
RCA information pack update

21 March 2017

1. Changes to 45/46T Bridge Screening Table

The original RCA information pack contained a table in Appendix B indicating the capability of various bridges to support 50MAX and Full HPMV loading based on their historic design loading and span length.

Recent assessment of older bridges has shown that historic Working Stress methods can often be unconservative when compared to Ultimate Limit State (ULS) design and assessment using load factors in the current Bridge Manual. As such, the parameters in this capacity table have been revised, with acceptable span ranges reduced in some cases.

2. Effect of Changes

The reduction in acceptable span ranges may result in additional bridges being flagged as restrictive to 50MAX or Full HPMVs. However, the increase in the number of restrictive bridges is expected to be very small. It should be noted that this table is only designed for high level screening of bridge capacity. If a bridge span falls outside the acceptable span range, it does not indicate that the bridge cannot safely support the vehicle load, only that further review and assessment of the bridge capacity may need to be undertaken.

3. Updated Bridge Capacity Table

The following table updates the original tables provided in Appendix B of the RCA Information Pack.

Design Loading	Construction Date	Acceptable Span Range	
		50MAX	Full HPMV (with Class 1 or HPMV AWF)
HN-HO-72	1972-	All spans	All spans
H20-S16-T16	1961-1971	0 - 40m	0 - 30m
H20-S16-44	1944-1960	0 - 25m*	0 - 16m
H20-S16-41	1943	0 - 25m*	0 - 14m
Traction Engine	1933-1942	0 - 25m*	-

**Provided bridge is unposted and is assessed as being able to safely support Class 1 vehicles*

4. Technical Details for Structural/Bridge Engineers

The updated acceptable span ranges in the table above have been developed based on a comparison with the load effects from the original design loading. For some design loadings, the acceptable span range is lower than in the previous tables provided, to ensure the bridge assessments are more in line with the assessment load factors used in the current version of the NZTA Bridge Manual.

This table was developed based on the following assumptions:

- The structure has been designed correctly, based on the relevant design loading.
- There are no detailing issues that limit the capacity of the structure below its original design loading.
- The structure is in good or fair condition, in accordance with Table 7.5 of the NZTA Bridge Manual (3rd Edition).
- **Load effects from HPMV's and 50MAX are as outlined in the NZTA Bridge Manual**
- Bridges with full moment continuity between spans are of normal proportions and show no signs of distress, in accordance with clause 7.4.5 f. of the Bridge Manual (3rd Ed).
- Load effects in transverse bridge elements (i.e. decks and transoms) must be assessed independently, based on the proposed HPMV load (however, these effects will be no worse than Class 1 effects for 50MAX HPMVs).

As outlined in the information pack, the table should only be used by experienced structural engineers, in conjunction with a review of the bridge condition, structural form and failure mechanisms. It should not be relied upon for a structure that contains any critical structural weaknesses that could create a non-ductile failure mechanism under live loading.