

Title	Manufacture precast concrete beams and columns		
Level	3	Credits	25

Purpose	People credited with this unit standard are able to: prepare, set up moulds and storage areas, carry out the pre-pour process, place and test concrete, and finish concrete; for precast concrete beam and column manufacture; and cure and demould, lift and store, carry out post-pour checks and remedial work, carry out delivery processes; for precast concrete beams and columns; and complete work operations.
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Classification	Concrete > Precast Concrete
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Available grade	Achieved
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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 Credit for this unit standard indicates compliance with industry practice. *Industry practice* refers to the ability to demonstrate knowledge and skills that reflect the productivity, uniformity, finish quality and material economies currently accepted within industry.

3 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

Prepare to manufacture precast concrete beams and columns.

Performance criteria

- 1.1 Job requirements for manufacture of precast concrete beams and columns are identified in accordance with specifications and shop drawings.
- 1.2 Job requirements for manufacture of precast concrete beams and columns are identified in accordance with production programme, including timeframe of job in relation to rate of manufacture and available labour hours.
- 1.3 Tools and equipment for manufacture of precast concrete beams and columns are selected in accordance with job requirements.
- 1.4 Casting area for manufacture of precast concrete beams and columns is selected in accordance with job requirements.

Range considerations – size of work area needed, where units will be stored and/or stockpiled, safety in and around moulds, environmental factors, other work operations.

Outcome 2

Set up moulds and storage areas for precast concrete beam and column manufacture.

Performance criteria

- 2.1 Moulds for precast concrete beams and columns are set up in accordance with job requirements, specifications and workplace practice.
- 2.2 Areas for manufacture and storage of precast concrete beams and columns are set up in accordance with job requirements, specifications and workplace practice.

Outcome 3

Carry out the pre-pour process for precast concrete beam and column manufacture.

Performance criteria

3.1 The pre-pour process for precast concrete beams and columns is carried out in accordance with job requirements, specifications and workplace practice.

Range identification of reinforcing type and size, gathering of materials, placement of initial bar chairs on reinforcing cage, tying of reinforcing, setup of mould, 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

Place and test concrete for precast concrete beam and column manufacture.

Performance criteria

4.1 Concrete for precast concrete beam and column manufacture is placed in accordance with NZS 3109:1997, job requirements, specifications and workplace practice.

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

4.2 Concrete for precast concrete beam and column manufacture is tested in accordance with NZS 3109:1997 and job specifications.

Outcome 5

Finish concrete for precast concrete beam and column manufacture.

Performance criteria

5.1 Precast concrete beams and columns are finished in accordance with NZS 3114:1987 and workplace practice.

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

5.2 Construction joints in precast concrete beams and columns are formed in accordance with NZS 3109:1997 and workplace practice.

Range type B construction joints.

Outcome 6

Cure and demould precast concrete beams and columns.

Performance criteria

- 6.1 Precast concrete beams and columns are cured in accordance with NZS 3109:1997, specifications and workplace practice.
- Range two different curing methods, including testing procedures related to the curing.
- 6.2 Precast concrete beams and columns are demoulded in accordance with job requirements and workplace practice.

Outcome 7

Lift and store precast concrete beams and columns.

Performance criteria

- 7.1 Precast concrete beams and columns are lifted safely and in accordance with specifications, workplace practice and manufacturer's specifications.
- Range equipment used, lifting techniques.
- 7.2 Precast concrete beams and columns are stored in accordance with specifications and workplace practice.
- Range factors to consider – area suitable for high loadings, height capacity, delivery sequence versus storage sequence.

Outcome 8

Carry out post-pour checks and remedial work for precast concrete beams and columns.

Performance criteria

- 8.1 Precast concrete beams and columns are checked for possible defects in accordance with workplace practice.
- Range method, documentation required.
- 8.2 Remedial work on defects in precast concrete beams and columns is carried out in accordance with specifications and workplace practice.
- Range three defects.

Outcome 9

Carry out delivery processes for precast concrete beams and columns.

Performance criteria

- 9.1 Standard forms associated with delivering precast concrete beams and columns are confirmed as completed in accordance with workplace practice.

- 9.2 Loading of precast concrete beams and columns for delivery is carried out in accordance with specifications and workplace practice.

Range loading, placement of dunnage, securing load on vehicle.

Outcome 10

Complete work operations.

Performance criteria

- 10.1 All operations are safely completed, workplace and equipment are cleaned in accordance with workplace practice, including environmental safety requirements; and routine maintenance is carried out in accordance with workplace practice.

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>.