NEW SOUTH WALES

DEVELOPMENT CONSTRUCTION SPECIFICATION

C264

NON-RIGID ROAD SAFETY BARRIER SYSTEMS
(Public Domain)

Amendment Record for this Specification Part

This Specification is Council's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in amendment	Clause No.	Amendment Code	Author Initials	Amendment Date
EXAMPLE 1	*Provision for acceptance of nonconformance with deduction in Payment*	*XYZ.00*	*AP*	*KP*	*2/6/97*

SPECIFICATION C264:
NON-RIGID ROAD SAFETY BARRIER SYSTEMS (Public Domain)

GENERAL

C264.01 SCOPE

1. The work to be executed under this Specification consists of the setting out, supply of all materials and erection of road safety barriers and terminals, in accordance with the requirements for non-rigid road safety barrier systems in AS/NZS 3845, at the locations shown on the Drawings or as directed by the Superintendent.

2. This Specification details the requirements for public domain non-rigid road safety barrier systems. Where a patented non-rigid road safety barrier system is specified and shown on the Drawings, all materials shall be in accordance with the manufacturer's specifications and, it shall be constructed strictly in accordance with the manufacturer's instructions.

C264.02 REFERENCE DOCUMENTS

1. Documents referenced in this Specification are listed in full below whilst being cited in the text in the abbreviated form or code indicated.

Documents Standards Test Methods

(a) Council Specifications

C201	-	Control of Traffic
C271	-	Minor Concrete Works

(b) Australian Standards

AS 1906.2	-	Retroreflective devices (non pavement application).
AS/NZS 3845	-	Road safety barrier systems.
AS/NZS 4680	-	Hot-dip galvanised (zinc) coatings on fabricated ferrous articles

MATERIALS

C264.03 COMPONENTS

1. All steel components for public domain non-rigid road safety barrier systems, W-beam and Thrie-beam, shall be in accordance with AS/NZS 3845 and shall be of the type as shown on the Drawings.

Steel

2. Timber posts are to be used only in W-beam terminal sections, as detailed on the Drawings and shall be of the timber type, grade, size and treatment level in accordance with AS/NZS 3845. All surfaces shall be smooth and free from obvious saw marks.

Timber

C264.04 CERTIFICATION

1. Steel and timber road safety barrier components shall not be erected until the Contractor has produced documentary evidence to the Superintendent that the steel and timber road safety barrier components conform to the requirements of this Specification. ***Evidence of Conformance***

CONSTRUCTION

C264.05 GENERAL

1. The Contractor shall at all times conform to the requirements of the Specification for CONTROL OF TRAFFIC. ***Traffic Control***

2. Construction of non-rigid road safety barrier shall comply with AS/NZS 3845 except where explicit departures are detailed on the Drawings.

3. Road safety barriers shall be erected after the construction of the base on concrete pavements and after the placing of the initial layer of asphaltic concrete or sprayed seal on a flexible pavement, unless otherwise approved by the Superintendent. ***Timing of Construction***

4. The Contractor shall set out the work to ensure that all road safety barriers and terminal sections are located in accordance with the Drawings or as directed by the Superintendent. ***Set Out***

5. Underground cables and ducts laid in the road safety barrier area shall be located prior to the erection of posts and all care must be taken not to damage such cables and ducts. ***Cables and Ducts***

6. The posts should be set to the full depth as shown on the Drawings. If this is not possible due to the presence of an underground obstruction, an alternative method of setting the posts, as approved by the Superintendent, shall be used. ***Underground Obstruction***

7. Posts shall stand vertical and the spacing shall be such that when the safety barrier is erected no post movement is necessary in order to align holes or for any other reason. ***Post Accuracy***

C264.06 ERECTION OF STEEL POSTS

1. The safety barrier posts are to be located as shown on the Drawings. The top of the post shall be 710mm, 805mm or 865mm as appropriate for W-beam, Thrie-beam or modified blockout Thrie-beam respectively, above the ground level, unless otherwise shown on the Drawings. On terminal ends, the level of the posts shall be such as to conform to the extended crossfall of the main pavement unless otherwise shown on the Drawings. ***Positioning of Posts***

2. When erected in position the posts shall be on a smooth line both horizontally and vertically with the tops of posts within ±20mm of the heights specified in paragraph 1 of this Clause. ***Smooth Line/ Tolerances***

3. Steel posts shall be erected by driving, or by other means, as directed by the Superintendent, in accordance with the requirements for foundation posts in AS/NZS 3845. The open section of the post shall point in the same direction as adjacent traffic. The posts are to be firm in the ground and any movement at ground level shall not exceed 3mm in any direction when force tested in accordance with AS/NZS 3845. ***Foundation and Testing***

4. The posts shall not have any obvious deformation as a result of driving. Any damage which does occur to the posts is to be repaired within 24 hours using an organic ***Damage to Posts***

zinc-rich primer in accordance with the repair requirements of Appendix E in AS/NZS 4680.

5. Any post which has been excessively damaged will be rejected by the Superintendent and shall be replaced by the Contractor at its own expense. ***Contractor's Cost***

C264.07 ERECTION OF TIMBER POSTS

1. The safety barrier posts are to be located as shown on the Drawings. The top of the posts shall be 710mm ±20mm above the ground level, unless otherwise shown on the Drawings. On terminal ends the level of the posts shall be such as to conform to the extended crossfall of the main pavement, unless shown otherwise on the Drawings. ***Positioning of Posts***

2. When erected in position the posts shall be on a smooth line both horizontally and vertically. ***Smooth Line***

3. The section of the timber posts to be cast into a reinforced concrete footing shall be wrapped in 12mm thick polystyrene foam sheeting before concrete casting. ***Polystyrene Foam***

4. Concrete used in the footings for timber posts shall have a minimum compressive strength of 32MPa at 28 days and shall conform with the requirements of the Specification for MINOR CONCRETE WORKS. ***Concrete***

5. Concrete footings shall be 600mm diameter, and shall have tolerances of minus zero or plus 50mm. Overbreak and excessive depth shall be filled with 32MPa concrete at no cost to the Principal. ***Footing Size***

6. Wire fabric reinforcing shall be as detailed on the Drawings. ***Reinforcing Fabric***

7. The surface area of the posts which will be above ground shall be painted with two coats of grey acrylic paint. ***Painting***

C264.08 ERECTION OF ROAD SAFETY BARRIER RAILS

1. Steel blockout pieces shall be erected with the open section pointing in the same direction as adjacent traffic. ***Blockouts***

2. All rail laps shall be in the same direction as adjacent traffic such that approach rail ends are not exposed to traffic. ***Rail Laps***

3. Stiffening pieces, 300mm long, shall be used on intermediate posts. ***Stiffening Pieces***

4. Road safety barrier rails and blockout pieces shall be handled and erected in such a manner that no damage occurs to the galvanising. Any minor damage occasioned to the galvanising shall be repaired within 24 hours using an organic zinc-rich primer in accordance with the repair requirements of Appendix E in AS/NZS 4680. ***Minor Damage to Galvanising***

5. Any road safety barrier rails or blockout pieces which have been excessively damaged will be rejected by the Superintendent and shall be replaced by the Contractor at its own expense. ***Contractor's Cost***

6. Road safety barrier rail attachment bolts and splice bolts are to be tightened initially such that the barrier can be erected. Adjustments are then to be made to the rails using the slotted holes provided to produce a smooth regular line, free of any kinks or bumps. The overall line of the top of the safety barrier rails is to visually conform with the vertical alignment of the road pavement. ***Erection Procedure***

7. When the alignment both vertically and horizontally is obtained the splice bolts ***Splice Bolt***

are to be fully tightened. The bolt head (not the shoulder) should be in full bearing with the rail. ***Tightening***

C264.09 END TREATMENT OF ROAD SAFETY BARRIERS

1. Both approach and departure ends of the road safety barrier shall be constructed with leading and trailing terminal sections at locations shown and as detailed on the Drawings. ***Leading, Trailing Terminals***

2. Modified eccentric loader terminals (MELT) shall be constructed, as detailed on the Drawings and, at approach end locations of road safety barriers as shown on the Drawings. Where the departure end of a road safety barrier is within the clear zone of opposing traffic, a MELT shall be constructed in place of a trailing terminal section. ***MELT***

3. The approach and departure ends of double sided road safety barriers shall have terminal sections as detailed on the Drawings. ***Double Sided Safety Barrier***

4. Non-rigid road safety barrier connections to rigid road safety barriers or bridge parapets shall be as detailed on the Drawings. ***Connections to Rigid Barriers***

C264.10 DELINEATORS

1. Delineators complying with AS 1906.2 shall be fixed with brackets to the road safety barrier, to the details and at the locations shown on the Drawings beginning at the first post and then in accordance with the following table:- ***Fixing***

Radius of Curve	**Spacing of Reflectors on Barrier**
m	every
30 - 90	3rd post
90 - 180	5th post
180 - 275	8th post
275 - 365	11th post
over 365 (including straight road)	16th post

2. The delineators shall be so arranged that drivers approaching from either direction will see only red reflectors on their left side, and white reflectors on their right. ***Arrangement and Colour***

SPECIAL REQUIREMENTS

C264.11 RESERVED

C264.12 RESERVED

C264.13 RESERVED

C264.14 RESERVED

LIMITS AND TOLERANCES

C264.15 SUMMARY OF LIMITS AND TOLERANCES

1. The limits and tolerances applicable to the various clauses in this specification are summarised in Table C264.1 below:

Item	Activity	Limits/Tolerances	Spec Clause
1.	**Vertical Alignment**		
	(a) Tops of steel posts.	± 20mm	C264.06
	(b) Tops of timber posts	± 20mm	C264.07
2.	**Post Movement**	≤ 3mm	C264.06
3.	**Concrete Footings**		
	(a) Diameter	-0mm or +50mm	C264.07

Table C264.1 - Summary of Limits and Tolerances

MEASUREMENT AND PAYMENT

C264.16 PAY ITEMS

1. Payment shall be made for all the activities associated with completing the work detailed in this Specification on a schedule of rates basis in accordance with Pay Items C264(a) to C264(g) inclusive.

2. A lump sum price for any of these items shall not be accepted.

3. If any item, for which a quantity of work listed in the Schedule of Rates, has not been priced by the Contractor, it shall be understood that due allowance has been made in the prices of other items for the cost of the activity which has not been priced.

4. Concrete footings for timber posts are measured and paid in accordance with this Specification and not in the Specification for MINOR CONCRETE WORKS.

5. Miscellaneous minor concrete work not included in the pay items in this Specification shall be in accordance with pay items described in the Specification for MINOR CONCRETE WORKS.

6. Traffic control is measured and paid in accordance with the Specification for CONTROL OF TRAFFIC.

Pay Item C264(a) SINGLE SIDED ROAD SAFETY BARRIER

(i) Single W-beam
(ii) Nested W-beam
(iii) Single Thrie-beam
(iv) Nested Thrie-beam
(v) Single Modified Blockout Thrie-beam
(vi) Nested Modified Blockout Thrie-beam
(vii) Single W-Thrie-beam Transition
(viii) Nested W-Thrie-beam Transition

1. The unit of measurement shall be the linear metre.

2. The distance shall be measured along the centre line of the rail, centre to centre of posts, excluding terminal sections and connectors to rigid safety barriers or bridge parapets..

3. The schedule rate shall include the supply of all components and fixings and all activities associated with the erection of each type of road safety barrier.

Pay Item C264(b) MODIFIED ECCENTRIC LOADER TERMINAL (MELT)

1. The unit of measurement shall be "each" MELT section supplied and erected as detailed on the Drawings.

Pay Item C264(c) TERMINAL SECTION

(i) Leading Terminal
(ii) Trailing Terminal

1. The unit of measurement shall be "each" terminal section supplied and erected as detailed on the Drawings.

Pay Item C264(d) CONNECTORS TO RIGID ROAD SAFETY BARRIERS (RSB) OR BRIDGE PARAPET

(i) W-beam to RSB
(ii) W-beam to Thrie-beam to RSB
(iii) Thrie-beam to RSB

1. The unit of measurement shall be "each" connector supplied and erected as detailed on the Drawings, excluding the anchorage assemblies cast into the rigid road safety barrier or bridge parapet.

Pay Item C264(e) DELINEATOR BRACKETS

1. The unit of measurement shall be "each".

Pay Item C264(f) DOUBLE SIDED ROAD SAFETY BARRIER

(i) Single W-beam
(ii) Nested W-beam
(iii) Single Thrie-beam
(iv) Nested Thrie-beam
(v) Single Modified Blockout Thrie-beam
(vi) Nested Modified Blockout Thrie-beam
(vii) Single W-Thrie-beam Transition
(viii) Nested W-Thrie-beam Transition

1. The unit of measurement shall be the linear metre.

2. The distance shall be measured along the centre line of the rails, centre to centre of posts, excluding terminal sections and connectors to rigid safety barriers or bridge parapets.

3. The schedule rate shall include the supply of all components and fixings and all activities associated with the erection of each type of road safety barrier.

Pay Item C264(g) DOUBLE SIDED ROAD SAFETY BARRIER TERMINAL SECTION

1. The unit of measurement shall be "each" terminal section supplied and erected as detailed on the Drawings.

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