

<b>Title</b>	<b>Develop, implement, and evaluate solutions for well-defined civil engineering problems</b>		
<b>Level</b>	<b>6</b>	<b>Credits</b>	<b>15</b>

<b>Purpose</b>	People credited with this unit standard are able to develop, implement, and evaluate solutions for well-defined civil engineering problems.
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<b>Classification</b>	Infrastructure Civil Engineering > Generic Infrastructure Civil Engineering
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<b>Available grade</b>	Achieved
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## Guidance Information

- 1 The following legislation and requirements apply to this unit standard:  
 Health and Safety at Work Act 2015;  
 Resource Management Act 1991;  
 Current New Zealand jurisdiction requirements and regulatory framework including but not limited to: compliance regimes covered by statute or local body by-law, design specifications, conditions of contract (including applicable registered standards and approved codes of practice), and public consultation procedures.  
 Client and/or company specifications and standards;  
 New Zealand Standard NZS 3910: 2013 *Conditions of Contract for Building and Civil Engineering Construction* available at [www.standards.govt.nz](http://www.standards.govt.nz);  
 The ethical codes and standards relevant to professional bodies such as the Engineering New Zealand, the Institute of Refrigeration, Heating and Air Conditioning Engineers of New Zealand Inc, or, New Zealand Asset Management Support.

Any legislation or other requirement superseding any of the above will apply, pending review of this unit standard.

## 2 Definitions

*Accepted procedures and methodologies* are the procedures and methodologies required by the candidate's engineering sector and which meet applicable legal and code requirements, registered standards, organisational policies and procedures, and manufacturers' specifications.

*Well-defined civil engineering problems* are problems that include some or all of the following:

- Several issues, but only a few that result in conflicting constraints
- Can be solved using a systematic approach
- Resolved with limited theory but extensive practical knowledge
- Frequently encountered and so familiar to most practitioners in the practice area
- Covered by standards and/or documented codes of practice
- Limited range of stakeholders with differing needs

- Consequences that are important locally but aren't far-reaching
- Discrete components of engineering systems.

### 3 Assessment

Assessment against this unit standard must be based on evidence from the practice area the candidate is engaged in. The practice area for the candidate may include but is not limited to: engineering consultancy, maintenance or asset management, design, manufacturing, installation, production engineering, technical sales and customer service, draughting services, construction, or contracting in any of the following engineering disciplines – civil, electrical, electronics or mechanical.

All outcomes and performance criteria in this standard must be demonstrated in accordance with accepted procedures and methodologies.

Evidence of two problems is required.

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## Outcomes and performance criteria

### Outcome 1

Develop, implement, and evaluate solutions for well-defined civil engineering problems.

### Performance criteria

- 1.1 Problem requirements and constraints are identified.
- 1.2 Solutions are developed and tested.
- 1.3 Stakeholders are consulted.
- 1.4 Solution options are evaluated.
- 1.5 Solutions are selected that best match problem constraints.
- 1.6 Solutions are planned and implemented.
- 1.7 The outcomes of solutions are evaluated.

<b>Replacement information</b>	This unit standard, unit standard 27473, unit standard 27475, and unit standard 27476 replaced unit standard 23410.
<b>Planned review date</b>	31 December 2024

**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	17 November 2011	31 December 2018
Review	2	16 June 2016	31 December 2021
Review	3	12 December 2019	N/A

**Consent and Moderation Requirements (CMR) reference**

0234

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

**Comments on this unit standard**

Please contact Connexis - Infrastructure Industry Training Organisation [qualifications@connexis.org.nz](mailto:qualifications@connexis.org.nz) if you wish to suggest changes to the content of this unit standard.