

## Code of Practice Bridge traffic barriers

### 1. Scope and application

BTN001 Bridge traffic barriers states VicRoads' requirements for the design of bridge barriers.

Bridge Technical Notes are a Code of Practice. Compliance with Bridge Technical Notes is mandatory.

BTN001 Bridge traffic barriers is to be read in conjunction with the following documents:

- BTN002 Bridge approach barriers

Other than as stated in this document and relevant VicRoads standard specifications, the provisions of AS5100:2017 shall apply. Where this document differs from AS5100:2017, its requirements override those of AS5100:2017.

### 2. Terminology

Reference is made to the following performance levels:

- No barrier
- Low
- Regular
- Medium
- High\*
- Special

Where these terms are used, they have the meaning as defined in AS5100.1.

\*VicRoads' High performance level is defined in terms of AS5100 Special level. Design for High performance level barriers shall comply with the loading and effective height criteria for Special level which for this purpose shall be the 44 tonne articulated van as defined in AS5100.2 Appendix A2.

For the design of bridge barriers, no consideration shall be made of test levels or the implied equivalence of test levels to performance levels that is given in Table 14.4 of Part 1.

### 3. Performance level selection

Barrier required performance level shall be determined in accordance with the process described in AS5100.1 including Appendix A.

### 4. Geometry

#### 4.1. Height

Barriers shall have the height appropriate to the required performance level as described in Table 12.2.3 (Low, Regular and Medium performance level) and Table A3 of Appendix A (Special performance level) of AS5100.2.

#### 4.2. Shape

##### 4.2.1. Concrete barriers

The internal (roadside) face of concrete barriers shall have the F profile as illustrated in Clause 14.6.1 of AS5100.1. No other shape is permitted.

##### 4.2.2. Steel barriers

Steel post and rail type barriers shall comply with the requirements of Clause 14.6.2 of AS5100.1.

##### 4.2.3. Steel and concrete barriers

Combined steel and concrete barriers shall comprise a reinforced concrete lower section with the F profile with steel posts and rail(s) to give the required overall height.

##### 4.2.4. External face

The external face of the barrier shall have a shaped profile which is either:

- the VicRoads standard concave profile or
- compliant with VicRoads' barrier concept drawing or
- a project-specific profile designed by either VicRoads Landscape and Urban Design or a qualified Landscape and Urban Designer approved by VicRoads Principal Landscape and Urban Designer
- in all cases, final selection of the profile shall be subject to the Superintendent's approval.

### 5. Design loads

Design loads shall comply with Tables 12.2.2 (Low, Regular and Medium performance level) and Appendix A2 (Special performance level) of AS5100.2.

## 6. Design for strength and durability

### 6.1. Permitted design methodology

The design must be derived by a method which complies with the acceptance criteria stated in AS5100.1 Clause 14.4 (a), (b), (c) or (d).

Barrier components shall be designed and detailed in accordance with the requirements of AS5100.5 (for reinforced concrete) and AS5100.6 (for structural steel).

### 6.2. Median barriers designed to AS5100

Median barriers on roads and bridges designed in accordance with AS5100 must incorporate a foundation that is designed in accordance with AS5100 to safely transmit all design loads to the ground.

## 7. Connections and other details

### 7.1. Posts for steel barriers

Posts for steel barriers shall be square, rectangular or circular hollow sections complying with AS1163; minimum grade 350 or as specified on the drawings. The use of I-section posts is not permitted.

### 7.2. Additions

If it is necessary to support an additional structure such as a noise attenuation wall on the bridge barrier, the following requirements must be met:

- the design of the barrier must include the load effects arising from the addition
- the addition must not modify or affect the specified function of the barrier
- the additional structure must be angled away from the carriageway to provide a vehicle roll allowance in accordance with clause 6.3.16 of the AGRD Part 6 such that the risk of collision of a high-sided vehicle with the barrier is minimised.

### 7.3. Joints

Barriers of all types must incorporate provision for expansion and contraction. As a minimum, movement joints in barriers shall be provided at positions that coincide with movement joints in the superstructure.

Concrete and steel elements of barriers shall be fully continuous for strength between expansion joints in the bridge superstructure.

Where joints in rails are required, these shall be fabricated by welding. Bolted joints are not permitted.

### 7.4. Bonded and mechanical anchors

Use of bonded or mechanical anchors (as defined in BTN006 and BTN008) in holding-down bolt assemblies or in any position or orientation in which they contribute to the resistance to impact forces is not permitted.

### 7.5. Protective coatings

Steel components must have the protective coating specified in the contract specification, otherwise the protective coating shall be in accordance with Standard Specification Section 631.06.

### 7.6. Bridge approaches and departures

Bridge approach and departure barriers compliant with BTN002-2018, AS5100.1 and AS5100.2 shall be provided.

## 8. Constructability and maintainability

The design shall include provisions to enable replacement of sections of severely damaged barrier.

## 9. Retrofitting

The required performance level is to be assessed in accordance with Clause 3 of this document. If the design load and load-effects for the required performance level exceed the design load and load-capacity of the original superstructure, the bridge superstructure is to be strengthened to the required capacity.

Design of retrofitted barriers must comply with Clauses 4 to 8 of this document.

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***Bridge Technical Notes are subject to periodic review and may be superseded.***