40492 Calculate load weights and lifting gear capacity to move loads

Kaupae | Level	3
Whiwhinga | Credit	4
Whāinga | Purpose	This standard recognises the skills to calculate load weights and lifting gear capacity to move loads. This standard contributes to the New Zealand Certificate in Rigging (Level 3) [Ref: 2355].

Hua o te ako me Paearu aromatawai \| Learning outcomes and assessment criteria

Hua o te ako | Learning outcomes	**Paearu aromatawai |** Assessment criteria
1. Calculate load weight being moved.	a. Calculate load weight.
	b. Record and check calculated load weight for accuracy.
2. Calculate lifting capacity of lifting gear involved in the load movement.	a. Calculate lifting capacity of lifting gear.
	b. Record and check calculated lifting gear capacity.

Pārongo aromatawai me te taumata paearu \| Assessment information and grade criteria

Assessment specifications:

Acceptable calculation methods are used to accurately determine for a regular load, its load weight, dimensions, centre of gravity, lifting and slinging points, and derated working load limits of lifting equipment from selected slinging techniques, for regular lift scenarios.

A person with this standard would be expected to cover the scope of practice required to calculate load weight that determines equipment requirements and the centre of gravity, for multiple scenarios.

To achieve this standard the candidate must be capable of calculating load weights and lifting capacity of a load movement rig for different lift plan contexts to industry standards.

To achieve this standard the candidate must be capable of consistently performing the requirements:

- on a jobsite where the rigging operation will take place or simulated environments with plant and equipment that reflects real world scenarios;
- to current and relevant legislation, standards and codes (including safety).

Ngā momo whiwhinga \| *Grades available*

Achieved.

Ihirangi waitohu | Indicative content

Technical skills and knowledge

- The elements of a lift plan for load weight calculation and for calculating lifting capacity
  - Lift classification
  - Centre of gravity
  - Lift points/pivot points
  - Lift capacity
  - Load weight tables
  - Height, width and length of lift
  - Wind (Beaufort scale), temperature, and visibility
  - Crane and load foundation ratings
  - Sharp corners and angles of loads
  - Sling angles
  - Load angle factor
  - Travel route clearance
  - Floor loading capacity
  - Work zone safety.
- Introduction to rigging mechanics – tension, torsion, compression, shear, torque.
- Introduction to terminology Working Load Limit (WLL) tables, capacity charts, Safe working Load (SWL) and Minimum Breaking Load (MBL) and how they should be used.
- The calculation of volumes for two and three-dimensional objects.
- The calculation of load weights of objects, including three-dimensional objects.
- The calculation of centres of gravity for load balance and stability using dimensions and using indicated weight.
- The calculation of the forces acting on rigging equipment where pivot point is between two acting forces, where one value for forces and distances is known.
- The calculation of the forces acting on rigging equipment where pivot is not between two acting forces, but one value for forces and distances to the pivot are known.
- The use of sketches in the calculation of measurements for rigging arrangements and in confirming calculations.

Communication, literacy, numeracy and technology

- Marked weights and test load documentation.
- Equipment operating capacities and manufacturer guidelines.
- Required communication with supervisor.

Rauemi | Resources

Programme guidance information for the New Zealand Certificate in Rigging is available from qualifications@waihangaararau.nz.

Approved codes of practice available at www.worksafe.govt.nz:

- Approved Code of Practice for Load-lifting Rigging.
- Approved Code of Practice – Cranes.

Pārongo Whakaū Kounga | Quality assurance information

Ngā rōpū whakatau-paerewa | Standard Setting Body	Waihanga Ara Rau – Construction & Infrastructure Workforce Development Council
Whakaritenga Rārangi Paetae Aromatawai | DASS classification	Service Sector > Lifting Equipment > Core Rigging
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga | CMR	0003

Hātepe | Process	**Putanga |** Version	**Rā whakaputa |** Review Date	**Rā whakamutunga mō te aromatawai |** Last date for assessment
Rēhitatanga | Registration	1	27 March 2025	N/A
Kōrero whakakapinga | Replacement information	This skill standard replaced unit standard 26349.		
Rā arotake | Planned review date	31 December 2029		

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihangaararau.nz to suggest changes to the content of this skill standard.