

Title	Design, erect, and dismantle advanced cantilevers		
Level	5	Credits	15

Purpose	<p>This unit standard is for people who have intermediate scaffolding skills and who want to develop their scaffolding skills to an advanced level.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – design advanced cantilevers; – erect tube and fitting cantilevers; – erect a proprietary cantilever; – check the structure is compliant and complete a GPG inspection; and – dismantle advanced cantilevers.
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Classification	Lifting Equipment > Advanced Scaffolding
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been developed for learning and assessment on-job or off-job in a simulated environment.
- 2 All tasks must be carried out in accordance with:
 - a quality management systems;
 - b designer's requirements and manufacturers' operating instructions; legislation, regulations, bylaws, Health and Safety at Work Act 2015, and Health and Safety in Employment Regulations 1995;
 - c the most up to date version of the *Good Practice Guidelines – Scaffolding in New Zealand* (GPG), 2016 available from <https://www.worksafe.govt.nz/topic-and-industry/working-at-height/scaffolding-in-new-zealand/>; and all subsequent amendments and replacements.
- 3 Definitions

Advanced cantilevers refer to complex cantilevered scaffolding supported by both scaffolds and directly by supporting structures. These involve multiple working platforms, unusual applications, and irregular structures (e.g. backpropping, cantilevers from existing structures including between floors or out of windows, double cantilevers from existing scaffolds, and cantilevered heavy duty loading platforms). The specifications of advanced cantilevers for tube and fitting scaffolding may need to be checked against the requirements of the GPG by a chartered engineer, or against manufacturer's specifications by a chartered engineer for proprietary systems.

Cantilevers refer to scaffolding structures that project outward at height from an existing structure or scaffold.

Client refers to an individual or representative of a company who commissions a particular scaffold or scaffolding structure to be erected, or is an end user of the scaffold or scaffolding structure.

Needle is a cantilevered structural member that supports a cantilevered scaffold or other structure.

Restore and repair refers to the steps taken to ensure the end state of the supporting structure in accordance with site requirements.

Scaffold plan refers to a key design document prepared by the candidate and used as a basis for the erection of a particular scaffold.

Scaffolding is as defined in the GPG and in the Health and Safety in Employment Regulations 1995.

4 Training and assessment

This unit standard covers design, erection and dismantling of scaffolds and scaffolding structures, it must take place under the supervision of a certified scaffolder who holds a current Certificate of Competence for the scaffolding concerned.

5 Range

Evidence is required for at least two tube and fitting cantilevers, one constructed from an existing scaffold and one directly from a supporting structure, and one proprietary cantilever. One of the tube and fitting cantilevers, and the proprietary cantilever, must have at least two working lifts.

6 Recommended skills and knowledge

New Zealand Certificate in Scaffolding (Level 4) [Ref: 2362], or demonstrate equivalent knowledge and skills.

Outcomes and performance criteria

Outcome 1

Design advanced cantilevers.

Performance criteria

1.1 Confirm cantilever requirements with the client, or Chartered Professional Engineer.

Range	includes – confirmation of dead load calculation, establishing maximum load, extension distance; may include but is not limited to – height, number of working lifts, access to points of attachment, intended purpose or nature of work to be conducted from the cantilever, timeframes.
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- 1.2 Check the supporting structure or scaffold for its capacity to support the cantilever.
- Range includes but is not limited to – confirmation of structural integrity; identification of attachment, tie, and bracing points.
- 1.3 Determine design parameters including, where necessary, meeting chartered engineer's requirements.
- Range includes but is not limited to – calculation of loads, extension distance, support requirements and attachment points, regulatory requirements, safety margins.
- 1.4 Prepare design documents including, where necessary, incorporating advice from a chartered engineer.
- Range includes – scaffold plan, gear list, and, where necessary, engineer's requirements; may include but is not limited to – computer-aided design printouts, work schedules, staffing allocation, WorkSafe New Zealand and local authority approvals, workplace-specific documentation.
- 1.5 Submit the scaffold plan and associated design documents to a chartered engineer for checking and make adjustments as required.

Outcome 2

Erect tube and fitting cantilevers.

Performance criteria

- 2.1 Confirm design parameters on-site before work begins in accordance with the scaffold plan.
- Range includes but is not limited to – attachment distances and placement of spurs and propping, number of working lifts supported, bracing and tie points and their structure, load weights, bracing methods, direction and magnitude of forces.
- 2.2 Source the necessary equipment in accordance with the scaffold plan.
- 2.3 Position and attach needles to the supporting structure in accordance with the scaffold plan.
- 2.4 Brace needles.

- 2.5 Secure needles with a minimum risk of falling.
- Range includes the following four methods of accessing the cantilever – carry out along the beam or truss, carry out planks, springboard, half lift from below;
may include but is not limited to – spurring up and/or spurring down.
- 2.6 Erect, brace and plank subsequent scaffolding components progressively to form the cantilever in accordance with the scaffold plan.

Outcome 3

Erect a proprietary cantilever.

Performance criteria

- 3.1 Confirm design parameters on-site prior to the commencement of work in accordance with the scaffold plan.
- Range includes but is not limited to – attachment distances, placement of spurs and propping, number of working lifts supported, bracing and tie points and their structure, load weights, bracing methods, direction and magnitude of forces.
- 3.2 Source the necessary equipment in accordance with the scaffold plan.
- 3.3 Position and attach beams or trusses in accordance with the scaffold plan.
- Range ladder beams, I beams, soldier beams or trusses cantilevered from the structure supporting the existing scaffolding or from the existing scaffolding.
- 3.4 Brace and tie beams.
- Range may include but is not limited to – counterweight, back propping, drilling to the structure below, through bolting to the structure below, spur up and/or spur down.
- 3.5 Secure beams or trusses with a minimum risk of falling.
- 3.6 Erect, brace and plank subsequent components progressively to form the cantilever.

Outcome 4

Check the structure is compliant and complete a GPG inspection.

Performance criteria

- 4.1 Check the structure for compliance in accordance with the scaffold plan.

- 4.2 Complete a GPG inspection report.
- 4.3 Make changes to the structure to ensure compliance and amend the GPG inspection report accordingly.

Outcome 5

Dismantle advanced cantilevers.

Performance criteria

- 5.1 Clear cantilevers of load from the extremities inward.
- 5.2 Remove scaffolding components, and their bracing and ties, progressively back to the supporting members.
- 5.3 Remove supporting members and their bracing progressively.
- 5.4 Restore and repair attachment points.

Replacement information	This unit standard, unit standard 26599, unit standard 26600, unit standard 26601, and unit standard 26602 replaced unit standard 4209 and unit standard 4211.
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Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 July 2011	31 December 2016
Review	2	16 July 2015	31 December 2025
Review	3	24 February 2022	N/A
Revision	4	24 August 2023	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

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