



Australian Government

CPCCLBM3001 Licence to operate a concrete placing boom

Release: 1

CPCCLBM3001 Licence to operate a concrete placing boom

Modification History

Release 1.

This version first released with CPC Construction, Plumbing and Services Training Package Version 1.

Revised unit of competency replacing superseded non-equivalent CPCCLBM3001A Licence to operate a concrete placing boom.

Application

This unit of competency specifies the outcomes required to operate concrete placing booms safely. It supports the work of concrete placement workers who are responsible for locating concrete placing booms at the workplace and for setting up and operating the boom to deliver concrete safely and accurately as required.

The concrete placing boom includes a knuckle boom capable of power-operated slewing and luffing to place concrete by way of pumping through a pipeline attached to, or forming part of, the boom of the plant.

The unit includes planning the work, conducting routine plant and equipment checks, setting up and preparing for operation, receiving concrete from the manufacturer, placing concrete, and shutting down and securing the concrete placing boom.

This unit is based on the licensing requirements of Part 4.5 of the *Model Work Health and Safety (WHS) Regulations, High Risk Work*, and meets commonwealth, state and territory high risk work licensing requirements. Any alteration to unit content or outcomes would result in a unit that is not acceptable to WHS/OHS regulators for the purpose of licensing.

Pre-requisite Unit

Nil

Competency Field

Nil

Unit Sector

Construction

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the range of

conditions.

1. Plan concrete placement work.
 - 1.1. Concrete placement workplace is confirmed, ***potential hazards and emergencies are identified***, and risk controls are selected according to applicable regulations, the hierarchy of controls, and site and ***workplace procedures***.
 - 1.2. Type of required concrete placing boom and types, volumes and schedule of concrete delivery to the workplace are confirmed with relevant contractors and suppliers.
 - 1.3. Tools and equipment, including personal protective equipment, are selected to meet work requirements and checked according to workplace procedures.
 - 1.4. Workplace ***methods for communicating*** between concrete placing boom operator and ***other workplace personnel*** are identified and confirmed.
 - 1.5. Proposed location for setting up concrete placing boom is identified, and access to location and ***ground suitability are confirmed*** with ***relevant personnel***.
2. Set up boom and prepare for operation.
 - 2.1. Location and ground are inspected and checked against advice received from ***reports and drawings*** and confirmed as suitable according to workplace procedures.
 - 2.2. Concrete placing boom is located at workplace, positioned for work application, and outriggers are extended and adjusted to ensure stability according to manufacturer specifications and workplace procedures.
 - 2.3. Pre-start operator checks are conducted according to manufacturer specifications and workplace procedures.
 - 2.4. Concrete placing boom is partially extended to test operation and check function according to manufacturer specifications and workplace procedures.
 - 2.5. Plant safety devices are tested according to manufacturer specifications and workplace procedures.
 - 2.6. Post-start operational checks are carried out according to manufacturer specifications and workplace procedures.

- 2.7. Concrete delivery system components are positioned securely and safely according to workplace procedures.
 - 2.8. Appropriate **risk control measures** are applied to the concrete placing boom location according to manufacturer specifications and workplace procedures.
 - 2.9. Pumping system is tested and prepared for use according to manufacturer specifications and workplace procedures.
3. Deliver concrete.
- 3.1. Supply of bulk concrete to the hopper is coordinated with supply vehicle operators to ensure safe hopper levels, and hose hand and concreters are advised of pauses and changes in supply as required.
 - 3.2. Concrete placing boom is safely and efficiently operated through the **full range of movements** using remote control or control panel to deliver the concrete as required.
 - 3.3. Risk of collision with other fixed structures and moving plant is monitored and suitable risk control measures are implemented.
 - 3.4. Pump is operated using remote control or control panel to ensure a safe optimum output according to requirements of concreters and to minimise damage to the engine and gears.
 - 3.5. Hand signals are correctly made and interpreted, or instructions over the radio are correctly given and received, according to any workplace procedures.
 - 3.6. **Boom operation is constantly monitored** to ensure stability of boom and safety of personnel, delivery hose and workplace equipment and structures.
 - 3.7. **Strategies for managing emergencies** arising during concrete placement are implemented as required and according to manufacturer specifications, and emergencies are reported in line with workplace procedures.
 - 3.8. Concrete placing boom is safely withdrawn from the work area at completion of delivery task.

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| 4. | Shut down and secure concrete placing boom and components. | 4.1. | Delivery lines and hopper are cleaned out according to manufacturer specifications and workplace procedures. |
| | | 4.2. | Concrete placing boom is stowed according to manufacturer specifications and secured for travel according to plant operation and workplace procedures. |
| | | 4.3. | Outriggers are retracted, stowed and secured for travel according to manufacturer specifications and workplace procedures. |
| | | 4.4. | Plates or packing are stowed and secured for travel according to manufacturer specifications and workplace procedures. |
| | | 4.5. | Concrete placing boom is relocated as required and shut down according to manufacturer specifications and workplace procedures. |
| | | 4.6. | Routine post-operational equipment checks are carried out and recorded according to manufacturer specifications and workplace procedures. |
| | | 4.7. | Defects and damage are reported and recorded and appropriate action is taken according to manufacturer specifications and workplace procedures. |

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

Skill	Performance feature
Learning skills to:	- operate concrete placing booms in different types of workplaces transferring key principles of safe operation to different contexts - improve own performance in the safe and efficient operation of concrete placing booms by incorporating learning from experiences in different workplaces and different conditions.
Numeracy skills to:	- interpret numerical information, including: - information regarding concrete supply:

- schedule of delivery
 - strength and volume of concrete
 - readings on control and monitoring instruments.
- Oral communication skills to:
- use and interpret vocabulary specific to the construction industry at a level sufficient to communicate with other workplace personnel
 - use non-verbal feedback to support effective communication
 - use relevant conventions for the use of mobile communication devices, such as two-way radios.
- Reading skills to:
- interpret documentation that includes technical specificity, including:
 - engineering drawings
 - geotechnical reports
 - plant operation manuals and manufacturer specifications
 - workplace procedures.
- Writing skills to:
- accurately record and maintain information relating to the operation of concrete placing booms, including:
 - incident reports
 - vehicle and equipment checking and maintenance records.
- Self-management skills to:
- implement risk control measures
 - initiate emergency management strategies.

Range of Conditions

This section specifies 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. ***Bold italicised*** wording, if used in the performance criteria, is detailed below.

Identification of potential hazards and emergencies must include consideration of:

- environmental conditions, including:
 - lightning
 - storms
 - wind
- ground stability, including:

- compaction, especially recently filled trenches
- condition and structure, including presence of underground spaces
- slopes
- hazardous materials
- inadequate extension of outriggers
- insufficient lighting
- overhead or underground electrical assets and service pipes, including:
 - identification of overhead electric line hazards and risks
 - relevant limits of approach
 - safety observer zone
 - whether the work requires a permit from the electricity supply authority
- pressurised pipes, hoses and equipment
- risk of collision with other fixed structures and moving plant, including cranes, tower cranes and other concrete placing booms
- workplace visit if insufficient information available from building contractor or other workplace personnel
- traffic, including:
 - pedestrians
 - vehicles
 - plant.

Workplace procedures must include:

- compliance with applicable:
 - commonwealth, state and territory health and safety legislation
 - approved codes of practice
 - manufacturer specifications and recommendations for the operation of the concrete placing boom
 - safe work method statements (SWMS)
 - workplace-specific instructions
- consideration of relevant standards:
 - Australian standards
 - international technical standards (ISO)
 - industry standards.

Methods for communicating must comply with appropriate

- making and interpreting hand signals, including:
 - boom up
 - boom down

workplace protocols
and must include:

- slew left
- slew right
- open or extend boom
- close or retract boom
- stop boom
- start pump speed up
- slow pump down
- little bit
- add water
- all finished
- using fixed channel mobile communication devices, including selecting transmitting frequencies
- verbal:
 - speaking, including questioning to confirm understanding
 - listening
- written, including signage and symbols.

Other workplace personnel must include:

- concrete placing and supply personnel:
 - concreter
 - form worker
 - hose hand
- operator of other construction plant and equipment
- other personnel working on or visiting the workplace
- workplace supervisor.

Confirmation of ground suitability must include:

- checking that there is no evidence of:
 - backfilled ground
 - soft soils
 - underground cavities
 - uneven ground
- evidence that the ground is stable and can withstand the weight of the fully loaded concrete placing boom and concrete delivery vehicles
- evidence that the ground is relatively level and there is ample space for extension of outriggers to ensure the security of the boom when fully extended and operational
- identifying the type of ground, including:
 - bitumen
 - concrete
 - hard compacted soil

- rock.

Relevant personnel must include one or more of the following:

- geotechnical engineer
- principal contractor
- structural engineer
- workplace manager.

Reports and drawings must include one or more the following:

- engineering drawings
- geotechnical reports.

Risk control measures must include:

- adequate lighting
- complying with requirements of permit conditions from electrical supply authority, including:
 - observing the limits of approach
 - maintaining the safety observer zone
- disconnecting electricity or compliance with electrical supply authority requirements
- locking pins, including R clips and lynch pins
- minimising the risk of collision with other operational plant
- moving obstructions
- properly securing load-rated chain to secure the hose to the boom
- setting up concrete placing boom an adequate distance from excavations
- using pedestrian barricades
- using personal protective equipment
- using safety tags on electrical switches or isolators
- using traffic barricades and controlling traffic.

Full range of movements must include:

- folding and unfolding
- raising and lowering
- slewing left and slewing right
- stopping boom.

Monitoring boom operation must include:

- checking:
 - operation of safety devices
 - readings on control panels
 - boom location and movement

- concrete flow
- hopper level
- checking stability of concrete placing boom
- listening for abnormal noises.

Strategies for managing emergencies must involve:

- complying with workplace evacuation procedures
- contacting emergency services
- notifying other workplace personnel
- shutting down equipment.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCLBM3001 Licence to operate a concrete placing boom

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Performance Evidence

A person demonstrating competency in this unit must satisfy all of the elements, performance criteria and foundation skills of this unit. The person must also be able to provide evidence of the ability to locate, set up, operate and shut down a concrete placing boom for two different concrete placements:

- one of which must involve delivery of concrete where the placement area is not visible to the boom operator and radio communication with the hose hand is essential
- using two types of concrete with different slumps.

For each concrete placement, the person must provide evidence of the ability to:

- comply with commonwealth, state and territory health and safety legislation and regulations
- plan and prepare for concrete placement work, including:
 - conducting a risk assessment of the workplace
 - selecting risk controls according to the hierarchy of control for positioning and safely operating the concrete placing boom
- check location suitability and then position and stabilise the concrete placing boom using outriggers and packing according to plant operation and workplace procedures
- conduct pre-operational checks of plant, boom, pump, safety devices, and control panels according to plant operation and workplace procedures
- operate and control the concrete placing boom, including all functions to the maximum extension, in communication with workplace personnel to deliver concrete as required and according to plant operation and workplace procedures
- monitor concrete supply and pump and boom operation to ensure safe concrete delivery according to workplace procedures
- identify faults and problems with concrete placing boom, including emergencies, and apply appropriate strategies in response according to manufacturer recommendations and workplace procedures
- demonstrate strategies in place for managing the following emergencies that may arise during concrete placement:

- contact with electric lines
- failure or loss of control of the boom
- instability of concrete placing unit
- pipe or hose blockage or blow-out
- failure of equipment, including hydraulic system
- severe environmental conditions, including wind, lightning and storms
- shut down concrete placing boom in line with established safety procedures:
 - idle engine to stabilise temperature
 - disengage pump
 - turn off engine
 - remove key from ignition
 - secure plant according to manufacturer specifications
 - secure boom according to relevant manufacturer specifications and workplace procedures.

Knowledge Evidence

A person demonstrating competency in this unit must be able to demonstrate knowledge of:

- commonwealth, state and territory health and safety legislation and approved codes of practice relevant to operating a concrete placing boom
- Australian and industry standards relevant to operating a concrete placing boom
- characteristics and properties of concrete required for different elements of buildings
- concreting placing procedures, which must include requirements for priming material, volume of concrete required, and consistency and amount of concrete in the delivery line
- features and functions of concrete delivery system components:
 - adaptors
 - boom
 - couplings
 - hose
 - lines
 - locking pins, including R clips and lynch pins
- hand signals used in concrete placement operations
- manufacturer specifications, site and workplace procedures relevant to operating concrete placing booms
- essential safety procedures for ensuring stability of concrete placing boom:
 - deploying outriggers according to manufacturer specifications
 - establishing correct size plates or packing
 - correctly positioning plates or packing
 - checking plant is level and well-supported
- procedures for maintaining workplace records and information
- protocols for using mobile communication devices on construction workplaces

- routine problems, hazards and emergencies that could arise during concrete placing boom operations and strategies for managing them, including application of the hierarchy of controls
- types of ground and ground conditions at workplace that are:
 - suitable for set-up and operation of concrete placing boom
 - unsuitable for set-up and operation of concrete placing boom.

Assessment Conditions

Assessment must be conducted in the English language.

Assessment of performance must be undertaken in the workplace and/or under realistic workplace conditions that typically reflect:

- the use of full-scale equipment,
- performing tasks/activities within the same timelines expected in the workplace, and
- standard and authorised work practices, safety requirements and environmental constraints.

All practical assessment must be undertaken on a mobile concrete placing boom.

The use of simulators in the assessment of this unit of competency is not acceptable.

Accredited assessors are responsible for ensuring that candidates have access to operational workplaces with personnel to undertake hose hand and concreting responsibilities, and access to:

- equipment in safe operating condition:
 - mobile communication devices, including two-way radios
 - concrete placing boom and associated controls and equipment, including outriggers and packing
 - personal protective equipment
 - plant safety devices with the following features:
 - audible and visual reversing devices
 - horns and sirens
 - lights
 - safety interlocks
 - tools and equipment required for pre-start and post-operational equipment checking, cleaning and maintenance
- materials:
 - concrete
 - workplace documentation to be completed
- contingencies:
 - other plant, including cranes, working at the workplace
- specifications:

- manufacturer specifications
- work instructions
- workplace procedures
- specifications for concrete delivery
- relevant workplace technical reports and drawings
- physical conditions:
 - suitable terrain and weather for concrete placement operations.

Assessor requirements

As a minimum assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

In addition, assessment must be conducted by an assessor accredited for this high risk work (HRW) licence class in the commonwealth, state or territory jurisdiction where the licence application will be made (i.e. an accredited assessor authorised by a commonwealth, state or territory WHS/OHS regulator).

Links

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