

Title	Demonstrate knowledge of structural precast concrete element manufacture		
Level	3	Credits	25

Purpose	<p>People credited with this unit standard are able to demonstrate knowledge of: preparation, setting up moulds and storage areas, the pre-pour process, placing and testing concrete, and finishes for concrete; for structural precast concrete element manufacture; and curing and demoulding, lifting and storing, post-pour checks and remedial work, and delivery processes; for structural precast concrete elements.</p>
----------------	--

Classification	Concrete > Precast Concrete
-----------------------	-----------------------------

Available grade	Achieved
------------------------	----------

Guidance Information

1 Definitions

Specifications refers to documented instructions (oral, written, graphic) and may include any of the following – manufacturer’s specifications, recommendations or technical data sheets; material specifications; specifications from a specialist source such as an architect, designer, engineer or a supervisor; site or work specific requirements.

Workplace practice refers to the documented procedures specific to a workplace which set out the standard and required practices of that workplace.

2 For the purpose of this unit standard, evidence may be collected using specifications from a real workplace situation, or using given specifications for a simulated scenario.

3 Credit for this unit standard indicates compliance with industry practice. *Industry practice* refers to the ability to demonstrate knowledge that reflects the productivity, uniformity, finish quality and material economies currently accepted within industry.

4 Legislation and publications relevant to this unit standard include: Health and Safety in Employment Act 1992 and Health and Safety in Employment Regulations 1995; Building Act 2004; NZS 3109:1997 *Concrete construction*, and NZS 3114:1987 *Specification for concrete surface finishes*, available from Standards New Zealand (<http://www.standards.co.nz>); *Approved Code of Practice for the Safe Handling, Transportation and Erection of Pre-cast Concrete*, available from Department of Labour (<http://www.osh.dol.govt.nz/order/catalogue/pdf/concrete-ac.pdf>).

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of preparation for structural precast concrete element manufacture.

Performance criteria

1.1 Manufacture of structural precast concrete elements is described and explained in accordance with given specifications and shop drawings.

Range beam, column, panel, stairs;
situation of element in main structure, key items relating to element in specifications.

1.2 Manufacture of structural precast concrete elements is described and explained in accordance with production programme, including timeframe of job in relation to rate of manufacture and available labour hours.

1.3 Moulds used for manufacture of structural precast concrete elements are identified and described in terms of purpose and function.

Range timber moulds, steel moulds, fibreglass moulds, concrete formed moulds.

1.4 Considerations when selecting casting area for structural precast concrete elements are described and explained in terms of job requirements.

Range element to be manufactured, size of work area needed, where elements will be stored and/or stockpiled, safety in and around moulds, environmental factors, other work operations.

Outcome 2

Demonstrate knowledge of setting up moulds and storage areas for structural precast concrete element manufacture.

Performance criteria

2.1 Setting out of moulds for structural precast concrete elements is described in terms of job requirements from given specifications.

Range timber mould, steel mould, fibreglass mould, concrete formed mould.

2.2 Setting up of area for manufacture and storage of structural precast concrete elements is described in terms of job requirements from given specifications.

Range beam, column, panel, stairs.

Outcome 3

Demonstrate knowledge of the pre-pour process for structural precast concrete element manufacture.

Performance criteria

3.1 The pre-pour process for structural precast concrete elements is described and explained in terms of sequence and job requirements from given specifications.

Range identification of reinforcing type and size, gathering of materials, placement of initial bar chairs on reinforcing cage, tying of reinforcing, placement of reinforcing cage in mould, securing of remaining bar chairs, placement of cast in items, securing of final mould attachments, pre-pour quality assurance procedures.

Outcome 4

Demonstrate knowledge of placing and testing concrete for structural precast concrete element manufacture.

Performance criteria

4.1 Placing concrete for structural precast concrete element manufacture is described in accordance with NZS 3109:1997, given specifications and workplace practice.

Range factors to consider – segregation, layers, screeding, continuity of supply, vibration method.

4.2 Testing requirements for structural precast concrete element manufacture are identified in accordance with NZS 3109:1997 and given specifications.

Outcome 5

Demonstrate knowledge of finishes for concrete for structural precast concrete element manufacture.

Performance criteria

5.1 Available finishes for structural precast concrete elements are described in accordance with NZS 3114:1987 and workplace practice.

Range from NZS 3114:1987 – four of F series, two of U series.

5.2 Type B construction joints are described in terms of purpose and function, and in accordance with NZS 3109:1997.

Outcome 6

Demonstrate knowledge of curing and demoulding structural precast concrete elements.

Performance criteria

6.1 Methods for curing structural precast concrete elements are described in accordance with NZS 3109:1997, given specifications and workplace practice.

Range two different curing methods, including testing procedures related to the curing.

6.2 Methods for demoulding structural precast concrete elements are described in terms of sequence, job requirements from given specifications, and workplace practice.

Range two of – timber mould, steel mould, fibreglass mould, concrete formed mould.

Outcome 7

Demonstrate knowledge of lifting and storing structural precast concrete elements.

Performance criteria

7.1 Safe lifting practices for structural precast concrete elements are described in accordance with given specifications, workplace practice and manufacturer's specifications.

Range equipment needed, lifting techniques.

7.2 Storage practices for structural precast concrete elements are described and explained in accordance with given specifications and workplace practice.

Range factors to consider – area suitable for high loadings, height capacity, delivery sequence versus storage sequence.

Outcome 8

Demonstrate knowledge of post-pour checks and remedial work for structural precast concrete elements.

Performance criteria

8.1 Checking structural precast concrete elements for possible defects is described in accordance with workplace practice.

Range method, documentation required.

8.2 The process for remedial work on defects in structural precast concrete elements for possible defects is described in accordance with given specifications and workplace practice.

Range three defects.

Outcome 9

Demonstrate knowledge of delivery processes for structural precast concrete elements.

Performance criteria

9.1 Use of standard forms associated with delivering structural precast concrete elements is described in accordance with workplace practice.

9.2 Loading of structural precast concrete elements for delivery is described in accordance with given specifications and workplace practice.

Range methods for – loading, placement of dunnage, securing load on vehicle.

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	20 August 2010	31 December 2023
Review	2	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>.