



Australian Government

PMC553051 Produce structural precast concrete

Release: 1

PMC553051 Produce structural precast concrete

Modification History

Release 1. Supersedes and is equivalent to PMC553051B Produce structural precast concrete

Application

This unit of competency covers the skills and knowledge required to produce structural precast and pre-stressed concrete products, such as beams and girders.

This unit of competency applies to operators who are required to assemble moulds and reinforcement; mould, cure and strip the product; control quality and solve problems within area of responsibility.

This unit of competency applies to an experienced operator demonstrating theoretical and technical knowledge and well developed skills in situations that require some discretion and judgement. The experienced operator may work alone or as a member of a team or group and will work in liaison with other shift team members, team leader, supervisor and engineers, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare mould for casting

1.1 Check casting schedule and job specification

1.2 Clean and oil moulds according to requirements

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| | | 1.3 | Check for mould damage and repair as necessary |
| 2 | Assemble reinforcement cage | 2.1 | Lift preassembled reinforcing sections into mould using good work health and safety (WHS) practice |
| | | 2.2 | Assemble additional steel to complete cage to drawings and job specification |
| | | 2.3 | Fit additional items, such as base plates, tie plates and lifting 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 as required |
| | | 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 as required |
| | | 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 as required |
| | | 4.3 | Screed top surface flat in preparation for final finish if required |

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| | | 4.4 | Patch product as required |
| | | 4.5 | Clean mould and worksite in accordance with WHS requirements |
| 5 | Control concrete quality | 5.1 | Test raw materials as required |
| | | 5.2 | Prepare test cylinders and samples as required |
| | | 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 as required |
| 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 |
| | | 7.2 | Remove mould sides and store ready for cleaning |
| | | 7.3 | If applicable, de-stress in accordance with work procedures and sequences |
| | | 7.4 | Ensure unit is lifted according to work instructions and moved to store, supported only on points designated on the drawings |
| 8 | Respond to problems | 8.1 | Identify possible routine and non-routine problems in the equipment or process |
| | | 8.2 | Determine problems needing action |
| | | 8.3 | Determine possible fault causes |
| | | 8.4 | Rectify problem using appropriate solution within area |

of responsibility

8.5 Report problems outside area of responsibility to designated person

9 Control hazards

9.1 Identify hazards from the job to be done

9.2 Identify other hazards in the work area

9.3 Assess the risks arising from those hazards

9.4 Implement measures to control those risks in line with procedures

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.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, equipment and production processes and hazardous materials
- Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- manufacturer's technical information
- job cards
- drawings
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards Hazards must be identified and controlled. Identifying hazards requires consideration of:

- heat, smoke, dust, vapours or other atmospheric hazards
- weight, shape, volume of materials to be handled
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- electricity
- gas
- gases and liquids under pressure
- noise
- rotational equipment or vibration
- plant services (steam, condensate, cooling water, etc)
- structural hazards
- equipment failures
- machinery, equipment and product mass
- limited head spaces or overhangs
- working at heights
- working in restricted or confined spaces
- other hazards that might arise.

Problems Routine and non-routine problems must be resolved.

Routine problems are predictable and have known solutions and include one or more of:

- slippage, breaking of tensioned strands
- mould problems
- compaction in areas with high reinforcement content (end blocks and haunches)
- compact product with tight bends/clearances
- polystyrene blocks (which may be used in formwork to lighten products) may float to surface on vibration
- polystyrene blocks may move sideways undetected, reducing wall thickness
- variations in cement/water ratio
- raw materials supply
- product quality problems.

Non-routine problems are unexpected problems or variations of previous problems.

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person.

Operational knowledge includes one or more of:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people.

Records and reports Records include one or more of:

- log books/sheets
- electronic records
- job/work sheets
- other records used for the smooth running of the plant.

Reports include one or more of:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action.

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>