



Australian Government

Department of Education, Employment and Workplace Relations

PMC553050C Produce architectural precast concrete

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the production of architectural precast concrete products. It involves preparing the mould and reinforcement, selecting the necessary tools and materials and ensuring finished product is to specification.
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Application of the Unit

Application of the unit	This unit of competency applies to operators in a concrete plant who are responsible for producing precast architectural concrete components. It includes the operation of all ancillary equipment. It includes reinforcement (not prestressed) and the operation of casting and vibrating equipment. The product will generally require finishing and/or veneering once cured. This unit of competency includes: • placement of reinforcing • compaction using vibrating tables and immersion vibrators as appropriate to the enterprise • curing by water, steam, membrane or other heat sources as appropriate to the enterprise • preparation for (a selected range of) finishing techniques including water washing, retarding, sandblasting, off-form, acid etching, bush hammering, honing, polishing and glass reinforced concrete (GRC). This competency is typically performed by an experienced operator, leading hand or supervisor working under the supervision of a principal contractor and architect.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	
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Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare mould for casting	1.1. Check casting schedule, drawings and job specification 1.2. Check finish and veneer requirements for any or all faces, edges or surfaces 1.3. Prepare veneering equipment and formwork to temporarily support veneers and backing concrete
2. Prepare reinforcement	2.1. Check quantities, type, size and shape of reinforcement supplied against drawings and schedules 2.2. Place reinforcement and check concrete covers 2.3. Complete mould assembly 2.4. Insert lifting devices, lugs, fixing and other fittings according to drawings and specifications 2.5. Seal mould
3. Cast concrete	3.1. Ensure that concretes are poured in correct sequence according to work schedule 3.2. Ensure adequate vibration 3.3. Complete casting process to plans and specification 3.4. Prepare test samples/cylinder as required by work instructions 3.5. Screed to a flat, accurate surface in preparation for finishing 3.6. Finish green concrete as required 3.7. Wet patch as required
4. Cure product	4.1. Cover and cure mould in accordance with standard procedure and any special requirements 4.2. Monitor curing to achieve specified stripping strength
5. Strip and store product	5.1. Remove mould parts at appropriate time, with care, and inspect for damage 5.2. Lift unit using appropriate lifting equipment and lifting methods 5.3. Use good occupational health and safety (OHS) practice 5.4. Arrange storage using protective pads to ensure against damage
6. Respond to problems	6.1. Identify possible routine and non-routine problems in the equipment or process

ELEMENT	PERFORMANCE CRITERIA
	6.2. Determine problems needing action 6.3. Determine possible fault causes 6.4. Rectify problem using appropriate solution within area of responsibility 6.5. Report problems outside area of responsibility to designated person
7. Control hazards	7.1. Identify hazards from the job to be done 7.2. Identify other hazards in the work area 7.3. Assess the risks arising from those hazards 7.4. Implement measures to control those risks in line with procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- recognising conditions which will lead to out of specification product and taking appropriate action
- implementing the enterprise's procedures within time constraints and in a manner relevant to the correct use of the equipment
- conveying information relevant to the operation clearly and effectively
- maintaining appropriate levels of quality assurance
- reading and numeracy to interpret workplace documents and technical information

Required knowledge

Required knowledge includes:

- principles of concrete mixing (if mixed by operator)
- principles of veneer adhesion
- principles of concrete finishing
- causes of mould wear
- results of using worn moulds
- problems resulting from mould leakage
- reading steel plans
- predicting final shape/dimension based on bar size/type and bend radius
- principles of reinforcing concrete to specification
- principles of fitting accessories to specification
- principles of concrete product finishing
- reinforcing materials
- design factors
- fabrication methodologies
- effect of water-cement ratio on product
- importance of vibration on compaction
- required concrete cover of reinforcing
- concrete sampling and testing procedures
- non-conformance procedures
- underlying causes of faults such as precipitated by:
 - material inconsistencies
 - mixing irregularities
 - application
 - finishing difficulties concrete

REQUIRED SKILLS AND KNOWLEDGE

- mould anomalies
- casting/operating conditions
- concrete mix variations
- vibration
- aggregate size
- reinforcing design/placement
- setting/curing time/rate

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that the process be understood and that the importance of critical material properties and design characteristics is known. Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action.

Consistent performance should be demonstrated. In particular look to see that:

- products are made consistently in minimum time and with minimum patching
- finishing is within specification/example
- good OHS practice is used consistently.

Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.

Context of and specific resources for assessment

Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations.

Assessment will occur over a range of situations which will include disruptions to normal, smooth operation.

Simulation or case studies/scenarios may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual plant and will include 'walk-throughs' of the relevant competency components. A bank of scenarios/case studies/what ifs and questions will be required to probe the reasoning behind observable actions.

Method of assessment

Individual enterprises may choose to add prerequisites and co-requisites relevant to their processes.

Prerequisite units may be co-assessed if appropriate.

EVIDENCE GUIDE**Guidance information for assessment**

Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Procedures

All operations are performed in accordance with standard procedures and work instructions

Typical problems

Typical problems may include:

- compact product with tight bends/clearances
- loss of fluids (concrete leakage)
- adjustment to take account of variables such as weather
- variations in cement/water ratio
- backing concrete penetrating veneers

OHS

All operations are subject to stringent OHS requirements and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and OHS requirements, the OHS requirements take precedence

Unit Sector(s)**Unit sector**

Operational/technical

Competency field

Competency field	
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Co-requisite units

Co-requisite units		