Australian Government

Department of Education, Employment and Workplace Relations

TLIE3016A Estimate/calculate load shifting requirements for a mobile crane

Release: 1

TLIE3016A Estimate/calculate load shifting requirements for a mobile crane

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to estimate/calculate load shifting requirements including carrying out required calculations, preparing estimates of loads, and interpreting graphical representations of mathematical information. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the licence/permit requirements and regulations of the relevant state/territory authorities pertaining to operations of mobile cranes.
Work is performed with limited or minimum supervision. It involves the application of routine principles, procedures and regulations to estimate/calculate load shifting requirements for a mobile crane.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Identify mathematical information and tools used in the workplace	1.1 Dimensions and/or weights to be measured are identified from work procedures and, where applicable, work order forms 1.2 Units of measurement for allowable load limits (SWL and WLL) for load shifting are identified from crane load chart 1.3 Information presented in mathematical symbols, diagrams and pictorial representations is recognised, interpreted and used to complete workplace tasks 1.4 Measuring equipment, features and/or scales and units of measurement are selected as appropriate for the task and process
2 Estimate and calculate requirements for load shifting	2.1 Appropriate methods are selected to perform calculations required to complete workplace tasks, including addition, subtraction, multiplication, division, fractions, decimals, percentages and mixed numbers 2.2 Quantities of materials and resources required to complete a work task are calculated 2.3 Load balance characteristics are identified 2.4 The time needed to complete a work activity is estimated 2.5 Calculations required for weight, reach, radii, boom and jib configurations are undertaken and checked for conformity with crane load chart information 2.6 Load spread is estimated/calculated to ensure safe weighting on pallets, trucks, platforms or other storage or transport systems 2.7 Measuring instruments are read to the limit of accuracy of the tool
3 Complete documentation using mathematical information	3.1 Appropriate workplace documentation is completed using recognised symbols and mathematical terms for the work tasks 3.2 Numerical information is self-checked and corrected for accuracy

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant regulations, permit and licence requirements pertaining to mobile crane operation
- Relevant OH&S and environmental procedures and regulations
- Mobile crane applications, capacities, configurations, safety hazards and limitations

REQUIRED KNOWLEDGE AND SKILLS

- Risks and hazards involved in mobile crane operation and associated action that can be taken to eliminate or minimise the risk
- Workplace procedures concerning the estimation/calculation of load shifting requirements for a mobile crane
- Workplace procedures concerning the estimation/calculation of load shifting requirements for a mobile crane
- Problems that may occur during a lift and associated action that can be taken to address the problems concerned
- Focus of operation of work systems and equipment
- Metric and, where required, imperial measurement systems

Required skills:

- Communicate effectively with others when estimating and calculating load shifting requirements for a mobile crane
- Read and interpret mathematical scales, digital readouts, specifications and customer or workplace instructions
- Interpret permit or licence requirements in terms of height, weight and type of lift
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to estimating and calculating load shifting requirements for a mobile crane
- Operate electronic communication equipment to required protocol
- Apply mathematical procedures including addition, subtraction, multiplication, division, percentages and fractions to the estimation of load shifting requirements
- Work collaboratively with others when estimating and calculating load shifting requirements for a mobile crane
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may arise when estimating and calculating load shifting requirements for a mobile crane in accordance with workplace procedures
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Plan own work including predicting consequences and identifying improvements
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating

Required skills:

procedures

- Identify and correctly use equipment, processes and procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
	  • the underpinning knowledge and skills
	  • relevant legislation and workplace procedures
	  • other relevant aspects of the range statement

Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts
	• Resources for assessment include:
	  • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
	  • access to an appropriate range of relevant operational situations in the workplace
	• In both real and simulated environments, access is required to:
	  • relevant and appropriate materials and equipment, and
	  • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation • As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests • Practical assessment must occur: • through activities in an appropriately simulated

EVIDENCE GUIDE

	environment at the registered training organisation, and/or • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Operations may be conducted:	• by day or night • in a variety of weather conditions
Environment may include movement of:	• equipment • goods • materials • vehicular traffic
Customers may be:	• internal or external
Mobile crane may be any slewing and non-slewing crane up to and including 20 tonne capacity and may be involved in work in a range of industry sectors including:	• construction and demolition • manufacturing • waterfront • mining • primary industry • utilities (electricity, gas, water) • arboricultural • swimming pool • quarrying
Calculations and estimations may relate to :	• aspects of the lift as well as weights and dimensions of specific loads, cargo, containers to be shifted, stored or lifted. They may involve units of measurement for weight, linear measurement, number, mass, pressure, speed, volume and/or time
Calculations may be undertaken with:	• use of calculators, computers or other mathematical aids
Hazards may include:	• power lines • noise, light, energy sources • overhead service lines • surrounding buildings, structures, facilities • underground services

RANGE STATEMENT

- obstructions
- uneven or unstable ground and recently filled trenches
- stationary and moving machinery and equipment
- hazardous or dangerous materials
- traffic hazards and congestion

RANGE STATEMENT

Hazard management is consistent with:	• the principle of hierarchy of control with elimination, substitution, isolation and engineering control measures being selected before safe working practices and personal protective equipment
Personal protective equipment may include:	• gloves • safety headwear and footwear • sunscreen, sunglasses and safety glasses • two-way radios • high visibility clothing
Consultative processes may involve:	• other employees and supervisors • management • union representatives • clients • industrial relations and OH&S specialists • other professional or technical staff
Requirements for access and/or lift may include:	• site restrictions and procedures • authorities and permits • hours of operation • induction • slings, chains, nets, brackets and other specialised lifting equipment • noise restrictions • personal protective equipment • support trucks • additional gear and equipment • communications equipment
Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures • site procedures
Documentation/records may include:	• Safe Working Load (SWL) and Working Load Limit (WLL) • operations manuals including load charts and crane and rigging manuals • induction documentation • competency standards and training materials • job specifications and procedures • manufacturers specifications • workplace operating procedures and policies

RANGE STATEMENT

	• supplier and/or client instructions
	• communications technology equipment, oral, aural or signed communications
	• personal and work area work procedures and practices
	• conditions of service, legislation and industrial agreements including:
	  • workplace agreements and awards
	  • OH&S procedures
	  • standards and certification requirements
	  • quality assurance procedures
	  • emergency procedures

Applicable procedures and codes may include:	• relevant state/territory regulations and licence/permit requirements pertaining to mobile cranes • relevant Australian Standards and certification requirements • relevant state/territory road rules • relevant state/territory OH&S legislation • relevant state/territory fatigue management regulations • relevant state/territory environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field E - Communication and Calculation