

Title	Demonstrate knowledge of fire sprinkler systems and installation practices		
Level	3	Credits	10

Purpose	<p>This unit standard is for personnel employed in the fire protection industry and covers the knowledge of operating principles of fire sprinkler systems and installation practices.</p> <p>People credited with this unit standard are able to demonstrate knowledge of: fire sprinkler systems; system components used for fire sprinkler systems; and pipe-work installation procedures and requirements for fire sprinkler systems.</p>
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Classification	Mechanical Engineering > Fixed Fire Protection Systems
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Available grade	Achieved
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Explanatory notes

1 References

Building Act 2004

Ministry of Business, Innovation and Employment (MBIE) *Acceptable Solutions (AS) and Verification Methods (VM)*. Available at <http://www.dbh.govt.nz/AS/VM-documents>

NZS 4515:2009, *Fire sprinkler systems for residential occupancies*

NZS 4541:2013, *Automatic fire sprinkler systems*.

2 Definitions

Enterprise procedures refer to the documented procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site safety procedures, equipment operating procedures, codes of practice, quality assurance procedures, housekeeping standards, charging of time and materials, management of drawings and documentation, procedures to comply with legislative and local body requirements.

Fire Protection Equipment Register refers to the sprinkler equipment register maintained by the Sprinkler System Certifier (SSC). Only equipment which the SSC considers satisfy the criteria, as set out in NZS 4541:2013, shall be listed.

Systems documentation refers to the documentation required to be maintained by NZS 4541:2013, including log books, test reports, equipment details and drawings, specifications, additions and alterations, contract agreement, fire reports, building consents, standards, codes of practice, test and commissioning procedures, and test and maintenance records.

3 Assessment

Use of standards listed in the references by candidates during assessment is encouraged.

Outcomes and evidence requirements

Outcome 1

Demonstrate knowledge of fire sprinkler systems.

Evidence requirements

1.1 The principles of operation of fire sprinkler systems are explained in accordance with NZS 4541:2013.

Range wet pipe, dry pipe, anti-freeze system.

1.2 Commissioning procedures for a typical fire sprinkler system are outlined with reference to system documentation.

Range wet pipe, dry pipe, anti-freeze system.

1.3 The New Zealand building legislation and compliance system relevant to fire sprinkler system installations are outlined.

1.4 Certification procedures applicable to fire sprinkler systems are identified in accordance with NZS 4541:2013.

Outcome 2

Demonstrate knowledge of system components used for fire sprinkler systems.

Evidence requirements

2.1 Components of a fire sprinkler system are identified, and their uses and limitations explained.

Range may include – pressure, temperature, atmospheric and environmental factors.

2.2 Types of sprinkler heads and sprayers are described in terms of their means of operation, spray pattern, and selection criteria.

2.3 Storage, handling, and installation precautions for sprinkler heads are described in accordance with enterprise procedures.

2.4 Storage, handling, and installation precautions for other components are described in accordance with enterprise procedures.

Range may include but is not limited to – valves, signal generating devices, pressure switches, flow switches, dry drops, flexible droppers, pressure gauges, flange and coupling types.

- 2.5 Location criteria and installation practices for sprinkler heads are identified and described in terms of systems documentation.
- 2.6 Valves and their associated fittings are identified and described in terms of the types of systems in which they are used and systems documentation.
- Range may include but is not limited to – butterfly valves, pressure relief valves, pressure reducing valves, back flow prevention devices, gate valves, float control valves, deluge valves, preaction valves.
- 2.7 Alarm devices used in fire sprinkler systems are identified, and are explained in terms of their principles of operation.
- Range type x and type y pressure switches, flow switches,, enhanced safety valve sets, residential valve sets, water motor alarms.
- 2.8 Approval and listing requirements for fire sprinkler components are identified and described with reference to the Fire Protection Equipment Register maintained by the SSC.

Outcome 3

Demonstrate knowledge of pipe-work installation procedures and requirements for fire sprinkler systems.

Evidence requirements

- 3.1 Pipe selection and jointing options applicable to various sprinkler systems are described.
- Range jointing options for steel pipes include but are not limited to – threaded (including wet and dry jointing compounds), rolled groove, flange, slip-on joints, mechanical jointings, clamp-on fittings; jointing options for plastic pipes include but are not limited to – glue, fusion weld, slip-on joints.
- 3.2 Fittings, fixtures, and supports matching the size and type of pipes used for systems are identified and their use in terms of their placement within the systems is explained.
- Range pipe fittings include but are not limited to – threaded, rolled groove, flange, glue, fusion weld, slip-on joints; pipe supports include but are not limited to – hanging, bracing (2-way and 4-way), fixing, fasteners, clips, structures, spacing, flexible droppers, wall brackets.
- 3.3 Plant and equipment used for pipe jointing are described in terms of use, care, set-up requirements, and procedures for use, and in accordance with manufacturer's instructions.
- Range includes but is not limited to – threading machine, roll-grooving machine, drop saw, cut-off wheels, hole saws, pipe reamers.

3.4 Proprietary jointing systems are described in accordance with manufacturer's specifications.

Range includes but is not limited to – roll groove couplings, slip joints, fusion welding, solvent based jointing.

Planned review date	31 December 2020
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	31 December 2000	31 December 2017
Revision	2	17 May 2001	31 December 2017
Review	3	26 March 2007	31 December 2017
Revision	4	23 April 2008	31 December 2017
Review	5	15 October 2015	N/A

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMRs). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact Competenz at qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.