

Title	Demonstrate knowledge of precast concrete tank manufacture		
Level	3	Credits	30

Purpose	<p>People credited with this unit standard are able to, for the manufacture of precast concrete tanks, demonstrate knowledge of:</p> <ul style="list-style-type: none"> • preparation • setting up moulds • fabricating and placing reinforcing, and the pre-pour process • placing and testing concrete • finishing concrete • curing and demoulding • lifting and storing • finishing, post-pour checks and remedial work • delivery processes.
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Classification	Concrete > Precast Concrete
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Available grade	Achieved
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Guidance Information

1 Definitions

Modified tank refers to any tank that has been changed from its initial design or intended use.

Precast concrete tank manufacture refers to tanks manufactured by pouring concrete into a mould or series of moulds.

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 that set out the standard and required practices of that workplace.

2 Range

Evidence for assessment against this unit standard must include – a water tank, a waste water treatment tank, a modified tank;
 must include – one single-chambered tank, one multi-chambered tank.

3 Evidence may be collected using specifications from a real workplace situation, or using given specifications for a simulated scenario.

- 4 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.
- 5 Legislation and publications relevant to this unit standard include the Health and Safety in Employment Act 1992, Health and Safety in Employment Regulations 1995, and Building Act 2004;
NZS 3109:1997 *Concrete construction*, NZS 3114:1987 *Specification for concrete surface finishes*, AS/NZS 1546.1:2008 *On-site domestic wastewater treatment units - septic tanks* and AS/NZS 1547:2000 *On-site domestic wastewater management*, available from Standards New Zealand (<http://www.standards.co.nz>).

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of preparation for precast concrete tank manufacture.

Performance criteria

- 1.1 Manufacture of precast concrete tanks is described and explained in accordance with workplace practice, given specifications and shop drawings.
- Range description must include the effect of end-use and installation requirements on the manufacturing process.
- 1.2 Manufacture of precast concrete tanks 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 Tools and equipment used for manufacture of precast concrete tanks are identified and described in terms of purpose and function.
- Range moulds, vibrator, float, screed, lifting equipment, hand tools, plant.
- 1.4 Considerations when selecting production area for precast concrete tanks are described and explained in terms of job requirements.
- Range size of work area needed, access to work area, duration of production, storage, safety, environmental factors, other work operations.

Outcome 2

Demonstrate knowledge of setting up moulds for precast concrete tank manufacture.

Performance criteria

2.1 Setting up of moulds for precast concrete tanks is described from given specifications in terms of job requirements.

Range base moulds, complete tank moulds, internal wall moulds, roof moulds.

Outcome 3

Demonstrate knowledge of fabricating and placing reinforcing, and the pre-pour process for precast concrete tank manufacture.

Performance criteria

3.1 The fabrication and placing of reinforcing for precast concrete tanks is described and explained from given specifications in terms of sequence and job requirements.

Range identification of reinforcing type and size, arrangement of supplies, cutting and fabrication of reinforcing, placement of bar chairs, tying of reinforcing, set-up of mould, placement of reinforcing in mould.

3.2 The pre-pour process for precast concrete tank manufacture is described from given specifications in terms of sequence and job requirements.

Range securing of final mould attachments, pre-pour quality assurance procedures.

Outcome 4

Demonstrate knowledge of placing and testing concrete for precast concrete tank manufacture.

Performance criteria

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

Range factors to consider – mix design, quantity, segregation, layers, screeding, continuity of supply, timing of pour.

4.2 Testing concrete for precast concrete tank manufacture is described in accordance with NZS 3109:1997 and given specifications.

Outcome 5

Demonstrate knowledge of finishing concrete for precast concrete tank manufacture.

Performance criteria

5.1 Methods for finishing concrete for precast concrete tanks are described in accordance with NZS 3114:1987 and workplace practice.

Range form finish, utility finish, trowelling, floating, brooming, brushing, stippling, exposed aggregate.

5.2 Methods for forming construction joints in precast concrete tanks are described in accordance with given specifications and workplace practice.

Range base/wall, roof/wall.

Outcome 6

Demonstrate knowledge of curing and demoulding precast concrete tanks.

Performance criteria

6.1 Methods for curing precast concrete tanks are described in accordance with workplace practice and given specifications.

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

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

Range base moulds, complete tank moulds, internal wall moulds, roof moulds.

Outcome 7

Demonstrate knowledge of lifting and storing precast concrete tanks.

Performance criteria

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

Range equipment needed, lifting techniques.

7.2 Storage practices for precast concrete tanks 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, storage sequence, dunnage, access.

Outcome 8

Demonstrate knowledge of finishing, post-pour checks and remedial work for precast concrete tanks.

Performance criteria

- 8.1 Finishing techniques for precast concrete tanks are described from given specifications in terms of function and method in accordance with job requirements.
- Range final sealing wash, pasting, piping, fitting out.
- 8.2 Checking precast concrete tanks for possible defects is described in accordance with workplace practice.
- Range method, documentation required.
- 8.3 Methods for remedial work on defects in precast concrete tanks are described in accordance with given specifications and workplace practice.
- Range three defects.

Outcome 9

Demonstrate knowledge of delivery processes for precast concrete tanks.

Performance criteria

- 9.1 Use of standard forms associated with delivering precast concrete tanks is described in accordance with workplace practice.
- 9.2 Loading of precast concrete tanks 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	21 January 2011	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>.