

Roads

Master Specification

RD-BF-C3 Construction of Concrete Safety Barrier Systems

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Contents

| | |
|---|---|
| Contents | 3 |
| RD-BF-C3 Construction of Concrete Safety Barrier System | 4 |
| 1 General | 4 |
| 2 Quality Requirements | 4 |
| 3 Construction of Concrete Barriers | 4 |
| 4 Hold Points | 5 |

RD-BF-C3 Construction of Concrete Safety Barrier System

1 General

- 1.1 This Part specifies the requirements for the construction of concrete road safety barrier systems. It includes precast and cast in situ barriers.
- 1.2 Concrete safety barrier systems must comply with the following, including the most recent amendments/revisions (in order of precedence):
 - a) Parts ST-SC-S3, ST-SC-S6, ST-SC-S7, ST-SC-C4, ST-SC-C7;
 - b) Contract specific drawings;
 - c) AS 3845.1 Road Safety Barrier Systems;
 - d) GD 300 Accepted Safety Barrier Products;
 - e) Department's standard drawings.
- 1.3 Documents referenced in this Part are listed below:
 - a) AS 3610 Formwork for Concrete.
 - b) AS 3845 Road Safety Barrier Systems.
 - c) GD 300: "Accepted Safety Barrier Products" available from:
<https://www.dit.sa.gov.au/standards/roads-all>
 - d) Standard Drawings, available from <https://www.dit.sa.gov.au/standards/roads-all>

2 Quality Requirements

- 2.1 The Contractor must prepare and implement a Quality Plan that includes detailed procedures for:
 - a) achieving the specified concrete compaction, finishing, curing and dimensional tolerances (for cast in situ barriers); and
 - b) placement of units and method of grouting (for precast units).
- 2.2 The procedures must be submitted at least 28 days prior to the commencement of site work.
- 2.3 Provision of the procedures listed in this Clause shall constitute a **Hold Point**.

3 Construction of Concrete Barriers

General

- 3.1 Barriers on bridge deck medians and sealed surfaces must be placed such that they are retained by a minimum depth of 30 mm of asphalt on both sides. Barriers placed on subbase must be restrained prior to placing base material against them so that there is no visible movement during placement of the base.

Precast Units

- 3.2 A spreader bar must be used during lifting to ensure that slings remain vertical. Hemispherical recesses must be filled with mastic after installation of the units. Barrier units must be set up on packer blocks to provide sufficient gap under the unit to enable the grout to be placed under the entire unit. A **Hold Point** shall apply prior to grouting the units in place.

- 3.3 Grout must be grade S32 and consist of cement, sand, water and an approved admixture. The water-cement ratio must be as low as practicable consistent with adequate workability and must not be greater than 0.45 by mass. Grout must be used within 30 minutes of mixing.
- 3.4 Grouting must be carried out in such a manner that the shear key and the area under the units are completely filled with dense and uniform grout placed in one continuous operation. Grouting must not be carried out when the temperature of the grout is less than 10°C or greater than 30°C.

Cast In Situ Barriers

- 3.5 Concrete must be placed in an operation which proceeds continuously between the ends of concrete safety barrier systems, or between construction joints, or within a precast safety barrier segment. Fresh concrete must not be placed against concrete that has taken its initial set, except at properly formed construction joints.
- 3.6 Unformed surfaces must be tamped to bring a layer of fines to the surface and screeded to the specified level. Immediately following compaction and screeding, unformed surfaces must be tested for high or low spots and any necessary corrections made.
- 3.7 The Contractor must control cracking by sawing or forming movement joints. Movement joints must be straight, square to the line of the barrier, 50 mm deep, and spaced at intervals of not more than 4.5 m along the barrier. If sawing is used to control cracks, sawing must be carried out before uncontrolled cracking begins, and in any case, within 12 hours after placing the concrete.
- 3.8 Expansion joints must be straight, square to the line of the barrier, 6 mm wide and filled with a preformed joint filler.

Tolerances

- 3.9 Barrier units must be constructed within the following tolerances:
- location of unit 5 mm;
 - level of unit 5 mm (where there is a design string);
 - face steps, including at construction joints, must not exceed the limits in Table 3.4.2 in AS 3610 for Class 3 surface finish, (i.e. 5 mm for 100% of readings and 3 mm for 80% of readings);
 - the deviation from any specified plan or cross-sectional dimension must not exceed 1/200 times the specified dimension or 5 mm, whichever is the greater;
 - the deviation of any point from a straight line joining any two points on top of the barrier must not exceed 1/250 times the length of the line or 10 mm, whichever is the greater after allowing for horizontal and vertical curves;
 - surface undulations on the faces of a barrier must not exceed the limits in Table 3.4.2 in AS 3610 for Class 3 surface finish; and
 - the line of a transverse joint must not deviate by more than 10 mm from a line comprising a series of contiguous straight lines on the surfaces of the barrier.

4 Hold Points

- 4.1 The following is a summary of Hold Points referenced in this Part:

| Document Ref. | Hold Point | Response Time |
|---------------|---|---------------|
| 2.3 | Preparation of Procedures | 2 days |
| 3.2 | Prior to grouting of Median barrier Units | 1 day |