technical memorandum

road safety hardware series

NZ TRANSPORT AGENCY
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Bridge W-Beam Guardrail Status

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Purpose

To advise on the status of Bridge W-Beam guardrail, its phase-out and accepted (restricted) future use.

From July 2013, "Bridge" W-Beam guardrail is no longer to be used for new installations on State highway structures. Repair of existing installations is permitted where the level of damage does not warrant system replacement.

Background

As part of the NZTA's ongoing assessment of road safety hardware systems and following consultation with the New Zealand suppliers of public domain guardrail componentry, the decision has been made to phase out "Bridge" W-Beam guardrail.

Bridge W-Beam guardrail (3.4mm thick/10 gauge) was commonly used as a semi-rigid bridge protection system during the 1970's through to the late 1990's, particularly on local road and lower volume State highway structures. Over time it has become a "legacy" product for the supply chain, with local production ceasing and overseas sourcing becoming more difficult with increased lead times.

With the release of the Transit New Zealand M23 Specification for Road Safety Barrier Systems in 1999 and the associated adoption of the NCHRP350 (and more recently MASH) testing regime, Bridge W-Beam guardrail has become an out-dated public domain system offering no substantive advantage over Highway W-Beam guardrail (2.7mm thick/ 12 gauge) in side protection applications.

Any additional stiffness provided by the thicker steel section (3.4mm vs. 2.7mm) of the Bridge W-Beam guardrail is offset by the greater post spacing (2000mm vs. 1905mm). The differing post spacings can also cause difficulties for maintenance contractors, leading to potential delays in on-site repairs, with consequent additional risk and disruption to the travelling public.

Recently, installations using Bridge W-Beam guardrail on proprietary system posts have appeared. This is a concern as the proprietary systems have been designed, tested and accepted based on the use of 2.7mm Highway W-Beam guardrail. **This practice is unsatisfactory and is not to be continued**. The use of non-standard componentry negates any NZ Transport Agency acceptance and will also likely void any supplier warranty. Rectification of non-compliant systems may be required and any costs will not be funded by the NZ Transport Agency.

Bridge W-Beam can be easily recognised by the "long" (150mm) post bolt slot, compared to Highway W-Beam which has a "short" (63mm) post bolt slot as illustrated below.

Figure 1 Bridge W-Beam Guardrail (3.4mm thick) (150mm long post bolt slot)

Figure 2 Highway W-Beam Guardrail (2.7mm thick) (63mm long post bolt slot)

Recommended Practice

From July 2013, "Bridge" W-Beam guardrail is no longer to be used for new installations on State highway structures.

Bridge W-Beam guardrail may only be used in the repair of existing State highway installations where the level of damage does not require system replacement.

For bridge protection on State highway structures where use of a semi-rigid system is acceptable, Thrie-Beam guardrail (on modified blockout) should be used. This system offers a higher level of containment and greater predictability of performance in comparison with Bridge W-Beam guardrail.

For road side protection to State highways and local authority roads where a semi-rigid system is acceptable, either W-Beam Highway or Thrie-Beam guardrail systems (both are 2.7mm/12 gauge) may be used.

For low volume local authority structures, the use of Highway W-Beam or Thrie-Beam guardrail as bridge protection is at the local road controlling authority's discretion (public domain standard drawings are available).

Details of acceptable public domain and proprietary systems are available on the NZ Transport Agency website (refer NZ Transport Agency Road Safety Hardware standard details and/or Specification M23 Interim Appendix B).

Endorsed by: National Manager Traffic & Safety