

<b>Title</b>	<b>Demonstrate knowledge of concrete specialist technology</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>7</b>

<b>Purpose</b>	People credited with this unit standard are able to: demonstrate knowledge of the applications of fibre reinforced concrete (FRC); demonstrate knowledge of the principles and application of pre-stressed concrete; and identify and determine the causes of faults in concrete which require specialist structural repairs.
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<b>Classification</b>	Concrete > Concrete Technology
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<b>Available grade</b>	Achieved
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### Guidance Information

Legislation and publications relevant to this unit standard include:

Health and Safety in Employment Act 1992;

Cement and Concrete Association of New Zealand (1992) *TM 01 Architectural Concrete Cladding*. Wellington: CCANZ.

NZS 3109:1997 *Concrete construction*; NZS 3114:1987 *Specification for concrete surface finishes*, available from Standards New Zealand (<http://www.standards.co.nz>);

SAA/SNZ HB84:2006, *Guide to Concrete Repair and Protection*, available from <http://infostore.saiglobal.com/store/Details.aspx?ProductID=569143>;

AS 3610:1995, *Formwork for concrete*; AS 3610 Supp 1-1995, *Formwork for Concrete – Blowhole and colour evaluation charts (Supplement to AS 3610-1995)*; AS 3610 Supp 2-1996, *Formwork for Concrete – Commentary (Supplement to AS 3610-1995)*, available from Standards Australia (<http://www.standards.org.au/Default.aspx>).

### Outcomes and performance criteria

#### Outcome 1

Demonstrate knowledge of the applications of fibre reinforced concrete (FRC).

#### Performance criteria

1.1 The uses of FRC are described in accordance with industry documentation.

Range industry documentation – ‘Architectural Concrete Cladding’; uses – architectural cladding, spandrels, parapets, fascias, sun screens, ornamental stonework, permanent formwork with a very smooth dense surface.

- 1.2 Description outlines the composition of FRC in accordance with industry documentation.
- 1.3 Description outlines the method of manufacture of FRC in accordance with industry documentation.
- 1.4 Description outlines the hazards associated with, and hazard control procedures required for, the handling and use of FRC.

## **Outcome 2**

Demonstrate knowledge of the principles and application of pre-stressed concrete.

### **Performance criteria**

- 2.1 Description outlines items of pre-stressing equipment and the purpose of each.  
  
Range materials and equipment – barrels, wedges, hydraulic jacks, strands.
- 2.2 Description outlines the principles of pre-stressing concrete in accordance with NZS 3109.
- 2.3 Description outlines the methods and systems of stressing in accordance with NZS 3109.
- 2.4 Description outlines the differences between the tensile properties of pre-stressing strand and reinforcing steel.
- 2.5 Description outlines the purpose of and methods for grouting stressing ducts and the associated hazards in accordance with NZS 3109.
- 2.6 Description outlines the specification requirements for grout and methods of testing in accordance with NZS 3109.

## **Outcome 3**

Identify and determine the causes of faults in concrete which require specialist structural repairs.

### **Performance criteria**

- 3.1 Causes of structural faults are identified in accordance with SAA/SNZ HB84:2006.  
  
Range causes of structural faults – deficiencies in design, damage caused by explosion, fire, impact, overloading, earthquake or foundation settlement, deterioration by environmental attack not foreseen by the specifier, lack of temporary propping.

3.2 Structural faults in concrete are identified in accordance with SAA/SNZ HB84:2006.

Range structural faults – cracking, blowholes, poor compaction, chipping, spalling, severe impact damage.

**This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.**

**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	21 May 1999	31 December 2023
Revision	2	12 February 2003	31 December 2023
Review	3	26 July 2004	31 December 2023
Rollover and Revision	4	25 January 2008	31 December 2023
Rollover and Revision	5	17 November 2011	31 December 2023
Review	6	28 October 2021	31 December 2023

**Consent and Moderation Requirements (CMR) reference**

0048

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.