Unit of Competency Template

UNIT CODE	**CPCPRE2004**
UNIT TITLE	**Grout prefabricated concrete elements**
APPLICATION	This unit of competency specifies the skills and knowledge required to grout load bearing (and non-load bearing) prefabricated concrete elements according to specified requirements. It requires using tools and equipment appropriate for grouting. A person who has achieved this unit of competency would be expected to apply grouting techniques to load bearing and non-load bearing vertical and horizontal joints between prefabricated concrete elements. Licensing, legislative, regulatory or certification requirements apply to this unit of competency in some states and territories. For further information, check with the relevant regulatory authority.
PREREQUISITE UNIT	**Nil**
COMPETENCY FIELD	
UNIT SECTOR	**Prefabricated Concrete**
ELEMENTS **Elements describe the essential outcomes.**	**PERFORMANCE CRITERIA** **Performance criteria describe the performance needed to demonstrate achievement of the element.**

1. Access requirements to grout prefabricated concrete elements.	1.1 Review and clarify grouting task and accessibility to enable the grouting to be placed in accordance with the erection design documentation and the material data sheets. 1.1 Review task specifications, and check to make sure they are in accordance with legislation, regulations, standards and codes of practice. 1.2 Review work health and safety (WHS) requirements for the task in accordance with safety plans and policies. 1.3 Identify safety signage and barricade requirements. 1.4 Review environmental requirements for the task in accordance with environmental plans and legislative requirements. 1.5 Access tools, equipment and materials required to carry out task. 1.6 Locate the joints and confirm safety requirements including working aloft, fall protection, accessibility and drop zones.
2. Prepare to grout prefabricated concrete elements.	2.1 Erect identified safety signage and barricade requirements, and fit personal protective equipment (PPE). 2.2 Obtain plant, tools, equipment, check for serviceability and rectify or report any faults. 2.3 Identify materials and associated quantities/measurements required for grouting according to specifications and material data sheets. 2.4 Review the erection design documentation and the material data sheets for the removal of shims or levelling packers after initial grouting has cured. 2.5 Review the erection design documentation and the material data sheets to verify which gaps are to be grouted.
3. Mix flowable grout.	3.1 Establish the volume of flowable grout required and mix in accordance with specifications and material data sheet to ensure it is the desired consistency so as to be free flowing and bleed from grout breathers and/or flow tubes. 3.2 Check that all grout tubes, breathers and areas to be grout filled are clear and free from debris, contaminants and/or loose materials. 3.3 Check the grout mixture for the desired consistency and flow property and adjust accordingly, in accordance with the erection design documentation and the material data sheets.
4. Mix dry pack or trowel-able grout.	4.1 Check the erection design documentation and the material data sheets to confirm compliance with compressive and tensile strength grout requirements. 4.2 Establish the volume of dry pack grout required and mix in accordance with specifications and material data sheet to ensure it is the desired consistency.

5. Prepare prefabricated concrete joint and apply grouting.	5.1 Ensure that all prefabricated concrete joint surfaces are prepared in accordance with the specifications and material data sheets. 5.2 Ensure all surfaces are clean, sound and free from dust, oils, or other contaminants. 5.3 Prepare the grouting surface in accordance with the erection design documentation and the material data sheets. 5.4 Seal perimeter of the area to be grouted in accordance with specifications. 5.5 Check that the correct grout is used to meet the project specifications. 5.6 Apply grout in accordance with the project specifications. 5.7 Ensure that dry pack or trowel-able grout is placed in a manner that ensures consolidation by tamping/rodding to eliminate any air voids. 5.8 Once complete, compare the actual volume of grout to the calculated volume of grout required to ensure no blockage and/or air voids have formed.
6. Clean up.	6.1 Clear work area and dispose of, reuse or recycle materials in accordance with regulatory and workplace requirements. 6.2 Clean, check, maintain and store tools and equipment in accordance with manufacturer and workplace requirements.
FOUNDATION SKILLS **Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.**	
UNIT MAPPING INFORMATION	**No equivalent unit.**
LINKS	**Link to Companion Volume Implementation Guide.**

TITLE	**CPPPRE2004 Grout prefabricated concrete elements**
PERFORMANCE EVIDENCE	To demonstrate competency, a candidate must meet the elements and performance criteria of this unit by • grouting two prefabricated concrete elements, one with dry pack or trowelable grout and the other with flowable grout.

KNOWLEDGE EVIDENCE	To be competent in this unit, a candidate must demonstrate knowledge of:
	• compliance requirements of legislation, regulations, codes and Australian Standards relevant to grouting of prefabricated concrete elements, including:
	  ○ environmental protection and waste disposal
	  ○ OHS/WHS regulations
	• erection design documentation
	• material data sheets
	• effects of temperature, wind and low humidity on the properties of prefabricated concrete:
	  ○ detrimental effect of water addition to concrete properties
	  ○ precautions that should be taken to minimise any potential adverse effects when finishing concrete
	• health risks associated with silica dust exposure
	• types of drawings and specifications used to interpret concrete installation requirements
	• characteristics of grouting materials and the difference between grouting materials properties, including:
	  ○ dry pack
	  ○ plastic
	  ○ trowelable
	  ○ flowable
	• grouting process, including:
	  ○ use of anchor bolts in preformed pockets
	  ○ formwork installation
	  ○ pre-soaking the substrate when using cement based grout
	  ○ use of suitable equipment to mix the grout to dry pack or trowelable consistency
	  ○ shrinkage
	  ○ placement of grout
	  ○ curing and protecting the grout to prevent loss of moisture which could lead to shrinkage and loss of strength
	• grouting requirements, including:
	  ○ use of pre-packaged, dry powder blend of cements, graded fillers and chemical additives proprietary grout
	  ○ mixing with clean water to required consistency according to manufacturer specifications
	  ○ fluid consistency for application
	• grouting tool types and their purpose, including:
	  ○ wire brush
	  ○ soft brush
	  ○ scraper
	  ○ air compressors and hoses
	  ○ portable blower
	  ○ sander/grinder

	○ spatula ○ roller ○ putty knife ○ grouting gun ○ power leads ○ testing equipment (moisture meter) • workplace requirements for grouting prefabricated concrete elements: ○ cleaning up the work area ○ maintaining and storing plant, labelling, tools and equipment ○ reporting problems ○ quality • terminology used for grouting • specifications used for grouting • fire rating requirements relevant to prefabricated concrete element rectification • workplace procedures related to communication protocols • relevant OHS/WHS regulations, policies and codes of practice, including: ○ use of personal protective equipment (PPE) ○ fall protection ○ drop zones ○ hazardous substances ○ safe manual handling techniques • principles of sustainability relevant to material reuse • work planning and logical task sequencing • types of concrete surface variables that reduce optimal sealant adhesion • prefabricated concrete release agent residue • laitance • dirt and dust • processes for calculating material measurements and quantities.
ASSESSMENT CONDITIONS	Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations. Assessment must be conducted in the workplace or a simulated workplace using realistic conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations. Candidates must have access to erection design documentation, material data sheets, materials, manufacturer specifications, plant, tools and equipment required to achieve the performance evidence.
LINKS	Link to Companion Volume Implementation Guide.