Unit of Competency Template

UNIT CODE	**CPCPRE3000**
UNIT TITLE	**Lift and place prefabricated concrete elements**
APPLICATION	This unit of competency specifies the skills and knowledge required to lift and place prefabricated concrete elements. It requires using appropriate tools, equipment, materials and working in a team environment to lift and place concrete elements. A person who has achieved this unit of competency would be expected to be able to correctly interpret and execute erection design documentation, including drawings; follow safety regulations and relevant specifications; and lead a team. 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	• CPCCLRG3002 Licence to perform rigging intermediate level • CPCCCM2012 Work safely at heights
COMPETENCY FIELD	
UNIT SECTOR	**Prefabricated concrete**
ELEMENTS **Elements describe the essential outcomes.**	**PERFORMANCE CRITERIA** **Performance criteria describes the performance needed to demonstrate achievement of the element.**

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1. Determine the requirements to lift, place and unload prefabricated concrete elements.	1.1 Determine the requirements to lift and place prefabricated concrete elements from the erection design documentation and check that they are in accordance with AS 3850 Prefabricated concrete elements. 1.2 Review and clarify prefabricated concrete installation task. 1.3 Review work health and safety (WHS) requirements for the task in accordance with safety plans and policies. 1.4 Conduct working at heights risk assessment and follow appropriate WHS processes. 1.5 Identify safety signage and barricade requirements. 1.6 Review environmental requirements for the task in accordance with environmental plans and legislative requirements. 1.7 Assess and apply environmental factors, including ground conditions, road permits, and public and vehicle access to carry out task. 1.8 Hook-up concrete elements prior to unchaining from the supporting frames/trailer, ensuring other panels on the trailer are still separately restrained. 1.9 Determine plant, tools, rigging equipment and support requirements to carry out task. 1.10 Determine the location of prefabricated concrete element installation from set-out drawings.
2. Comply with prefabricated concrete element erection requirements.	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 all lifting equipment components to ensure that they are compatible and meet all of the requirements of AS 3850 Prefabricated concrete elements and are correctly marked with working load limit (WLL). 2.4 Check lifting and rigging equipment to ensure that they match the specifications set out in the erection documentation and manufacturer specifications. 2.5 Check lifting and rigging equipment to ensure they are serviceable and if not, quarantine, report faulty items and replace with new equipment. 2.6 Check that the erection documentation and erection drawings or concrete element shop drawings, provide rigging configurations and all required information as set out in AS 3850 Prefabricated concrete elements. 2.7 Ensure that erection documentation is on-site, available to the erectors and the requirements are fully understood. 2.8 Check that the brace fixings installers have been trained and are experienced in the installation of the specified fixing in accordance with the requirements of AS 3850 Prefabricated concrete elements.

3. Prepare to lift, place and support prefabricated concrete elements.	3.1 Review erection plan and determine job sequencing and team roles, including supervision and confirm with builder and crane operator that the crane set-up is clearly detailed in the erection documentation. 3.2 Confirm load mass and load distribution of element to be lifted. 3.3 Assemble the rigging and confirm that the rigging configuration is in accordance with the rigging diagrams set out in the erection design documentation. 3.4 Check that the position of the temporary supports (braces and/or props) are in accordance with the erection design documentation. 3.5 Position levelling shims/packers to the nominated reduced level (RL) in accordance with the erection design documentation. 3.6 Check that any temporary supports and/or strong backs attached to the elements have been secured in accordance with the erection design documentation and safety standards. 3.7 Attach the compatible lifting devices to the lifting inserts embedded in the prefabricated concrete element in accordance with the manufacturer specifications. 3.8 Check that the included angle of the rigging is in accordance with the acceptable limits as set out in AS 3850 Prefabricated concrete elements. 3.9 Ensure all personnel are clear of the drop zone.
4. Conduct lifting and placing of prefabricated concrete elements.	4.1 Lift and place the load with the crane in accordance with job safety and environmental analysis (JSEA) and safe work method statement (SWMS). 4.2 Coordinate with the crane driver to maintain stability of load during lifting, transportation and positioning. 4.3 Direct load to landing position in accordance with the erection design documentation and specifications. 4.4 Check to ensure that the temporary supports are placed and fixed in accordance with the erection design documentation and safety standards. 4.5 Check that the installed component is both level and plumb and in accordance with the set-out drawings and erection design documentation. 4.6 When the load has been fully secured and supported by the temporary supports, release the load from the crane, safely access lifting points and disconnect the lifting devices attached to the prefabricated concrete elements.

5. Clean up.	5.1 Clear work area and dispose of, reuse 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	**Link to Companion Volume Implementation Guide.** https://vetnet.gov.au/pages/trainingdocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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TITLE	**CPCPRE3000 Lift and place prefabricated concrete elements**

PERFORMANCE EVIDENCE	To demonstrate competency, a candidate must meet the elements and performance criteria of this unit by:
	• determining the requirements for, and preparing for the lifting and placing of three prefabricated concrete elements in coordination with the crane driver and crane crew:
	  ○ unloading, lifting, placing and temporarily securing one prefabricated element (that is at least 4 m x 3 m) by face-lifting the element
	  ○ unloading, lifting and placing and temporarily securing one prefabricated element (that is at least 4 m x 3 m) by edge-lifting the element, and
	  ○ unloading, lifting and conducting a mid-air rotation, placing and temporarily securing one prefabricated element (that is at least 7 m x 3 m).

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KNOWLEDGE EVIDENCE	To be competent in this unit, a candidate must demonstrate knowledge of:
	• compliance requirements of legislation, regulations, codes of practice and Australian Standards relevant to the erection of prefabricated concrete elements, including:
	  ○ AS 3850.1, 2 & 3 Prefabricated concrete elements re the types of rigging.
	  ○ environmental protection and waste disposal
	  ○ work health and safety (WHS) regulations, including:
	  ▪ Safe Work Australia 'Guide to managing risk in construction: prefabricated concrete' 2019
	  ▪ use of personal protective equipment (PPE)
	  ▪ risk when working at heights/on ladders
	  ▪ fall protection
	  ▪ drop zones
	  ▪ hazardous substances
	  ▪ safe manual handling techniques
	• principles of effective team leadership
	• erection design documentation
	• the strength of concrete at the time of lifting and handling from the manufacturers' "birth certificate" contained in the erection documentation
	• faulty manufacturing and concrete defects which could compromise the strength of the prefabricated elements and pose a potential safety issue for lifting and handling
	• serviceability of temporary erection supports, including:
	  ○ braces
	  ○ props
	  ○ working load limit (WLL)
	• erection documentation, including:
	  ○ manufacturer specification
	  ○ element drawings
	  ○ rigging configurations and drawings
	  ○ layout drawings
	  ○ specifications required for the lifting and placing of prefabricated concrete elements
	• types of prefabricated concrete elements, including:
	  ○ panels
	  ○ columns
	  ○ beams
	  ○ planks
	  ○ stairs
	  ○ barriers
	  ○ poles
	  ○ pipes
	  ○ box culverts
	  ○ pits
	  ○ wall elements

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	• relevant types and procedures for the temporary support of prefabricated concrete elements, including:
	  ○ erection sequence
	  ○ orientation of prefabricated concrete components
	  ○ bracing details, including type and angle
	  ○ requirement for temporary brace and prop footings
	  ○ placement and positioning of propping systems
	  ○ levelling
	• crane operations, including:
	  ○ crane standing
	  ○ suspended slab operations
	  ○ hoist reeving for single and multi-winch operations
	  ○ requirements for single and multi-crane mid-air rotations
	• types, characteristics and limitations of tools, equipment and materials required for rigging, lifting and placing prefabricated concrete elements, including:
	  ○ chain slings
	  ○ flexible steel wire rope (FSWR) slings
	  ○ concrete lifting clutches and compatible lifting inserts
	  ○ post-installed lifting plates
	  ○ hooks, shackles, chain links, swivels and lifting rings
	  ○ sheaves and pulley blocks
	  ○ lifting beams
	  ○ equalising beams
	  ○ spanners
	  ○ spirit levels and automatic levels
	  ○ tape measures
	  ○ wrenches
	  ○ heights access equipment, such as elevated work platforms (EWPs)
	• load slinging methods:
	  ○ straight sling
	  ○ adjustable sling
	  ○ reeved sling
	  ○ inclined sling
	  ○ multi-point lift
	  ○ balanced load and CoG
	• load equalisation and methods
	• advanced lifting techniques:
	  ○ standard lift from a truck
	  ○ load balancing when lifting from vehicles
	  ○ flat lifting from supports or on ground
	  ○ edge lifting and tilting by rotation about one edge
	  ○ face lifting and tilting by rotation about one edge
	  ○ single crane and multi-crane mid-air rotation
	  ○ multi-crane lifts
	• workplace requirements when working with prefabricated concrete components:

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	○ cleaning up the work area ○ maintaining and storing plant, labelling, tools and equipment ○ material reuse ○ reporting problems ○ quality • workplace procedures related to communication protocols • principles of sustainability relevant to material reuse • work planning and logical task sequencing.
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, materials, manufacturer specifications, 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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