



Australian Government

MSMPMC300 Produce structural precast concrete

Release: 1

MSMPMC300 Produce structural precast concrete

Modification History

Release 1. New unit. Supersedes and is equivalent to PMC553051 Produce structural precast concrete

Application

This unit describes the skills and knowledge required to produce structural precast and pre-stressed concrete products, including beams and girders.

This unit applies to experienced operators who are required to take responsibility for own outputs and follow established procedures to assemble moulds and reinforcement; mould, cure and strip the product and control quality. Operators are also required to work autonomously and apply their own judgement to interpret information; monitor processes; identify and address routine and non-routine problems and control hazards.

The unit applies to an experienced operator working alone or as part of a team or group and in liaison with other shift team members, team leader and supervisor.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare mould for casting	1.1 Check casting schedule and job specification 1.2 Clean and oil moulds according to requirements 1.3 Check for mould damage and repair
2. Assemble reinforcement cage	2.1 Lift preassembled reinforcing sections into mould safely 2.2 Assemble additional steel to complete cage to drawings and job specification 2.3 Fit additional items, including base plates, tie plates and lifting

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	devices, according to work instructions 2.4 Fit hold-ups and hold-downs as appropriate 2.5 Place voids or ducts according to work specifications 2.6 Run pre-stressing strands through reinforcing cages 2.7 Set up guards and comply with WHS requirements for stressing 2.8 Tension strands to extension dimensions and/or gauge readings according to works or engineer instructions 2.9 Recheck reinforcing cage is in correct position and adjust as necessary
3. Close mould and test vibrators	3.1 Lift mould sides and additional parts into position and secure to specification 3.2 Fit any additional items 3.3 Seal mould 3.4 Fit vibrators to start positions 3.5 Test run before casting commences
4. Pour concrete	4.1 Begin casting in accordance with work instructions 4.2 Move vibrators and time vibration 4.3 Screed top surface flat in preparation for final finish 4.4 Patch product 4.5 Clean mould and worksite in accordance with WHS requirements
5. Control concrete quality	5.1 Test raw materials 5.2 Prepare test cylinders and samples 5.3 Monitor and control concrete mix to keep within specifications 5.4 Update all records and file all records and supplier certificates in appropriate place 5.5 Raise non-conformance reports
6. Cure product	6.1 Cover and cure mould and test cylinders in accordance with standard procedures and work instructions 6.2 Monitor curing to achieve specified stripping strength
7. Strip and store product	7.1 Test samples to ensure specific strength has been achieved

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	7.2 Remove mould sides and store ready for cleaning 7.3 De-stress in accordance with work procedures and sequences 7.4 Lift unit according to work instructions and move to store, supported only on points designated on the drawings
8. Respond to problems	8.1 Identify routine and non-routine problems in the equipment or process 8.2 Rectify problems using appropriate solution within area of responsibility 8.3 Report problems outside area of responsibility to designated person
9. Control hazards	9.1 Identify structural precast and pre-stressed concrete production hazards 9.2 Assess the risks arising from those hazards 9.3 Implement measures to control those risks

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 1. New unit. Supersedes and is equivalent to PMC553051 Produce structural precast concrete

Links

Companion Volume Implementation Guides are available at VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

Assessment Requirements for MSMPMC300 Produce structural precast concrete

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- produced at least 1 structural precast concrete product, including:
 - monitoring the following key variables to ensure product integrity and conformance to specification:
 - mould condition
 - amount and consistency of concrete mix
 - placement and anchorage of reinforcement and fittings
 - placement of voids and ducts
 - tension of reinforcement
 - concrete cover
 - compaction and vibration
 - curing conditions
 - curing time and rate
 - stripping strength
 - recognising possible causes of the following routine problems:
 - raw material and mix variations
 - mould anomalies
 - casting and operating conditions
 - reinforcement abnormalities
 - process errors.
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Knowledge Evidence

There must be evidence the candidate has knowledge of:

- principles of casting process
- significance to structural concrete products of key factors, including:
 - concrete cover
 - role of reinforcement
 - placement and anchorage of reinforcement and fittings

- stressing and destressing
- curing
- compaction and vibration
- formwork and specialised formwork (including voids and ducts)
- mould design
- mould condition and wear
- water and cement ratio
- concrete finishing
- methods of:
 - curing
 - compaction
 - fabrication
- concrete sampling and testing procedures
- the potential effects of variations in raw materials and equipment operation and processes in relation to quality of product
- quality requirements at each stage of production
- common adjustments in variables and their impact on product quality and production output
- routine and non-routine problems, their probable causes and relevant corrective actions
- hazards from critical stages of pre-stressing reinforcement (placement, stressing, de-stressing, cutting)
- work health and safety (WHS) requirements relevant to work outcome
- structural precast and pre-stressed concrete production hazards and:
 - their possible causes
 - potential consequences
 - risk control procedures.
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Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - structural precast concrete equipment and ancillary equipment
 - materials to be processed
 - specifications, procedures and job sheets
- modelling of industry operating conditions, including:
 - routine and non-routine problems.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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