

BRIDGE TECHNICAL DIRECTION BTD2011/01

USE OF PROPRIETARY PRECAST REINFORCED CONCRETE MODULAR BRIDGE DECK SYSTEMS

Background

BTD 2010/01 restricted precast reinforced concrete modular deck systems to use on low speed, low traffic roads. Circumstances have sufficiently changed that some of the restrictions on traffic volumes can now be eased.

Information

This Bridge Technical Direction specifies the conditions of use of proprietary modular concrete bridge deck systems by RTA and supersedes BTD2010/01, which is now withdrawn.

Bridge Technical Direction

Proprietary modular concrete bridge deck systems shall not be used for RTA bridges and those that will become the property of the RTA, where:

- For single span bridges the posted speed limit exceeds 100 km/hour; or
- For multiple span bridges the posted speed limit exceeds 80 km/hr; or
- The current or 30 year projected Annual Average Daily Traffic (AADT) exceeds 1500; or
- The current or 30 year projected Average Annual Daily Truck Traffic (AADTT) exceeds 500.

Where proprietary modular concrete bridge deck systems are used, the following conditions shall apply:

- a) The bridge and its components shall be designed in accordance with AS 5100 and constructed in accordance with relevant RTA QA specifications;
- b) All deck units shall be pre-cambered to compensate for dead load, shrinkage and creep deflections so that long-term sagging does not occur;
- c) Detailed analyses shall be carried out on the effects of load shedding and traffic barrier loading to ensure that the design stresses for the edge beam reinforcement will not exceed the limits specified in AS 5100.5;
- d) The anchorage of the main positive moment reinforcement past the inside face of the bearings shall be in accordance with Clause 8.1.8 of AS 5100.5. Where cogged or hooked bars are used, the drawings shall specify that the reinforcing bars are to be accurately bent to the required dimensions, to ensure correct cover at the ends of the units;
- e) Adjacent deck units shall be transversely prestressed or connected by in-situ reinforced concrete stitch pours to ensure full transverse flexural continuity;
- f) Full depth diaphragms shall be provided at the ends of all deck units. Intermediate diaphragms shall be provided as required;
- g) Diaphragms shall be designed to be fully prestressed under serviceability loading;

- h) As an alternative to in-situ grouting of transverse tendons in accordance with RTA QA Specification B1 I3, factory pre-grouted tendons in polyethylene sheathing may be used. In this case, the tendons shall be taken to be un-bonded;
- i) The number of transverse deck expansion joints shall be minimised and shall have a minimum spacing of not less than 25m;
- j) Where applicable, gaps in shear keys and between adjacent precast units shall be fully sealed to prevent leakage during grouting. In particular, leakage of grout on the bearing shelf shall be prevented to avoid compromising the performance of any bearing; and
- k) Proprietary modular concrete bridge deck systems are required to incorporate a waterproof membrane in order to comply with BPC2003/02.

References: BPC2003/02, BTD2010/01

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