Title	Define, investigate and analyse well-defined civil engineering problems
Level	**6**	**Credits**	**15**

Purpose	People credited with this unit standard are able to define, investigate and analyse well-defined civil engineering problems.

Classification	Infrastructure Civil Engineering > Generic Infrastructure Civil Engineering

Available grade	Achieved

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-laws, 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;
     The ethical codes and standards relevant to professional bodies such as Engineering New Zealand, the Institute of Refrigeration, Heating and Air Conditioning Engineers of New Zealand Inc, or New Zealand Asset Management Support.

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 the civil
       engineering discipline.

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

       Evidence of two problems is required.

Outcomes and performance criteria

Outcome 1

Define, investigate and analyse well-defined civil engineering problems.

Performance criteria

1.1   The scope of the problems is defined.

1.2   Information relevant to the problems is investigated and an analysis of the
         information is carried out using routinely-applied techniques.

1.3   Analysis is evaluated against empirical data and/or established engineering
         references.

1.4   If necessary, testing is carried out in order to confirm the findings of the
         analysis.

Replacement information	This unit standard, unit standard 27474, unit standard 27475, and unit standard 27476 replaced unit standard 23410.

Planned review date	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 if you wish to suggest changes to the content of this unit standard.