

40140**Explain the use of measurement conventions for structural detailing**

Kaupae Level	4
Whiwhinga Credit	5
Whāinga Purpose	This skill standard recognises the knowledge required to explain the use of measurement conventions for structural detailing in the construction industry. 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. Explain and demonstrate the use of measurement and calculation for structural detailing.	a. Explain relevant units of measure and demonstrate their use for structural detailing.
	b. Explain relevant calculation methods and their relationships according to structural design principles.
2. Explain the common tools of measurement used for structural detailing.	a. Explain common measurement tools, their degree of accuracy, and limitations of use.
3. Explain the types and how tolerances are applied in structural detailing.	a. Explain how design, fabrication and construction tolerances are applied.
	b. Explain the impact tolerances have on structural integrity, functionality, and compliance.
4. Explain the application of vertical and horizontal coordinate systems and datums for structural detailing.	a. Describe the attributes of different vertical and horizontal coordinate systems commonly used in structural detailing.
	b. Explain how vertical and horizontal coordinate systems are used to provide accurate building information in the production of drawings and layouts in structural detailing.

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

Calculation methods include those for angles, area, volume, density, force, pressure, and moments.

Tools of measurement include those commonly applied in a structural detailing context.

Tolerances refer to fabrication, construction, and measurement tolerances.

Coordinate systems and datums knowledge is relevant to structural detailing in New Zealand.

Coordinate systems include New Zealand map group, local circuit, geodetic 2000. Attributes include orientation, scale, origin and establishment method.

Ngā momo whiwhinga | *Grades available*

Achieved.

Ihirangi waitohu | Indicative content

International System of Units (SI Units)

- Concepts, relationships, and application.
- New Zealand coordinate systems and datums.
- Conversion from metric to imperial.

Angles

- Decimal.
- Degrees/minutes/seconds.

Tools of measurement

- Linear.
- 3D.
- Angular.

Geometric concepts

- Points, lines and planes, concentricity, eccentricity.
- Dimensions and measurement.
- Geometric shapes.
- Scaling.
- Symmetry and asymmetry.

Trigonometric concepts

- Trigonometric ratios.
- Angle measurements.
- Triangular relationships.
- Vector components.

Tolerances

- Types and application
- Design.
- Fabrication.
- Construction.
- Accuracy in measurement application.
- Impact of compounding tolerances.

Rauemi | Resources

Refer to the Structural Detailing Programme Guidance document 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	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@waihangaarau.nz to suggest changes to the content of this skill standard.