Manual

Structures Inspection Manual

Part 3 - Appendix G: Breakdown of Complex and Non-Standard Structures

September 2016

Queensland Government

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1 Introduction

The details and processes described in the manual provide a standardised system for the component breakdown of the various types of bridges and culverts commonly found in Queensland. There are a number of structures within the state that are not easily definable, either due to the complexity of their design or the uniqueness of the structure.

The purpose of this Appendix is to provide guidance on the component breakdown of these non-standard structures.

The drawings in this Appendix detail those non-standard structures for which advice has previously been issued.

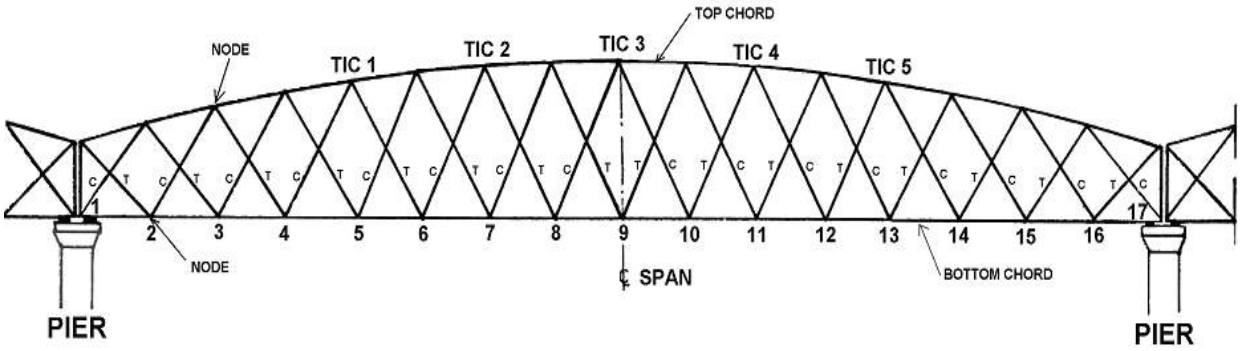
Most large, complex structures (such as steel truss bridges) will require more detailed reporting than the Standard Level 2 Inspection Report allows for. In such cases, it is recommended that the following process is adopted along with any other additional measures developed in accordance with Section 4.8 of Part 3 of this manual:

- A specific and detailed inventory of the elements making up each component shall be compiled by an engineer from Structures Section.
- Standard condition state descriptions shall be used to rate each element where appropriate and unique condition state descriptions shall be developed where necessary.
- Component ratings shall be in accordance with the *Structures Inspection Manual*, based on an assessment of the elements making up each component.
- The detailed inventory and inspection report shall be appended to the Level 2 or Level 3 report. Word documents may be saved directly into the Photographic and Sketches Record.

Figure G-1 shows an extract from a detailed inspection of the Burnett River Bridge. The extract shows the breakdown of a complex component (23S – Through Truss) into individual elements, and the rating of each element in accordance with the *Structures Inspection Manual*.

Figure G1: Extract from Burnett River Bridge Inspection

Above Bridge Inspection



BURNETT RIVER BRIDGE - TRUSS

CS = Condition State	C = Compression Member	T = Tension Member	BC = Bottom Chord
TC = Top Chord	N = Node	TIC = Tie Chord	BA = Bracing Angle

Group	Component	Exposure Class	CS	Comments
S 1 (U/S)	TC (N4)	3	4	Surface corrosion over an area of 100 x 20 mm. Refer to Figure 7-26.
	TIC1	3	4	Electrical conduit had broken and become loose. It was removed during the inspection refer to Figure 7-27. Crevice corrosion of the latticework where they connect to the T member, refer to Figure 7-28 and Figure 7-29.
	TIC 1-2	3	4	Crevice corrosion of the BA where the two angles intersect. The electrical conduit used zinc-plated clamps and these should be replaced with stainless steel clamps. Refer to Figure 7-30.
	TIC 2	3	4	Crevice corrosion of the latticework where they connect to the T member, refer to Figure 7-33. The T member has a 5 mm loss of section. The measurement was taken at node 3.
	TC (N8)	3	4	Crevice corrosion of the angled splice of the top chord lower flange.
	TC (N9)	3	3	Corrosion where the old power line brace attached to the TC.
	TIC 3	3	4	A timber post has been attached to the centre of the TIC for the lighting of the bridge. This timber post is causing the TIC to corrode, refer to Figure 7-34 and 7-36.
	TC (N9)	3	4	Damage to the protective coating has occurred during the installation of the new power line clamp.
	TC (N10)	3	4	Surface corrosion at the splice plate to cover plate interface.
	TIC 4	3	4	Crevice corrosion of the latticework at node 2, where it connects to the T member. The T member has a 5 mm loss of section in localised areas.
	TC (N12)	3	4	Surface corrosion at the splice plate interface with the cover plate.
	TIC 5	3	4	Surface corrosion where the TIC connects to the TC. Serve loss of section and nodes 6 and 7 where the section has lost 5 mm over an area of 150 x 65 mm. Refer to Figure 8-1.
	TC (N12-13)	3	4	Crevice corrosion of the angled splice of the top chord lower flange.
S 2 (U/S)	TC (N3)	3	4	Surface corrosion at the splice plate interface with the cover plate.
	TC (N4)	3	4	Surface corrosion at the splice plate interface with the cover plate.
	TIC 1	3	4	Crevice corrosion of the latticework at node 2, where it connects to the T member. There is a 5 mm loss of section, refer to Figure 8-7. Serve corrosion where the BA connects to the centre of the TIC. Refer to Figure 8-8.
	TC (N5)	3	4	Surface corrosion of the TC cover plate.