Unit of Competency Template

UNIT CODE	**CPCPRE3001**
UNIT TITLE	**Patch prefabricated components of concrete elements**
APPLICATION	This unit of competency specifies the skills and knowledge required to patch prefabricated components of concrete elements, including determining requirements, preparing patching components, conducting the patching activity and cleaning up upon completion. It requires using appropriate tools, equipment, materials and working at heights and in a team environment to patch prefabricated components of concrete elements. A person who has achieved this unit of competency would be expected to follow safety regulations and relevant specifications. Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work,* is required by anyone carrying out construction work. Achievement of *CPCWHS1001 Prepare to work safely in the construction industry* meets this requirement. 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	• CPCCWHS2001 Apply WHS requirements policies and procedures in the construction industry • CPCCCM2012 Work safely at heights
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.**

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1. Determine requirements to patch prefabricated components of concrete elements.	1.1 Review and clarify prefabricated concrete element patch task according to the approved repair procedure, project specifications and safety data sheets (SDS). 1.2 Determine location of the components of prefabricated concrete elements from drawings and/or patching schedule. 1.3 Determine the materials and patching procedures and check to ensure they comply with the approved repair procedure and are in accordance with relevant legislation, regulations, standards and codes of practice. 1.4 Review work health and safety (WHS) requirements for the task in accordance with safety plans and policies. 1.5 Conduct working at heights risk assessment and follow appropriate WHS processes. 1.6 Assess the risk of respirable crystalline silica and follow jurisdictional regulations. 1.7 Identify safety signage and barricade requirements. 1.8 Review environmental requirements for the task in accordance with environmental plans and legislative requirements. 1.9 Determine plant, tools, equipment, and materials required to carry out task.
2. Prepare to patch prefabricated components of 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 Check panels for damage or cracks and report to appropriate person.
3. Mix prefabricated concrete patch agents.	3.1 Access patching substance for prefabricated concrete components in accordance with safety requirements and hazardous substances code of practice. 3.2 Measure liquid and powdered substance ratios according to manufacturer specifications and pour into mixing container without spillage. 3.3 Check mix is lump free, impose curing times with cognisance to environmental variables and attain the required consistency in accordance with manufacturer specifications.
4. Undertake the patching of prefabricated components of concrete elements.	4.1 Determine the position of the prefabricated components of concrete elements that require patching. 4.2 Provide suitable access to work zone in accordance with the specifications and safety standards. 4.3 Review the approved patching procedure and specifications and determine job sequencing and team roles. 4.4 Access correct/approved patching materials and tools, including adequate quantity. 4.5 Complete patching in accordance with the approved repair procedures, including curing as specified. 4.6 Once complete, undertake sign-off procedures in accordance with approved workplace requirements.

5. Clean up.	5.1 Clear work area and dispose of, re-use or recycle materials in accordance with regulatory and workplace requirements. 5.2 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	**https://vetnet.gov.au/pages/trainingdocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad**

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TITLE	**CPCPRE3001 Patch prefabricated components of concrete elements**
PERFORMANCE EVIDENCE	To demonstrate competency, a candidate must meet the elements and performance criteria of this unit by patching components within a precast element, including: • a Stitch Plate recess (200mm x 200mm x 35mm deep min.) and any two of the following: ○ a lifting insert void former (5 tonne lifting insert recess min.) ○ a cast-in-insert recess (M20 ferrule nailing plate recess) ○ a grouting duct (50mm diameter grout duct recess)

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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 concrete patching, in particular for the repair of prefabricated concrete elements:
	  ○ environmental protection and waste disposal
	  ○ work health and safety (WHS) regulations, including:
	  ▪ use of personal protective equipment (PPE)
	  ▪ fall protection
	  ▪ risk when working at heights/on ladders
	  ▪ drop zones
	  ▪ hazardous substances
	  ▪ safe manual handling techniques
	  ▪ safety when working at heights
	  ▪ respirable crystalline silica
	  ○ SA HB 84-2018 Guide to Concrete Repair and Protection
	• detrimental effect of water addition to concrete properties
	• precautions that should be taken to minimise any potential adverse effects to the use of varying patching materials
	• types of procedures, drawings and specifications used to interpret prefabricated concrete element patching requirements
	• approved repair procedure
	• material data sheets
	• manufacturer specifications for patching agents
	• types of prefabricated concrete element patching, including:
	  ○ treatment of cracks
	  ○ surface preparation for volume replacements
	  ○ cosmetic volume replacements
	  ○ structural volume replacements
	  ○ priming and surface preparation
	  ○ installation of supplementary reinforcement
	  ○ repair layering and build-up
	  ○ fairing coats, colour and texture matching
	  ○ concrete sealing and methods of injection
	• prefabricated component of concrete element patching considerations, including:
	  ○ physical/permeability compatibility
	  ○ chemical compatibility
	  ○ electrochemical compatibility
	  ○ dimensional stability – coefficient of thermal expansion, modulus of elasticity and drying shrinkage
	• prefabricated component of concrete element patching evaluation methods, including:
	  ○ visual inspection and recording
	  ○ hammer sounding/rebound hammer test
	  ○ phenolphthalein test for carbonation

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	○ half-cell potential measurement ○ core-cutting ○ chemical analysis of prefabricated concrete element at different depths • workplace requirements when working with prefabricated concrete components and elements: ○ cleaning up the work area ○ maintaining and storing plant, labelling, tools and equipment ○ reporting problems ○ quality • fire rating requirements relevant to concrete prefabricated concrete elements rectification • workplace procedures related to communication protocols • repair procedure approval • principals of sustainability relevant to material reuse • work planning and logical task sequencing • types, characteristics and limitations of tools, equipment and materials required for the repair of prefabricated concrete elements, including: ○ stitch plate ○ ferrules ○ grout tubes ○ lifting points ○ hammers ○ jacks ○ podgers ○ spanners ○ tape measures ○ turn buckles ○ wedges ○ wrenches ○ jackhammer ○ scabbler ○ bush hammer ○ needle scaler ○ primers ○ low viscosity epoxy adhesives ○ curing compounds.

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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 documentation, approved repair procedure, manufacturer specifications, material data safety sheets, materials, plant, tools and equipment required to achieve the performance evidence.
LINKS Mandatory field	https://vetnet.gov.au/pages/trainingdocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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