



Australian Government

TLILIC0016 Licence to operate a bridge and gantry crane

Release: 1

TLILIC0016 Licence to operate a bridge and gantry crane

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to operate bridge cranes and gantry cranes safely. Competence in this unit, does not in itself result in a High-Risk Work Licence (HRWL) to operate this plant.

Bridge crane means a crane that:

- consists of a bridge beam or beams, that are mounted to end carriages at each end, and
- can travel along elevated runways, and
- has one or more hoisting mechanisms arranged to traverse across the bridge.

Gantry crane means a crane that:

- consists of a bridge beam or beams supported at one or both ends by legs mounted to end carriages, and
- can travel on supporting surfaces or deck levels, whether fixed or not, and
- has a crab with one or more hoisting units arranged to travel across the bridge

This unit applies to the activities of a person operating a bridge crane or gantry crane that is:

- controlled from a permanent cabin or control station on the crane, or
- remotely controlled and having more than three powered operations.

A person performing this work is required to hold a bridge and gantry crane HRWL.

This unit requires a person operating a bridge crane or gantry crane to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency. This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, state and territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable.

Competency Field

LIC - Licencing Units.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan work/task

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Task requirements are identified from work orders or equivalent, a lift plan is confirmed with associated personnel and a site inspection conducted in accordance with workplace procedures
- 1.2** Working area is inspected and appropriate paths for operating the bridge or gantry crane and moving/placing load/s in work area are assessed and determined in accordance with workplace procedures
- 1.3** Work area operating surface is assessed to determine the quality of ground suitability for operational gantry crane in accordance workplace procedures
- 1.4** Bridge or gantry crane Rated Capacity (RC) and lifting gear Working Load Limit (WLL) are established for the load/s and work/task requirements in accordance with manufacturer specifications and workplace procedures
- 1.5** Relevant hazard identification and risk elimination/control measures are applied and advised to relevant person/s in accordance with workplace procedures
- 1.6** Traffic management plan implementation is confirmed and followed in accordance with workplace procedures

- 1.7 Appropriate communication procedures are identified and tested with associated personnel in accordance workplace procedures
 - 1.8 All tasks are confirmed to ensure requirements for the relevant work area in accordance with workplace procedures
 - 1.9 Information required to ensure that lifting equipment and gear inspection, use, maintenance and storage complies with manufacturer requirements is obtained and interpreted
- 2 Prepare for work/task**
- 2.1 Consultation with workplace personnel is established and maintained to ensure all crane and lifting operations are clear and consistent with site requirements in accordance with a lift plan and workplace procedures
 - 2.2 Risk control measures for hazards identified are checked for implementation in accordance with the lift plan and safe work procedures
 - 2.3 Bridge or gantry crane is accessed safely in accordance with manufacturer specifications and safe work procedures
 - 2.4 Pre-start bridge or gantry crane checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with safe work procedures and manufacturer specifications
 - 2.5 Bridge or gantry crane is set up and rigged correctly with any lifting gear as per lift plan and in accordance with relevant manufacturer specifications, including load chart/s and safe work procedures
 - 2.6 Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer specifications and safe work procedures
 - 2.7 All controls are located, identified and tested in accordance with relevant manufacturer specifications and safe work procedures
 - 2.8 Crane logbook is inspected and is correct for the crane and type, and required rectifications have been signed off in accordance with manufacturer requirements and safe work procedures

- 2.9** Weather and work environment conditions are assessed to determine any impact on bridge or gantry crane operations in accordance with manufacturer requirements and safe work procedures
- 2.10** Weight of load is identified, calculated or estimated
- 2.11** Derated WLL of lifting equipment resulting from selected slinging techniques is calculated
- 2.12** Suitable lifting points and slinging techniques are identified
- 2.13** Lifting equipment and gear are prepared for safe use
- 2.14** Load destination is confirmed for stability ensuring it is able to bear the load and is prepared for safe access and landing

3 Perform work/task

- 3.1** Lifts are determined within the RC of the bridge or gantry crane in accordance with load chart/s and lift plan
- 3.2** Hook block is safely positioned over the load in accordance with safe work procedures and if crane is controlled from cabin following directions from associated personnel
- 3.3** Lifting equipment and gear are connected to load and used safely in accordance with the lift plan and safe work procedures
- 3.4** Test lift is carried out in accordance with safe work procedures
- 3.5** Loads are transferred using relevant bridge or gantry crane movements and tag lines, as required, in accordance with lift plan and safe work procedures
- 3.6** Load and bridge or gantry crane movement is monitored constantly and operated safely in accordance with lift plan and safe work procedures
- 3.7** All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with safe work procedures

- 3.8** Load is lowered and landed safely in accordance with lift plan and safe work procedures
 - 3.9** Lifting gear is disconnected from load and positioned safely and efficiently for next task in accordance with lift plan and safe work procedures
 - 3.10** Lifting equipment and gear are inspected for defects, and defective items are isolated, tagged and reported
- 4 Pack up**
 - 4.1** Bridge or gantry crane is parked in accordance with manufacturer specifications and safe work procedures
 - 4.2** Bridge or gantry crane lifting gear and associated equipment are stowed and secured in accordance with safe work procedures
 - 4.3** Relevant motion locks and brakes are applied, as required, in accordance with manufacturer specifications and safe work procedures
 - 4.4** Bridge or gantry crane is shut down and secured to prevent unauthorised access/use in accordance with safe work procedures
 - 4.5** Post-operational bridge or gantry crane checks are carried out in accordance with safe work procedures and manufacturer specifications

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the TLI Transport and Logistics Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC0006 Licence to operate a bridge and gantry crane.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLILIC0016 Licence to operate a bridge and gantry crane

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying and interpreting crane manufacturer requirements and data, including load charts, to enable crane to be configured for load
- applying relevant crane movements, including:
 - catching load swing appropriately
 - positioning and using lifting attachment and lifting gear to connect to load safely
 - raising and lowering hoist
- applying relevant communication signals from associated personnel
- applying relevant mathematical calculations in conjunction with the Rated Capacity (RC) to determine relevant lifting gear to perform work/task
- complying with Commonwealth, state and territory work health and safety (WHS)/occupational health and safety (OHS) legislation and safe work procedures
- communicating with other workplace personnel through using appropriate worksite protocols, including:
 - two-way radio
 - listening
 - making and interpreting hand signals
 - questioning to confirm understanding
 - signage
 - verbal language
 - visual aids
 - whistles
 - written instructions
- completing pre-start checks, including:
 - presence of correct logbook
 - evidence of damage
 - pendant wiring not frayed or damaged (if applicable)
 - fluid leaks
 - lights work effectively

- locating, identifying and confirming all controls
- emergency evacuation rescue plan in place
- mirrors and seat are adjusted appropriately
- safety equipment checks
- fire extinguisher
- signage and labels to ensure they are visible and legible
- checking for signs of paint separation and stressed welds indicating potential structural weakness
- tyres/wheels for damage/wear and rail conditions are serviceable
- visual damage or equipment faults
- completing operational checks ensuring:
 - all controls are located, identified and tested for functionality
 - all hydraulic functions are operated
 - lifting gear movements and control functions are smooth and comply with operating requirements
 - hazard warning systems, safety, audible and visual warning devices, including travel alarms, lights and horns are functional
 - start-up is in accordance with manufacturer requirements and workplace procedures
 - there are no unusual noises
 - long and cross travel, transmission and brake functions comply with operating requirements
- conducting and applying risk and hazard assessment strategies, including:
 - confirming work area operating surface suitability based on crane and task requirements
 - travelling surfaces are clear of debris and in serviceable condition
 - overloading
 - lifting and placing of load
 - asymmetric loads
 - overhead hazards
 - restricted and poorly ventilated areas
 - risk of collision with people, moving plant and fixed structures
 - adequate lighting
 - weather conditions
- confirming and following traffic management plan procedures relevant to their role in the work area
- identifying hazards and using appropriate risk controls and safety measures and equipment relevant to slinging loads
- selecting and inspecting appropriate lifting gear and applying slinging techniques appropriate to the type of load, its mass and centre of gravity
- identifying the WLL tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- using lifting gear, including flexible steel wire rope (FSWR) sling, synthetic sling, chain sling

(including shortener), spreader bar or lifting beam, tag line, shackles and eyebolts, and using bends and hitches when slinging, including:

- single sheet bend
- clove hitch
- bowline
- controlling the load and attachments (where fitted), including:
 - long and cross travel
 - positioning crane in relevant area for next task
- determining any defects or faults with operation of crane and reporting to relevant personnel
- ensuring risk control measures within the work area are effective in accordance with workplace procedures
- ensuring stability of load and avoidance of hazards, including:
 - lifting attachment and lifting gear as low as possible
 - carrying load near to ground surface
 - accelerating and braking to minimise load swing
 - lowering load onto appropriate dunnage safely taking into consideration swing and restrictions of area
 - minimum speed
 - using handheld tag lines
- inputting crane configuration into crane computer (where fitted) and checking operation to accurately reflect crane configuration
- interpreting and acting on communication signals, including:
 - hoist down - hand, whistle and radio
 - hoist up - hand, whistle and radio
 - traverse (trolley) travel - hand, whistle and radio
 - long (bridge) travel - hand, whistle and radio
 - creep - hand, whistle and radio
 - stop - hand, whistle and radio
- interpreting and confirming relevant documentation for the work task and relevant area
- maintaining three points of contact whilst accessing crane and ensuring rungs/steps are free of hazards (if applicable)
- monitoring load disconnection from hook/lifting gear is safe and ensuring no movement of controls
- operating a bridge or gantry crane configured to lift and move four different loads using the main hook through an obstacle course using all crane operational controls while the load is in full view of the crane operator. Loads must consist of:
 - a load at least 5% of the RC of the crane
- positioning the crane for safe operation for:
 - application of the task
 - manoeuvring in the workplace
 - stability of the crane and the load

- recording and maintaining accurate information relating to crane operations
- reporting to relevant person/s on site risk control measures that are not in place or deficient
- setting up and validating an exclusion zone
- shutting down a bridge or gantry crane in accordance with manufacturer requirements and workplace procedures
- test-lifting load just clear of lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure:
 - slinging is correct
 - all crane equipment is functioning properly
 - load centre of gravity is correct
 - loads of unusual shape or weight distribution are correctly slung
- test-lifting load just clear of lifting plane to allow for checks of crane computer (where fitted) to ensure:
 - load measuring equipment can be used to verify calculated weight of load
 - near capacity loads do not overload crane
- using two-way radio communication during movement of load.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- appropriate workplace communication procedures, including:
 - bells
 - buzzers
 - listening
 - hand signals
 - questioning techniques
 - signage
 - two-way radios
 - written instructions
 - whistles
- bridge or gantry crane characteristics and capabilities
- crane and lifting gear load chart/s and manufacturer requirements
- crane configuration mathematical calculations to:
 - estimate loads
 - determine relevant lifting accessories to perform work/task
- hazards, including:
 - erection and pack up
 - crane stability
 - ground stability and condition, including recently filled trenches and slopes

- insufficient lighting
- obstacles or obstruction
- other specific hazards and dangerous materials
- overhead hazards, including:
 - electric lines
 - service pipes
 - structures
- traffic, including pedestrians, vehicles and other plant
- operations on unusual, uneven or difficult terrains
- lift impacting factors, including:
 - centre of gravity
 - dynamic nature of load
 - flex/deflexion of load
 - length
 - weight
- manufacturer requirements and instructions on shutting down crane
- pre-start and operational checks required for a bridge or gantry crane
- problems and application of appropriate response procedures to unplanned and/or unsafe situations and environmental conditions, including:
 - wind, lightning and storms
 - failure of equipment
 - failure/loss of control, including brakes
 - obstacles and obstructions
- relevant documentation requirements and procedures for recording, reporting and maintaining workplace records and information
- relevant workplace instructions, safety information and emergency procedures
- risk assessment management and mitigation strategies, including hierarchy of control:
 - elimination
 - substitution
 - isolation
 - engineering controls
 - administrative controls
 - personal protective equipment (PPE)
- roles and responsibilities of duty holders in accordance with legislative obligations of WHS/OHS requirements and safe work/workplace procedures
- hazards commonly encountered while slinging:
 - instability of landing surfaces
 - overhead and underground hazards
 - insufficient lighting
 - traffic

- weather
- pedestrian traffic
- work at heights
- selection, inspection, care, handling, application, limitations and storage of lifting equipment and gear:
 - FSWR sling
 - synthetic sling
 - chain sling (including shortener)
 - spreader bar or lifting beam
 - tag line
 - shackles
 - eyebolts
 - plate clamps
 - load moving attachments, including magnetic, vacuum and grab
- methods of making temporary connections to loads using fibre and synthetic ropes:
 - single sheet bend
 - clove hitch
 - bowline
- starting procedure of crane in accordance with manufacturer requirements
- weather bureau forecasts and associated information and environmental conditions that could impact operation, including:
 - lightning
 - rain
 - wind
 - water impacted ground
 - ultraviolet (UV) exposure
- workplace standards, requirements, policies and procedures for conducting operations for the bridge or gantry crane.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

- Simulators must **not** be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- access to a bridge or gantry crane in safe/serviceable working order and have the following characteristics:
 - bridge crane, that consists of a bridge beam or beams, that are to end carriages, at each end and is capable of travelling along elevated runways and has one or more hoisting mechanisms arranged to traverse across the bridge, or if remote controlled, the crane must have more than three powered operations, or
 - gantry crane, that consists of a bridge beam or beams supported at one or both ends by legs mounted to end carriages and is capable of travelling on supported surfaces or deck levels, whether fixed or not, and has a crab with one or more hoisting units arranged to travel across the bridge, or if remote controlled, the crane must have more than three powered operations
- communication equipment, including:
 - bells
 - buzzers
 - two-way radios
 - whistles
- relevant personal protective equipment (PPE)
- safety devices, including:
 - audible and visual travel devices
 - horns/sirens
 - lights
- applicable documentation, including:
 - approved codes of practice and relevant guidance material
 - relevant Australian technical standards
 - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>