

Title	Prepare and use a crane and vibro hammer machine for piling and foundation operations		
Level	4	Credits	12

Purpose	People credited with this unit standard are able to: prepare a crane and equipment for piling and foundation operations; drive piles using a vibro hammer machine; extract piles using a vibro hammer machine; de-rig the vibro hammer machine, re-rig the crane, functionally test the crane for routine crane use, and complete documentation; and carry out daily and weekly safety and maintenance checks of the crane and vibro hammer machine.
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Classification	Cranes > Crane Operation
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Available grade	Achieved
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Explanatory notes

- 1 Definitions
Crane is as given in the Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999.
Crane and attachment manufacturer's requirements – crane and attachment manufacturer's operating, safety, and maintenance instructions.
- 2 Assessment
 Assessment must be carried out in a crane workplace or equivalent.
 Assessment must include either an electric or a hydraulic vibro machine for both driving and extracting piles, caissons, and tubes.
- 3 All tasks are to be carried out in accordance with the equipment manufacturers' requirements and company standards and procedures based on industry requirements in:
 - a company quality management systems;
 - b health and safety requirements and guidelines consistent with the Health and Safety in Employment Act 1992 (HSE Act);
 - c equipment manufacturers' operating instructions;
 - d government and local government legislation, regulations, and bylaws;
 - e *Crane Safety Manual*, published by the Crane Association of New Zealand (Inc), PO Box 25 156, Panama Street, Wellington 6146;
 - f *Approved Code of Practice for Cranes*, published by the Department of Labour, available at <http://www.dol.govt.nz>.
- 4 HSE Act Codes of Practice are available from the Department of Labour website, <http://www.osh.dol.govt.nz>.

Outcomes and evidence requirements

Outcome 1

Prepare a crane and equipment for piling and foundation operations.

Range pile driving, pile extraction.

Evidence requirements

1.1 Crane is confirmed as suitable for piling and foundation operations in accordance with company procedures.

1.2 Site safety precautions are taken and hazard control measures implemented prior to commencement of activities in accordance with company procedures.

Range equipment – vibro power pack, hydraulic hoses, vibro heads; environment, people, utilities and services to the site, personal protective equipment; proximity to, and affect on adjacent services and buildings.

1.3 Equipment that is provided is described in terms of its functions, and suitability for the work that will be carried out.

1.4 Crane is rigged for piling and foundation operations in accordance with crane type, crane attachment manufacturer's requirements, requirements of the job, siting and piling conditions, and company procedures.

Range includes but is not limited to – power packs, hydraulic hoses, vibro heads, reeving, ropes, crane size, boom length, safe load indicator (SLI) operations.

1.5 Siting of the crane and the sequence of procedures are planned in consultation with authorised personnel, and in accordance with company procedures.

Range authorised personnel may include but are not limited to – client representatives, on-site supervisor, engineer.

Outcome 2

Drive piles using a vibro hammer machine.

Range one of – electric vibro hammer machine, hydraulic vibro hammer machine.

Evidence requirements

- 2.1 Potential hazards during pile driving are identified, and hazard control strategies are described in accordance with company procedures and site engineer's site recommendations.
- Range may include but is not limited to hazards relating to – stability of crane, recoil, stability of crane and boom, failure of pile head or fatigue of pile, failure of ropes or attachments, environmental, damage to eyes and ears of personnel.
- 2.2 Procedures for pile driving are carried out in accordance with crane and attachment manufacturers' requirements and company procedures.
- 2.3 The cranes ability to support the combined weight of the hammer and pile during piling operations is assessed in accordance with crane load limit charts and company procedures.
- 2.4 Signals are identified and agreed in accordance with company procedures and *Crane Safety Manual*
- 2.5 Pile is driven in accordance with company procedures.

Outcome 3

Extract piles using a vibro hammer machine.

Range one of – electric vibro hammer machine, hydraulic vibro hammer machine.

Evidence requirements

- 3.1 Pile is extracted in accordance with company procedures and crane and attachment manufacturer's requirements.
- 3.2 Potential hazards during pile extraction are identified and hazard control strategies are implemented in accordance with company procedures.
- Range may include but is not limited to hazards relating to – stability of crane, recoil, stability of crane and boom, failure of pile head or fatigue of pile, failure of ropes or attachments, environmental damage to eyes and ears of personnel.

Outcome 4

De-rig the vibro hammer machine, re-rig the crane, functionally test the crane for routine crane use, and complete documentation.

Evidence requirements

- 4.1 Vibro hammer machine is de-rigged, and crane is re-rigged for other crane use in accordance with crane and attachment manufacturer's requirements and company procedures.

4.2 Test is conducted in accordance with crane manufacturer's requirements and company procedures, prior to the crane being returned to routine crane activities.

4.3 Documentation is completed in accordance with company procedures.

Range may include but is not limited to – logs, records, job sheets, crane equipment inventories, maintenance requests.

Outcome 5

Carry out daily and weekly safety and maintenance checks of the crane, and vibro hammer machine.

Evidence requirements

5.1 Daily safety and maintenance checks of the crane and vibro unit, hammer, hoses, rigging and lifting equipment, and power pack are carried out in accordance with crane and attachment manufacturers' requirements and/or company procedures.

5.2 Weekly safety and maintenance checks of the crane and vibro unit, hammer, hoses, and power pack are carried out in accordance with crane and attachment manufacturers' requirements and/or company procedures.

Planned review date	31 December 2016
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 February 2004	30 June 2013
Review	2	20 May 2008	30 June 2013
Review	3	15 March 2012	N/A

Consent and Moderation Requirements (CMR) reference	0025
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact The Skills Organisation at reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.