of line guardrail with a flare rate steeper than 15:1, additional testing would be required.

The grading around the end of the terminal would be the same as for any terminal installation and would be as recommended in the AASHTO Roadside Design Guide.