3 3D Model

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

Kaupae | Level	4
Whiwhinga | Credit	5
Whāinga | Purpose	This skill standard recognises the skills required to produce digital structural models using 3D computer-aided design (CAD) software. This skill standard contributes to the New Zealand Diploma in Detailing (Structural) (Level 5) with strands in Light steel, Structural steel, Precast concrete, and Reinforcing steel [Ref:4515].

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 accurate and complies with design documentation.
	b. The digital model enables production of 2D drawings for fabrication and construction.
2. Apply 3D CAD practices to produce fabrication and construction drawings from a digital model.	a. Fabrication and construction drawings comply with industry standards.

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

Assessment specifications:

The learner produced a digital model of a structure with concrete and steel components.

Fabrication drawings and files provide comprehensive information to guide the fabrication process and include materials specifications, measurement. 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

3D CAD

- Use of 3D CAD software (e.g., Tekla. AutoCAD 3D, Revit, SolidWorks, or equivalent) using model creation practices.

2D Drafting Skills

- Generation of detailed technical drawings, plans, sections, elevations, and assembly drawings.

Geometric Modelling

- Creating 3D geometric shapes & profiles with reference to coordinate systems, grids and levels/datums.

Workflow

- Transitioning between 3D modelling and 2D drafting within the CAD system, ensuring consistent and accurate representations.

Assembly and Component Modelling

- Modelling, manipulating and assembling individual structural components into a coherent, clash free 3D digital model.
- An introduction to model interrogation eg BIM. Bill of materials (BOM)

Annotations and Dimensioning:

- Accurate placement of dimensions, labels, notes, and other annotations on 2D drawings to convey critical information for fabrication and construction.

Rauemi | Resources

NZ BIM Handbook

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
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	<type here>	[dd mm yyyy]	[dd mm yyyy]
Arotakenga | Review	<type here>	[dd mm yyyy]	[dd mm yyyy]
Kōrero whakakapinga | Replacement information	<type here>		
Rā arotake | Planned review date	31 December 2028		

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.