

PART R44
CONSTRUCTION OF CONCRETE SAFETY BARRIER SYSTEMS

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1. GENERAL

- .1 This Part specifies the requirements for the construction of concrete road safety barrier systems. It includes pre-cast and cast insitu systems.
- .2 Concrete safety barrier systems shall comply with the following (in order of precedence):
 - (a) Contract specific drawings;
 - (b) Division 3 "Concrete" of this specification; and
 - (c) AS 3845 "Road Safety Barrier Systems".
- .3 Documents referenced in this Part are listed below:
 - (a) AS 3610 Formwork for Concrete
 - (b) AS 3845 Road Safety Barrier Systems.
- .4 The work shall be undertaken in accordance with the following drawings:

TABLE 1.3 DRAWING		
<u>Drawing No. S-4064:</u>		Amendment No.
sheet 1	810 mm high TL4 Road Concrete Barrier	0
sheet 2	1070 mm high TL5 Road Concrete Barrier	0
sheet 3	Concrete Barrier Installation	0

- .5 DPTI standard drawings are available from the following web site: <http://www.dpti.sa.gov.au/standards>.

2. QUALITY REQUIREMENTS

- .1 The Contractor shall 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 pre-cast units).
- .2 The procedures shall be submitted at least 28 days prior to the commencement of site work.
- .3 Provision of the procedures listed in this Clause shall constitute a **HOLD POINT**.

3. CONSTRUCTION OF CONCRETE BARRIERS**General**

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

Precast Units

- .2 A spreader bar shall be used during lifting to ensure that slings remain vertical. Hemispherical recesses shall be filled with mastic after installation of the units.
- .3 Barrier units shall 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.

- .4 Grout shall be grade S32 and consist of cement, sand, water and an approved admixture. The water-cement ratio shall be as low as practicable consistent with adequate workability and shall not be greater than 0.45 by mass. Grout shall be used within 30 minutes of mixing.
- .5 Grouting shall 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 shall not be carried out when the temperature of the grout is less than 10°C or greater than 30°C.

Cast Insitu Barriers

- .6 Concrete shall 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 shall not be placed against concrete that has taken its initial set, except at properly formed construction joints.
- .7 Unformed surfaces shall be tamped to bring a layer of fines to the surface and screeded to the specified level. Immediately following compaction and screeding, unformed surfaces shall be tested for high or low spots and any necessary corrections made.
- .8 The Contractor shall control cracking by sawing or forming movement joints. Movement joints shall 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 shall be carried out before uncontrolled cracking begins, and in any case, within 12 hours after placing the concrete.
- .9 Expansion joints shall be straight, square to the line of the barrier, 6 mm wide and filled with a preformed joint filler.

Tolerances

- .10 Barrier units shall be constructed within the following tolerances:
 - (a) Location of unit □ 5 mm,
 - (b) Level of unit □ 5 mm (where there is a design string),
 - (c) Face steps, including at construction joints, shall 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),
 - (d) The deviation from any specified plan or cross-sectional dimension shall not exceed 1/200 times the specified dimension, or 5 mm, whichever is the greater,
 - (e) The deviation of any point from a straight line joining any two points on top of the barrier shall not exceed 1/250 times the length of the line or 10 mm whichever is the greater, after allowing for horizontal and vertical curves,
 - (f) Surface undulations on the faces of a barrier shall not exceed the limits in Table 3.4.2 in AS 3610 for Class 3 surface finish,
 - (g) The line of a transverse joint shall 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

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

CLAUSE REF.	HOLD POINT	RESPONSE TIME
2.2	Preparation of procedures	2 days
3.2	Prior to grouting of Median Barrier Units	1 day