



Technical advice from
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Paving a New Future

With this issue focusing on roads and pavements, it is timely to look at a Standard that relates to this subject. NZS 3116:1991, Interlocking Concrete Block Paving, is at present being revised and a draft for public comment is in circulation.

Copies of the draft are available from Standards New Zealand, with the closing date for public comments being 26 October 2001.

Interlocking concrete block pavements offer many advantages including:

- (a) access to underground services without destruction of the concrete blocks, and opportunity of reinstatement without leaving unsightly and poorly finished patches
- (b) simple construction methods
- (c) low maintenance costs and long service life
- (d) excellent durability and abrasion resistance
- (e) design flexibility
- (f) suitability for paving both large and small complex areas
- (g) aesthetic appeal
- (h) wide range of colours
- (i) specific areas can be delineated by the use of blocks of contrasting colour.

Table 1 – Paver selection

Applications	Characteristic breaking load ¹ (kN) per 100mm width	Minimum thickness ² (mm)	Shape ³	Dimensional tolerances	Edge detail ⁴	Abrasion resistance ⁵	Minimum slip resistance (cycles) (Coef. of friction) ⁷	Salt resistance
Relevant AS/NZ	4456.5	–	–	4456.3	–	4456.9	3661.1	4456.10
1 Residential	3.0							
Pedestrian	3.5	40	Any	DPBI	SQ/SC/R	Not required	0.45	0
General		40	Any	DPBI	SQ/SC/R	Not required	0.45	50
Adjacent to Pools and Seas								
2 Residential								
Driveways	5.0	50	Any	DPBI	CH/R	Not required	0.45	–
Light Traffic	6.0	60	Rr	DPBI	CH	Not required	0.45	–
Medium Traffic								
3 Public								
Footpaths								
Low Volume	5.0	50	Any	DPB2	SQ/SC	6.0	0.45	–
High Volume/ Malls	5.0	50	Any	DPB2	SQ/SC	3.5	0.45	–
4 Roads								
Minor	6.0	60	Rr/Dd	DPB2	CH	Not required	0.45	–
Local	12.0	80	Rr/Dd	DPB2	CH	Not required	0.45	–
Main	12.0	80	Rr/Dd	DPB2	CH	Not required	0.45	–
5 Industrial Pavements design	Specific ⁶ engineering	80	Rr/Dd	DPB3	CH	Not required ⁵	0.45	–

NOTE – Space limitations prevent us publishing notes to the table. For full details please refer to the Standards NZ document.

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NZS 3116:1991 included three parts:

- Part 1 General
- Part 2 Specification for Interlocking Concrete Paving Blocks
- Part 3 Design and Construction of Interlocking Concrete Block Paving.

Part 2 mainly covered issues associated with the manufacture of pavers, and was superseded by AS/NZS 4455:1997. Having only part of a Standard superseded has caused some confusion in the industry, with many specifications still requiring manufacture to NZS 3116. The removal of this confusion is one reason for the proposed revision.

Other reasons for revision of NZS 3116:1991 were that the Standard was limited to pavers greater than 60 millimetres thick, and there were some concerns regarding acceptable limits of fine material in bedding sands. Loss of sand between the blocks can cause paving units to rotate, which might be because of inadequate joint filling during construction or a deficiency in the bedding sand. The bedding sand should therefore be able to dispel water

horizontally as opposed to vertically through the joints, so the permeability of the sand needs to be within a certain range.

The increased range of pavement options available in the draft document is illustrated in Table 1. The proposed Standard covers pavers between 40 millimetres and 80 millimetres thick. Heavily loaded pavements require specific design.

Table 4, also from the draft for public comment, summarises the proposed bedding sand grading requirements.

Another innovation in the proposed draft is a test method for evaluating abrasion resistance. The draft contains both performance criteria and a referenced test method.

For those in the interlocking concrete block paving design, construction and manufacture industry, I recommend that you obtain and study the draft documents and forward your comments to Standards New Zealand before 26 October.

Table 4 – Grading limits for bedding sand

BS Sieve Size	Percentage by Mass Passing		
	Sand category I	Sand category II	Sand category III
5.00mm	90 to 100	89 to 100	89 to 100
2.36mm	75 to 100	65 to 100	65 to 100
1.18mm	55 to 90	45 to 100	45 to 100
600µm	35 to 65	25 to 80	25 to 80
300µm	10 to 45	5 to 48	5 to 48
150µm	0 to 10	0 to 15	0 to 15
75µm	0 to 1.5	0 to 3	0 to 5 ¹

NOTE – (1) For residential pedestrian applications only a 0-10 range can be used.

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