

40577**Use computer-aided design software to detail a structural system and its components**

Kaupae Level	5
Whiwhinga Credit	10
Whāinga Purpose	This skill standard is for people intending to complete qualifications and credentials in structural detailing. This skill standard recognises the skills required to detail a structural system and its components using computer-aided design (CAD) software. This skill standard aligns with the New Zealand Diploma in Detailing (Structural) (Level 5) with strands in Light Steel Frame, Reinforcing Steel, Structural Steel, and Precast Concrete [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. Use computer-aided design software to detail a structural system and its components.	a. Design information is interpreted to model a structure which enables the production of 2-dimensional (2D) drawings and files to guide fabrication/manufacture, and construction of the structure.
	b. CAD software interface, tools, and functions are applied to modelling structure.
	c. Techniques to establish accuracy of input models are applied.

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

Evidence must include a digital model of a structure comprising one or more of the following: concrete with steel reinforcement, heavy steel, light steel framing or steel reinforcement components.

Evidence for this skill standard may include modelling part of a structural system.

A common heavy steel structural model is one that includes multiple structural steel components that form a structure. These components require connecting techniques such as welding and bolting both in the fabrication shop and on-site.

A common concrete structural model is one that has reinforced concrete elements connected to form a structure. Fabrication of concrete components include cut and bent steel reinforcement, and may include, cast in weld plates, anchors, rebates, bolts, and inserts.

A common light steel structural model is one that has several roll-formed steel components that will be fabricated/assembled in the factory. Typical connectors are screws and bolts that enable connection to a concrete slab, structural steel and frame elements on-site.

A common steel reinforcement structural model is one that has several steel components that will be fabricated/assembled in a factory. Steel reinforcement members will be joined and the structure placed on-site or fabricated in a precast concrete manufacturing site.

Fabrication/manufacturing drawings and files will inform and guide the fabrication/manufacture process and may include materials specifications, measurements, fabrication/manufacture instruction, surface and coating details, and tolerances.

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

Ngā momo whiwhinga | Grades available.

Achieved

Ihirangi waitohu | Indicative content

- Industry relevant modelling software.
- Checking and quality assurance processes relevant to modelling.
- Advanced 3D structural modelling process inputs
 - Design information – types and purpose.
 - Architect's & engineer's drawing types and purpose.
- Modelling file outputs for production.
 - Computer-Aided Manufacture (CAM), Drawing Exchange Format (DXF), Drawing (DWG) Native authoring model formats, Industry Foundation Class Models (IFC).
- Contributing trades including electrical and plumbing.
- Precast Concrete modelling outputs - Reinforcement bending files.

Rauemi | Resources

Programme guidance available from qualifications@waihangaararau.nz.

Pārongo Whakaū Kouna | 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	0120

Hātepe Process	Putanga Version	Rā whakaputa Date	Rā whakamutunga mō te aromatawai Last date for assessment
Rēhītatanga Registration	1	25 September 2025	N/A
Kōrero whakakapinga Replacement information	N/A		
Rā arotake Planned review date	31 December 2030		

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.