



Cranes, hoists and winches—Safe use

Part 11: Vehicle-loading cranes



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- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Australian Institute for Non-Destructive Testing
- Bureau of Steel Manufacturers of Australia
- Concrete Pumping Association of Australia
- Crane Association of New Zealand
- Department of Commerce, WorkSafe Division, WA
- Department of Industry, Skills and Regional Development, NSW
- Department of Justice and Attorney General, Qld
- Electricity Engineers Association (New Zealand)
- Elevating Work Platform Association of Australia
- Engineers Australia
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- National Road Transport Association
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- The Crane Industry Council of Australia
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- 600 Cranes Australasia
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Australian Standard®

Cranes, hoists and winches—Safe use
Part 11: Vehicle-loading cranes

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-005, Cranes, to supersede AS 2550.11—2004. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

This Standard incorporates Amendment No. 1 (December 2018). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to set out requirements for the use of vehicle-loading cranes for reference by legislators and vehicle-loading crane users.

Significant changes in this edition include the expansion of the requirements and guidance for maintenance, inspection and repair, and the requirements on installation, formerly in a normative appendix, have been replaced by a reference to AS 1418.11.

Standards Australia uses the term ‘shall’ to indicate requirements that have to be met for compliance with the Standard in question. The requirements of this Australian Standard are not required by law in any Australian jurisdiction, unless the Australian Standard has been specifically incorporated by an Act or Regulation in the jurisdiction.

The Commonwealth, state and territory governments may choose to incorporate this Australian Standard into their work health and safety regulations. The exact manner of incorporation will determine whether the whole document is incorporated or whether specific sections or provisions of the Australian Standard are incorporated. The manner of incorporation will determine which of the Standard’s requirements (‘shall’ statements) have been made a legal requirement in a jurisdiction. As a general principle, where an Australian Standard is incorporated by a regulation, the legal status of the Standard’s requirements and recommendations is made clear by the incorporation provisions of the regulation. Therefore, the requirements (‘shall’ statements) in an Australian Standard are not mandatory for legal purposes unless incorporated specifically by an Act or Regulation. Readers will need to refer to their jurisdiction’s law to determine which parts of the Australian Standard (if any) have been incorporated and the manner of incorporation.

Jurisdictions may also choose to incorporate this Australian Standard (either in whole or in part) in an approved code of practice made under WHS law. The purpose of an approved code of practice is to provide practical guidance to persons on how to comply with their obligations under the enabling WHS Act, or regulations made under the Act.

Readers will need to refer to their jurisdiction’s approved codes of practice to determine which parts of this Australian Standard (if any) have been incorporated into codes of practice and the manner of incorporation.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

Published Standards in the series are as follows:

AS

- 2550 Cranes, hoists and winches—Safe use
- 2550.1 Part 1: General requirements
- 2550.3 Part 3: Bridge, gantry, portal (including container cranes), and jib cranes
- 2550.4 Part 4: Tower cranes
- 2550.5 Part 5: Mobile cranes
- 2550.6 Part 6: Guided storing and retrieving appliances
- 2550.7 Part 7: Builders' hoists and associated equipment
- 2550.10 Part 10: Mobile elevating work platforms
- 2550.11 Part 11 Vehicle-loading cranes (this Standard)
- 2550.13 Part 13: Building maintenance units
- 2550.15 Part 15: Concrete placing equipment
- 2550.16 Part 16: Mast climbing work platforms
- 2550.19 Part 19 Telescopic handlers
- 2550.20 Part 20 Self-erecting tower cranes

AS/NZS

- 2550.9 Part 9: Vehicle hoists

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STANDARDS AUSTRALIA

Australian Standard

Cranes, hoists and winches—Safe use

Part 11: Vehicle-loading cranes

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the safe use of vehicle-loading cranes as defined in AS 2549. It is complementary to AS 2550.1, but requirements given herein take precedence over the corresponding requirements in AS 2550.1.

This Standard does not cover the specific requirements for the safe use of vehicle-loading cranes for work on or near live electrical equipment by power companies or their contractors while working for power companies, as referenced in Clause 5.4.

1.2 APPLICATION

This Standard applies to the safe use of vehicle-loading cranes of the type specified in AS 1418.11. The requirements of AS 1418.11 shall apply and no requirements given herein shall circumvent the requirements of AS 1418.11.

Where the crane structure is to be used for pick-and-carry operations, the design shall be in accordance with AS 1418.5, and usage shall be in accordance with AS 2550.5.

Where the crane structure is mounted on a fixed structure or other structure, the design shall be in accordance with the applicable part of AS 1418 and usage shall be in accordance with the applicable part of AS 2550.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1418	Cranes, hoists and winches
1418.5	Part 5: Mobile cranes
1418.11	Part 11: Vehicle-loading cranes
2549	Cranes (including hoists and winches)—Glossary of terms
2550	Cranes hoists and winches—Safe use
2550.1	Part 1: General requirements
2550.5	Part 5: Mobile cranes
2759	Steel wire rope—Use, operation and maintenance
3600	Concrete structures

AS/NZS ISO

31000	Risk management—Principles and guidelines
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ISO	
10245	Cranes—Limiting and indicating devices
10245-1	Part 1: General
12480	Cranes—Safe use
12480-1	Part 1: General

1.4 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 1418.11, AS 2549, AS 2550.1 and those below apply.

NOTE: The basic terminology and functions of typical vehicle-loading cranes are given in Appendix A.

1.4.1 Competent person

A person who has acquired through training, qualification, experience or a combination of these, the knowledge and skill enabling that person to correctly perform the required task.

1.4.2 Crane inspector

A person with the necessary knowledge and experience to perform the specific vehicle-loading crane inspection.

1.4.3 Professional engineer

Any one or a combination of the following:

- (a) A person registered in a relevant area of practice on the National Professional Engineers Register.
- (b) Where applicable, a member of a scheme established under professional standards legislation in the relevant jurisdiction.
- (c) A Chartered Professional Engineer (CPEng).
- (d) Other person providing satisfactory evidence to a responsible authority that they have the qualifications and experience to be competent to independently perform the required tasks.

1.4.4 Shall

Indicates that a statement is mandatory for compliance with this Standard.

1.4.5 Should

Indicates a recommendation.

NOTE: Neither following nor ignoring a recommendation results in non-compliance with the Standard.

1.4.6 Vehicle-loading crane operator

The person who operates the vehicle-loading crane.

1.5 INSTRUCTIONS

Instructions shall be prepared, maintained and made readily available to the appropriate personnel, to ensure the safe use of the crane. Such instructions shall include the manufacturer's instructions, recommendations and specifications. Where any of these instructions, recommendations and specifications are not available from the manufacturer or are deemed inappropriate arising from safety or legislative or similar concerns, they shall be drawn up by a competent person. Instructions shall use procedures and provide outcomes that are in accordance with the requirements of this Standard.

1.6 DESIGN REQUIREMENTS

All vehicle-loading cranes and alterations shall be designed in accordance with AS 1418.11.

1.7 RISK ASSESSMENT

The risk assessment for the intended lift shall apply to the vehicle-loading crane, its carrier vehicle, body and any ancillary equipment.

The risk assessment shall be performed by a competent person before carrying out lifting operations. The assessment should be in writing and shall take into account the following:

- (a) The task to be carried out.
- (b) The range of methods by which the task can be done.
- (c) The type of vehicle-loading crane that will be required or that can be used.
- (d) The hazards involved and the associated risks.
- (e) The actual method and the other requisite plant and material.
- (f) Emergency and rescue procedures.

Where a risk assessment is performed, the competent person should document a safe work procedure. The safe work procedure shall be monitored for ongoing effectiveness, and shall be changed whenever it is found to be deficient, when the task changes or when the associated risks change.

NOTE: Guidelines on risk management are given in Appendix B and AS/NZS ISO 31000.

SECTION 2 PLANNING

2.1 GENERAL

The planning and application of vehicle-loading crane requirements should commence as early as possible in the development of each project. Planning should include consultation with the vehicle-loading crane manufacturer, supplier, operator, designer, importer and agent, where appropriate.

Where ownership or the use of a vehicle-loading crane has changed, a competent person should assess the suitability of the vehicle-loading crane for the operations it is intended to be involved in.

2.2 PLANNING

A competent person(s) shall carry out the following planning activities, as a minimum:

- (a) Risk assessment performed (see Clause 1.7).
- (b) The selection and safe use of the vehicle-loading crane.
- (c) Travel and access requirements.
- (d) The assembly and erection of the vehicle-loading crane.
- (e) Assessing ground conditions.
- (f) Appraising an existing vehicle-loading crane for suitability for use.
- (g) Availability of adequate competent personnel for all tasks.
- (h) Availability of suitable equipment for the assembly, maintenance, operation and dismantling of the vehicle-loading crane.
- (i) Condition monitoring of the vehicle-loading crane.
- (j) The maintenance and inspection of the vehicle-loading crane and rigging equipment.
- (k) The preparation, availability and maintenance of instructions for the assembly, operation, maintenance and inspection of the vehicle-loading crane.
- (l) Emergency procedures for the evacuation of personnel from the vehicle-loading crane.
- (m) Procedures to deal with all reasonably foreseeable emergency situations.
- (n) Assessing the site for proximity hazards (see Clause 4.3.1).

Where vehicle-loading cranes are required to operate in or near buildings or structures, vehicle-loading crane loadings and access should be considered at the project design stage.

2.3 MATTERS TO BE CONSIDERED

At appropriate stages during planning, the following matters, as a minimum, shall be addressed, where applicable:

- (a) Lightning protection.
- (b) Appropriate earthing for the conditions (e.g. static electricity build-up due to electrical magnetic radiation (EMR) or wind).
- (c) Site access and vehicle-loading crane siting.
- (d) Safety of personnel.
- (e) Protection and safety of public.

- (f) Proximity of above ground and below ground services (e.g. power, gas, water).
- (g) Procedures for the setting up of the vehicle-loading crane.
- (h) Procedures for lifting operations.
- (i) Procedures for the dismantling of the vehicle-loading crane.
- (j) Selection of the personnel.
- (k) Communication system(s).
- (l) Weather conditions (e.g. anticipated wind speeds, rainfall and temperature range).
- (m) The ability of the supporting surface or structure to support the vehicle-loading crane.
- (n) Proximity of excavations.
- (o) Selection of lifting gear to the appropriate Australian Standard.
- (p) Personal protective equipment.
- (q) Emergency procedures.
- (r) Designed lifts (e.g. multiple crane lifting).
- (s) Consultation and coordination with other groups working in the area.
- (t) Lighting (e.g. for night operations).
- (u) Parking/storage facilities.
- (v) Access for servicing.
- (w) Interaction with people, plant and structure.
- (x) Provision of anti-collision systems.
- (y) Hazardous environments in which the vehicle-loading crane may operate (e.g. explosive atmospheres).
- (z) Water flow, including tides and floods.

NOTE: Where required, consideration should be given to obtaining appropriate authorization(s), e.g. from local councils or electricity distributors.

S E C T I O N 3 S E L E C T I O N

Before selecting a vehicle-loading crane for a particular application, all relevant information shall be obtained and all relevant operational criteria shall be determined, which shall include, as a minimum, the following:

- (a) The mass, center of gravity and physical characteristics of the load.
- (b) The mass of the lifting gear and other deductions from the rated capacity chart.
- (c) The location from which the load is to be lifted.
- (d) The location to which the load is to be placed.
- (e) The result of an appraisal of an existing vehicle-loading crane, if applicable.
- (f) The maximum permitted forces on the supporting surface or structure.
- (g) Ground and site conditions.
- (h) Rated capacity of the vehicle-loading crane.
- (i) The nature of the rigging or slinging to be used.
- (j) The movement limitations of the vehicle-loading crane and the load.
- (k) Other limitations of the vehicle-loading crane.
- (l) Multiple crane lifting.
- (m) The working environment, including hazardous gases, corrosive atmospheres and high ambient temperatures, and full speed operation against in-service wind load.
- (n) The competency of the operator.
- (o) The type and location of controls, i.e. whether they are remote controlled, if there are dual controls, or, if only one set of controls, the side they are fixed to the vehicle.

S E C T I O N 4 S I T I N G

4.1 GENERAL

Where applicable, attention shall be given to the following factors:

- (a) Vehicle-loading crane standing (see Clause 4.2).
- (b) Proximity hazards and visibility (see Clause 4.3).
- (c) Environmental factors, e.g. noise and noxious fumes, (see Clause 4.4).
- (d) Clearances (see Clause 4.5).

4.2 VEHICLE-LOADING CRANE STANDING

4.2.1 General

The loads imposed by the crane shall be assessed by a competent person to establish the ability of the crane standing or support structure for the duration of the job.

The loads imposed by the vehicle-loading crane while in service, out of service and during assembly and dismantling, shall be obtained from the vehicle-loading crane manufacturer or a competent person. The loadings shall include the combined effects of the following:

- (a) Dead weight of the vehicle-loading crane, including the vehicle, ballasting or foundation where appropriate.
- (b) Dead weight of the load(s) and any lifting attachment(s).
- (c) Dynamic forces caused by movements of the vehicle-loading crane.
- (d) Wind loadings, resulting from wind speeds up to the maximum permitted, taking into account the degree of the exposure of the site.

A competent person shall assess the ground (including underground cavities and soft ground) or means of support to determine which the vehicle-loading crane can operate within the levels and parameters specified by the manufacturer.

Loads shall not be imposed on any new concrete supporting structure until the structure has reached sufficient strength as specified in AS 3600.

4.2.2 Wind load

All aspects of in-service and out-of-service wind loading, including the wind funnelling effects caused by adjacent building and structures, shall be assessed to determine the effect on the crane standing or support structure.

4.2.3 Working over cellars, ground cavities or underground services

The site shall be checked by competent person(s) for the presence of cellars, ground cavities, underground services, ducts and the like. Where the check reveals the presence of these, precautions shall be taken to ensure the stability of the vehicle-loading crane and crane standing.

4.2.4 Excavations and embankments

Where a vehicle-loading crane is required to work in the vicinity of an excavation or an embankment, the possibility of slip or collapse of the supporting surface shall be evaluated by a competent person. Where necessary, the excavation or embankment shall be reinforced.

4.2.5 Soft surfaces

A vehicle-loading crane shall not be erected for operating on soft or waterlogged surfaces unless measures are taken to ensure vehicle-loading crane standing. Mats, steel plates, timber sleepers, a concrete raft or similar aids shall be used to distribute the operational loads under the support points of the vehicle-loading crane, so that the bearing capacity of the supporting surface is not exceeded.

4.2.6 Riverbed, tidal or flood water areas

Precautions shall be taken to protect vehicle-loading cranes required to stand in flowing water against specific hazards, such as scouring the surface around the vehicle-loading crane. The effectiveness of the measures shall be monitored.

NOTE: The possibility of a vehicle-loading crane being trapped by floodwater or by an incoming tide, should be considered.

4.2.7 Working on structures

The structure of a bridge, a wharf, a jetty, a building or a suspended concrete slab shall be checked by a competent person to ensure that it is capable of withstanding the operational forces applied by a vehicle-loading crane operating on it.

4.2.8 Stabilizer legs

When stabilizer legs are to be used, the site conditions shall allow for setting up of the stabilizers to the manufacturer's specifications.

Stabilizer legs on both sides of the vehicle-loading crane shall be fully extended or positioned in accordance with the manufacturer's instructions.

Where necessary, suitably prepared packing, shall be placed under the stabilizer leg footplates to ensure that the allowable bearing pressure under the footplate is not exceeded.

Where timbers are used as packing under stabilizer leg footplates, they shall be arranged so that successive layers are laid at 90° to each other (pig sty stacking) (see Figure 4.2.8).

4.2.9 Level verification

Frequent verification of the level of the vehicle-loading crane from the level indicator and examination of the vehicle-loading crane standing shall be made during the operation to ensure that there has been no movement that might affect the stability of the vehicle-loading crane. Such verification shall be made immediately before and after lifting a load equal to or greater than 50% of the vehicle-loading crane's rated capacity.

4.2.10 Working adjacent to traffic

If the vehicle-loading crane has to operate adjacent to a roadway, it shall be located to control risk to the operator from passing traffic.