NEW ZEALAND STANDARD

Specification for
CONCRETE CONSTRUCTION

Amendment No. 1

July 1983

EXPLANATORY NOTE - This amendment is issued primarily through the necessity to avoid conflict with the concrete production standards NZS 3104 and NZS 3108 and is published concurrently with those Standards. The opportunity has been taken to make certain other changes which have been recommended as a result of experience during the use of NZS 3109 and also to avoid conflict with NZS 3101:1982 The design of concrete structures.

To ensure receiving the next amendment to NZS 3109 please complete and return the amendment request form.

DECLARATION

Amendment No. 1 was declared on 22 July 1983 by the Standards Council to be an amendment to NZS 3109:1980 pursuant to the provisions of the Standards Act 1965.

RELATED DOCUMENTS

Under NEW ZEALAND STANDARDS delete the references to *NZS 3101, *NZS 3104, *NZS 3108 and *NZS 3110, and substitute the following:

NZS 3101:---- The design of concrete structures
Part 1:1982 Code of practice for the design of concrete structures
Part 2:1982 Commentary on the code of practice for design of concrete structures
NZS 3104: 1983 Concrete production - High grade and special grade
NZS 3108: 1983 Concrete production - Ordinary grade

(Amendment No. 1, July 1983)

FOREWORD

Delete the third paragraph of the FOREWORD and substitute the following:

Reference is made in the document to:
NZS 3104 Concrete production - High grade and special grade
NZS 3108 Concrete production - Ordinary grade

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The production of concrete complying with one or other of the above standards ensures compliance with the relevant requirements for supply of fresh concrete given in this Standard.

(Amendment No. 1, July 1983)

Clause 1.1 Scope and application

Delete clause 1.1.2 and substitute the following:

1.1.2 For the production of concrete, compliance with the relevant grades of this Standard is satisfied through compliance with one or other of the following standards:

NZS 3104* Concrete production - High grade and special grade
NZS 3108* Concrete production - Ordinary grade

(Amendment No. 1, July 1983)

Section 2 DEFINITIONS

In clause 2.1 delete the definition SAMPLING, RANDOM and substitute the following:

SAMPLING, RANDOM. Sampling by a procedure in which all of the concrete from which the selection is to be made has an equal chance of being sampled, that is, sampled without bias, such as by the use of tables of random numbers or by other well established methods.

Delete the definition SAMPLE, REPRESENTATIVE and substitute the following:

SAMPLE, REPRESENTATIVE. A sample of a batch of concrete taken as prescribed in 3.4.3. of NZS 3112: Part 1*

Delete the definition SAMPLE, SNATCH and substitute the following:

SAMPLE, SNATCH. A sample taken as prescribed in 3.4.2 of NZS 3112: Part 1*.

(Amendment No. 1, July 1983)

3.5 Spacing of reinforcement

Delete clause 3.5.3 and substitute the following:

3.5.3 In walls and slabs other than concrete joist construction, the principal reinforcement shall be spaced not further apart than three times the wall or slab thickness, nor more than 450 mm.

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3.5 Spacing of reinforcement

In line 2 of clause 3.5.4, delete the word vertical and substitute the word longitudinal.

(Amendment No. 1, July 1983)

3.6 Splices in reinforcement

Delete the second sentence of clause 3.6.2(a) Lap lengths and substitute the following:

Splice lap lengths shall be increased by 100 % for plain round steel.

Delete whole of second paragraph of 3.6.2(a) Lap lengths.

(Amendment No. 1, July 1983)

3.8 Tolerances for reinforcement

To clause 3.8.1 (a) Bending tolerances add a further item (3) as follows:

(3) Length of straight bars ..... + 0, - 15 mm.

(Amendment No. 1, July 1983)

3.8 Tolerances for reinforcement

To clause 3.8.1 (b) Tolerances on bar spacing add a further item (4) as follows:

(4) Spacing of stirrups or ties in beams and columns ±20 mm.

(Amendment No. 1, July 1983)

Table 4 PERMISSIBLE DEVIATIONS

Delete the heading to item 1 and substitute the following:

PRECAST UNITS (except special units).

Delete the heading to item 2 and substitute the following:

SPECIAL UNITS (where close tolerances are necessary).

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Add a new item 5 to table 4, as follows:

Component	Dimension	Tolerance
5. POSITION TOLERANCES (distance to nearest reference line)	m	mm
(a) Weld plates		±25
(b) Inserts		±12
(c) Handling devices		±75
(d) Flashing reglets		±6
(e) Flashing reglets at edge of panel		±4
(f) Reglets for glazing gaskets		±2
(g) Groove width for glazing gaskets		±2
(h) Electrical outlets, hose bibs, etc.		±2
(i) Openings and blockouts		±6

Add a second footnote to table 4, as follows:

NOTE - The attention of detailers is drawn to the fact that the requirements for tolerances for embedded items and blockouts vary considerably and should be subject to specific consideration.

(Amendment No. 1, July 1983)

COMMENTARY

C5.3 Tolerances

In item 1 of the second paragraph of clause C5.3 Tolerances, delete the first sentence and substitute the following:

1. Precast concrete work (except special units).

Delete item 2 of clause C5.3 and substitute the following:

2. Special units

These tolerances apply where necessary and only outline dimensions are indicated. It is likely further dimensions and tolerances should be detailed on the drawings.

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6.2 Production standards

Delete clause 6.2.1 and substitute the following:

6.2.1 Concrete used in construction shall be either made on the site or supplied ready mixed or supplied in the form of precast products. Site mixed concrete production shall comply with NZS 3104* or NZS 3108* as appropriate. Ready mixed concrete and concrete used in the production of precast products off the site shall comply with NZS 3104*.

(Amendment No. 1, July 1983)

6.2 Production standards

In clause 6.2.2.1 delete the description of ORDINARY GRADE and substitute the following:

ORDINARY GRADE denotes site mixed concrete conforming to the standard of production prescribed for ordinary grade in NZS 3108* and for a specified strength up to but not exceeding 20 MPa.

In clause 6.2.2.1, in the description of HIGH GRADE, delete the following:

NZS 3108*, or NZS 3110* or NZS 3104* respectively

and substitute the following:

NZS 3104*.

In clause 6.2.2.1, in the description of SPECIAL GRADE, delete the following:

NZS 3108*, or NZS 3110* or NZS 3104* respectively

and substitute the following:

NZS 3104*.

(Amendment No. 1, July 1983)

Table 7 MINIMUM PRODUCTION STANDARDS

Delete the heading to the first column: "Records"

(Amendment No. 1, July 1983)

Table 8 CONCRETE IN HARMFUL SITUATIONS - RECOMMENDED MINIMUM SPECIFIED STRENGTH

To the end of the heading to the table, add "MPa".

(Amendment No. 1, July 1983)

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7.3 Handling and placing

Delete clause 7.3.1 and substitute the following:

7.3.1 All concrete shall be conveyed from the mixer, or from the agitator or truck mixer, to the place of final deposit as rapidly as possible by methods which shall prevent segregation. The addition of water to the mixed concrete at the site is strictly forbidden except under the controlled circumstances detailed in NZS 3104* for ready mixed concrete and the addition of water or any other material after discharge from the mixer or agitator truck is prohibited.

(Amendment No. 1, July 1983)

7.7 Curing and protection

In clause 7.7.2 Unformed surfaces, delete item (b) and substitute the following:

(b) Application of absorptive mats or a layer of sand and maintaining continuously wet

Add a further item (e) as follows:

(e) Covering with an impermeable sheet such as polyethylene in a manner to prevent undue loss of water from the concrete.

(Amendment No. 1, July 1983)

9.2 Sampling procedure

Delete clause 9.2.2 Types of sample and substitute the following:

9.2.2 Types of sample

9.2.2.1 Random samples. Samples taken on a random basis may be either random representative samples or random snatch samples as defined in Section 2. Only the results of tests from random samples shall be incorporated in a series from which the best estimate overall production coefficient of variation is to be calculated.

9.2.2.2 Selected samples. Samples taken on a selected basis may be either selected representative samples or selected snatch samples as defined in Section 2. Samples on a selected basis may be taken when:

(a) There are reasons to doubt the quality of a particular batch or batches of concrete.

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(b) There is doubt as to the consistency of the concrete throughout an individual delivery, for example, undue variation between the start and the finish of a delivery.

(c) The engineer supervisor seeks assurance about the quality of concrete in a specific part of the structure and directs that tests be taken on the concrete being placed in that area.

Under category (c), provided that the operator responsible for batching and mixing the concrete has no knowledge of the intention to sample that particular mix, the sample may be treated as a random sample. In all other circumstances the results of tests taken on selected samples shall be checked for compliance with the rejection limits only of table 11.

(Amendment No. 1, July 1983)

Table 9 MAXIMUM TOLERANCES FOR NOMINATED SLUMP

At the head of second and third columns, add "mm." In the first line of the first column, delete "60" and substitute "60 or less".

(Amendment No. 1, July 1983)

Table 10 AIR CONTENTS IN AIR ENTRAINED CONCRETE

At the head of the second column, add "%".

In the third line of the second column, delete "6" and substitute "7".

In the fourth line of the second column, delete "5" and substitute "6".

(Amendment No. 1, July 1983)

Clause 9.5.6.3 Evaluation of groups of test results from random samples

In item (b) of clause 9.5.6.3, lines 5 and 6, delete "minimum target meant strength" and substitute "cautionary limit value".

In item (c) of clause 9.5.6.3, delete the first sentence.

(Amendment No. 1, July 1983)

Clause C9.5.6 Acceptance compression tests

In item (a)(2), third line, delete "representative or random snatch".

In item (a)(3), third line, delete "representative or random snatch".

In item (a)(4), third line, delete "representative".

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Table 11 ACCEPTANCE CRITERIA

Delete table 11 and substitute a new table 11 as follows:

Table 11 ACCEPTANCE CRITERIA

	No performance record								With a performance record													
	Ordinary Grade		High Grade						High Grade						Special Grade							
Specified strength MPa	17.5	20	17.5	20	25	30	35	40	17.5	20	25	30	35	40	17.5	20	25	30	35	40	45	50
Overall coefficient of variation	22	20	17.5	17	16	15	14	13	15.5	15	14	13	12	11	12.5	12	11.5	10.5	10	9.5	9	8.5
(a) Rejection limit, single result. Grounds for rejection of concrete.																						
Representative sample, MPa	15	17	15	17	21.5	26.5	31.5	36.5	15	17	21.5	26.5	31.5	36.5	15	17	21.5	26.5	31.5	36.5	41.5	46.5
Snatch sample, MPa	14	16	14	16	20.5	25.5	30.5	35.5	14	16	20.5	25.5	30.5	35.5	14	16	20.5	25.5	30.5	35.5	40.5	45.5
(b) Cautionary limit to be equalled or exceeded by the mean of any consecutive group of 6 or more consecutive results. Grounds for correction of the mix.																						
Random representative sample or random snatch sample, MPa	25	29	23.5	26.5	32.5	39	44.5	50	22	24.5	30.5	36.5	42	47.5	20	22.5	28	34	39.5	45.5	51	56.5
(c) Cautionary limit to be equalled or exceeded by the mean of the results of each series of consecutive tests (after a minimum of 30 results has accumulated). Grounds for correction of the mix.																						
Random representative sample or random snatch sample, MPa	29.5	33.5	26.5	29.5	35	41.5	48	53.5	24	26.5	32.5	39	44	49.5	21.5	24	29.5	35.5	41.5	47.5	53	58.5

(Amendment No. 1, July 1983)

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STANDARDS ASSOCIATION OF NEW ZEALAND
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NEW ZEALAND STANDARD NZS 3109:1980

Specification for
CONCRETE CONSTRUCTION

Amendment No. 1 - ERRATUM

Amendment No. 1 to NZS 3109:1980 Specification for concrete construction was issued to avoid conflict with the concrete production Standards NZS 3104 and NZS 3108. This amendment has been found to contain an error.

In clause 7.3 Handling and placing, only the first paragraph should be deleted and replaced with the following:

7.3.1 All concrete shall be conveyed from the mixer, or from the agitator or truck mixer, to the place of final deposit as rapidly as possible by methods which shall prevent segregation. The addition of water to the mixed concrete at the site is strictly forbidden except under the controlled circumstances detailed in NZS 3104* for ready mixed concrete and the addition of water or any other material after discharge from the mixer or agitator truck is prohibited.

The second paragraph beginning "Concrete in deep sections ... for a construction joint." remains as originally printed in NZS 3109:1980.