

<b>Title</b>	<b>Explain, operate, monitor, and review piling equipment operations for piling and deep foundation works</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>24</b>

<b>Purpose</b>	People credited with this standard will be able to, for piling and deep foundation works: explain the features of piling equipment and the operating process; operate the drill rig and piling equipment; and monitor and review drill rig and piling equipment operations.
----------------	---

<b>Classification</b>	Infrastructure Works > Structural Foundations
-----------------------	---

<b>Available grade</b>	Achieved
------------------------	----------

---

## Guidance Information

- 1 Learning and assessment within this unit standard must be carried out in an infrastructure works environment and in accordance with the following, as relevant to role, and any subsequent amendments:
  - Health and Safety at Work Act 2015;
  - Resource Management Act 1991;
  - Heritage New Zealand Pouhere Taonga Act 2014;
  - Hazardous Substances and New Organisms Act 1996.
  
- 2 Definitions
 

*Company requirements* include the policy, procedures, and methodologies of the company. They include legislative and regulatory requirements that may apply across the company or to a specific site. Requirements are documented in the company health and safety plans, traffic management plans, contract work programmes, quality plans, policies, and procedural documents.

*Operating process* may include but is not limited to – layout, levels, positioning, drilling shaft, reinforcing, casing installation and removal, tremie pour, over pour, piling, soil removal.

*Quality plan* refers to any contract specific policy, processes, procedures, testing or certification requirements.

*Work plan* refers to any job specifications or plans given to the operator prior to undertaking a job.

---

## Outcomes and performance criteria

### Outcome 1

Explain the features of the piling equipment and the operating process for piling and deep foundation works.

**Performance criteria**

- 1.1 Model, type and function of drill rig and piling equipment are explained in relation to conditions onsite, type of piling and deep foundation works, and the machine specifications or operator manual.
- Range conditions onsite may include but are not limited to – type and composition of soil, water table, rock layers, obstructions, access.
- 1.2 Advantages of the drill rig and piling equipment are explained in terms of the range of use and safety requirements.
- 1.3 Capabilities of the drill rig and piling equipment are explained in terms of the relevant work plan.
- 1.4 Technological features are explained in terms of the model chosen to provide solutions for onsite works.
- Range technological features may include but are not limited to – sensors, camera function, global positioning system, reporting, tracking and recording functions.
- 1.5 Sustainability features are explained in terms of analysing data on equipment and the job site to maximise productivity and reduce costs.
- 1.6 Operating process is explained in terms of the roles and responsibilities of the workers onsite and the tasks that need completing for that day.
- 1.7 Importance of the health and safety of the drill rig operator is explained in accordance with company requirements.
- Range health and safety may include but is not limited to – stress, panic, long distance travel to work, duration of work hours, fatigue, dehydration, regular breaks, nutrition, lack of focus due to repetition of job tasks or onsite delays, under or over confidence.
- 1.8 Type and composition of the pile and method of construction selected is explained in terms of the operating process, meeting the work plan and quality plan.

**Outcome 2**

Operate the drill rig and piling equipment for piling and deep foundation works.

**Performance criteria**

- 2.1 Daily piling rig operating tasks are discussed at morning briefing meetings and confirmed in accordance with the work plan and site drawings.
- 2.2 Plant prestart checks and start-up procedures are completed in accordance with company requirements and operator manual.

- 2.3 Access and stability considerations are confirmed to ensure a stable and safe platform for the piling equipment operations.
- 2.4 Safety attachments and Personal Protective Equipment are used in accordance with operator manual, company and client requirements.
- 2.5 Site boundaries and blind spots are determined and communicated to the spotter or groundsman and workers in terms of safety and site awareness.
- 2.6 Drill rig and piling equipment is operated efficiently and safely throughout the operating process in accordance with the operator manual, company requirements and work plan.
- 2.7 Drill rig and piling equipment are positioned correctly and operation is commenced when workers onsite are ready and in view.
- 2.8 Horn or communication device is used when turning, manoeuvring, tracking, or changing attachments in accordance with company requirements.
- 2.9 Drill rig and piling equipment is operated efficiently in terms of avoiding stress on the plant and paying attention to changes in speed, noise, or any movement that indicates a different mode of operating or technique is required.

### **Outcome 3**

Monitor drill rig and piling equipment operations for piling and deep foundation works.

#### **Performance criteria**

- 3.1 Pile depths are monitored and checked to identify issues in accordance with company testing procedures.
- 3.2 Drill rig and piling equipment performance is monitored in accordance with company requirements.  
  
Range volumes, depths, flow, pressures, time, angles, speed, any stress on the plant.
- 3.3 Soil content is monitored to check for change in colour, level of moisture, or any other change that might suggest a different attachment, tooling or operating technique is required.
- 3.4 Set out and positioning are monitored in terms of working with the groundsman or spotter to make sure alignment is correct.
- 3.5 Piling equipment is monitored in terms of changes or modifications to attachments or replacement of worn parts.
- 3.6 Drill log or recording procedures are monitored and completed in accordance with company requirements.

**Outcome 4**

Review drill rig and piling equipment operations for piling and deep foundation works.

**Performance criteria**

- 4.1 Review includes recommendations for improvements to the safe and productive operation of the drill rig and piling equipment.
- 4.2 Post-operational checks, shut-down procedures and routine maintenance is completed and reviewed at the end of each day and any issues are communicated to the foreman or supervisor in accordance with company and/or operator manual requirements.

<b>Planned review date</b>	31 December 2022
----------------------------	------------------

**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	25 January 2018	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0101
--	------

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

**Comments on this unit standard**

Please contact the Connexis Infrastructure ITO [qualifications@connexis.org.nz](mailto:qualifications@connexis.org.nz), if you wish to suggest changes to the content of this unit standard.