

40139**Produce a digital structural model using 3D computer-aided design software**

Kaupae Level	4
Whiwhinga Credit	5
Whāinga Purpose	<p>This skill standard recognises the skills required to produce digital structural models using 3D computer-aided design (CAD) software.</p> <p>This skill standard aligns with the detailing pathway for the construction industry and may be relevant for steel, precast concrete, and timber structure detailing qualifications.</p>

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

Hua o te ako Learning outcomes	Paearu aromatawai Assessment criteria
1. Apply 3D CAD practices to produce a digital model of a structural system.	a. The digital model is accurately produced and complies with design documentation.
	b. The produced digital model enables production of 2D drawings for fabrication and construction.
	c. The produced digital model demonstrates efficient use of CAD software interface, tools, and functionalities.
2. Produce manufacturing and construction drawings from the digital model.	a. The produced manufacturing and construction drawings comply with industry standards.
	b. The produced manufacturing and construction drawings are annotated, dimensionally accurate and functionally dimensioned.

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

The digital model of a structural system will include concrete and steel components.

Manufacturing drawings and associated files provide comprehensive information to guide the manufacture process and include materials specifications, measurements, fabrication instruction, surface and coating details, and tolerances.

Construction drawings provide information to guide assembly/erection on-site, method and sequence.

Ngā momo whiwhinga | Grades available

Achieved.

Ihirangi waitohu | Indicative content

Computer-aided design software for 3D modelling

- Introduction to common 3D CAD software.
- Model creation practices.

2D drafting skills

- Generation of detailed technical drawings.

Geometric modelling

- Creating 3D geometric shapes & profiles.
- Coordination of systems, grids and levels/datums.

Workflow

- Transitioning between 3D modelling and 2D drafting.

Assembly and component modelling

- Modelling, manipulating and assembling.
- Model interrogation.

Annotations and dimensioning:

- Placement – dimensions, labels, and notes.

Rauemi | Resources

Refer to the Structural Detailing Programme Guidance document available from qualifications@waihangaararau.nz.

[The New Zealand BIM Handbook v4 2023](#)

[AS/NZS 1100.501 Technical Drawing Part 501: Structural engineering drawing](#)

[ISO 128-2:2022 Technical product documentation \(TPD\) — General principles of representation — Part 2: Basic conventions for lines](#)

[ISO 128-3:2022 Technical product documentation \(TPD\) — General principles of representation — Part 3: Views, sections and cuts](#)

[STEELDOC - Code of Practice for Structural Steelwork Documentation SCNZ-12:2022](#)

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 > Core Planning and Construction
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga CMR	0048

Hātepe Process	Putanga Version	Rā whakaputa Date	Rā whakamutunga mō te aromatawai Last date for assessment
Rēhitatanga Registration	1	26 September 2024	N/A
Kōrero whakakapinga Replacement information	N/A		
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.