Retain L4 Evaluate compliance of constructed retaining walls

Kaupae | Level	4
Whiwhinga | Credit	
Whāinga | Purpose	This skill standard recognises the skills required to evaluate compliance of constructed retaining walls. It contributes to the New Zealand Certificate in Carpentry (Level 4) with optional strand in Metal Roof Cladding Installation [Ref:2738].

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

Hua o te ako | Learning outcomes	**Paearu aromatawai** | Assessment criteria
1. Explain the principles of retaining wall design.	a. The purpose of retaining walls in landscaping and construction projects is described.
	b. Loads acting on retaining walls are identified and confirmed, and how these loads are supported by their design is explained.
	c. Requirements for building consent when retaining walls are constructed are explained.
2. Analyse types and construction methods for retaining walls to confirm compliance.	a. Different types of retaining walls and their respective construction methods are identified.
	b. Conditions that impact the design and construction of retaining walls are identified.
	• Retaining walls are evaluated to confirm they meet specified designs, standards, and relevant compliance regulations.

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

Assessment specifications:

To achieve this standard the candidate must be capable of evaluating compliance of constructed retaining walls for non-engineered retaining walls used in residential construction, in accordance with industry standards.

Industry standards must reflect industry best practice, workplace procedures, and be within acceptable tolerances as defined in New Zealand codes, standards and regulations.

This standard may be assessed in the workplace or a simulated work environment.

Evidence for this standard must be:

- to current and relevant Legislation, Standards, and Codes (including safety),
- in an environmentally sustainable manner,
- within an acceptable timeframe,
- in different and unfamiliar contexts,
- with acceptable behaviours.

Ngā momo whiwhinga | Grades available

Achieved

Ihirangi waitohu | Indicative content

Types of loads on retaining walls

- Lateral loads, pressure from soil or fill material.
- Surcharge loads, loads from nearby objects, vehicles, or structures.
- Hydrostatic loads, pressure from water accumulation behind the wall.
- Seismic loads, impact of earthquakes on retaining wall stability.
- Foundation loads, the weight of the retaining wall itself.

Types of retaining wall systems

- Gravity walls, made of stone, gabion, in-situ concrete, or concrete block.
- Crib walls, timber or concrete interlocking systems.
- Piled walls, using vertical piles for support.
- Cantilevered walls, l-shaped, t-shaped, or anchored designs that rely on leverage.

Subterranean conditions

- Soil composition, understanding the soil type and its impact on wall design.
- Earthquake potential, assessing the risk of seismic activity in the area.
- Water table, proximity to the water table and its effect on drainage.
- Geothermal activity, evaluating any geothermal risks.

Construction tasks

- Setting out the site, establishing accurate lines and levels.
- Excavation, preparing the area for wall construction.
- Post installation, installing end and intermediate posts securely.
- Fixing rails/sheets, properly attaching retaining materials to posts.
- Drainage and backfill, installing drainage systems and backfilling with suitable materials.

Building code and environmental considerations

- Building code requirements, compliance with New Zealand’s building regulations for retaining walls.
- Geo-tech report, the need for a geotechnical report to guide wall design.
- Drainage systems, designing systems to minimise hydrostatic pressure and direct flow to NZBC-regulated outfalls, while meeting environmental rules.

Retaining structures as part of the building envelope

- Incorporating retaining walls, understanding when retaining walls form part of the building’s envelope.

Tanking for masonry structures

- Required tanking, methods of waterproofing masonry structures to prevent water ingress.

Shoring and protection

- Shoring methods, techniques to support and protect the exposed face of the retaining wall during construction to minimise collapse or slip.

Rauemi | Resources

Programme Guidance information available from qualifications@waihangaararau.nz.

Pārongo Whakaū Kounga | Quality assurance information

Ngā rōpū whakatau-paerewa | Standard Setting Body	Waihanga Ara Rau Construction and Infrastructure Workforce Development Council
Whakaritenga Rārangi Paetae Aromatawai | DASS classification	Planning and Construction > Construction Trades > Carpentry
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga | CMR	0048

Hātepe | Process	**Putanga** | Version	**Rā whakaputa** | Review Date	**Rā whakamutunga mō te aromatawai** | Last date for assessment
Rēhitatanga | Registration	1	[dd mm yyyy]	N/A
Kōrero whakakapinga | Replacement information	This skill standard replaces unit standards:		
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.