

<b>Title</b>	<b>Install pipe culverts and structures on road construction works</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>15</b>

<b>Purpose</b>	People credited with this unit standard are able to: prepare for culvert works; prepare sites for works; prepare bedding for culverts; lay and joint pipes and carry out initial inspection; install inlet and outlet structures; backfill trench and apply surfacing; and inspect and clean up sites.
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<b>Classification</b>	Infrastructure Works> Road Construction
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<b>Available grade</b>	Achieved
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### Explanatory notes

- 1 The following legislation and regulations must be complied with: Health and Safety in Employment Act 1992; and Health and Safety in Employment Regulations 1995.
- 2 Assessment against this unit standard must take place in a workplace environment. Assessment parameters will depend on company and site specific equipment, procedures, and practices. Practices must reflect industry best practice and comply with legislative requirements.
- 3 Definitions  
*As-built* refers to what is actually constructed as opposed to that which was planned.  
*Benchmark* is the starting set-out position from which control marks are derived.  
*Company requirements* include the policy, procedures, and methodologies of the company. They include legislative and regulatory requirements which may apply across the company or to a specific site. Requirements are documented in the company's health and safety plans, traffic management plans, contract work programmes, quality assurance programmes, policies, and procedural documents.  
*Contract specifications* include plans, diagrams, and special technical conditions. They do not include special administrative conditions.  
*Manufacturer's instructions* may include specifications, installation, handling, use and maintenance instructions, and safety data sheets.  
*Set-out* means to set out a site by survey method using pegs.

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### Outcomes and evidence requirements

#### Outcome 1

Prepare for culvert works.

**Evidence requirements**

- 1.1 Location of culvert is confirmed from plans in accordance with contract specifications.
- 1.2 Pipe type, class, and diameter are confirmed from plans in accordance with contract specifications.
- 1.3 Bedding material and backfill are confirmed from plans in accordance with contract specifications.
- 1.4 Culvert details such as inlets, outlets, aprons, and reinforcing are confirmed from plans in accordance with contract specifications.
- 1.5 Existing services are verified in accordance with company requirements.
- 1.6 Responsibilities to adjoining landowners during culvert works are described in accordance with contract specifications and company requirements.
- 1.7 Plant and labour requirements are confirmed in accordance with plans, contract specifications, and company requirements.

**Outcome 2**

Prepare sites for works.

**Evidence requirements**

- 2.1 Sites are set out in accordance with plans, specifications, and on-site survey marks.  
  
Range levels, benchmarks, alignment, gradients, offsets, measuring equipment, pegs, stakes.
- 2.2 Underground services are marked and located in accordance with service authority requirements.
- 2.3 Trench is excavated in accordance with plans, contract specifications, and company requirements.

**Outcome 3**

Prepare bedding for culverts.

**Evidence requirements**

- 3.1 Water is removed from the area through which the culvert is to be installed in accordance with site conditions and company requirements.  
  
Range temporary diversion, temporary sump, submersible pump, well pointing, sediment trap.

- 3.2 Alignment and invert levels of trench are checked in accordance with contract specifications.
- Range benchmarks, levels, alignment, gradient, offsets, pegs, stakes, pipe laser.
- 3.3 Trench bed is trimmed and shaped in accordance with contract specifications.
- 3.4 Pipe bedding material is placed in trench in accordance with contract specifications.

#### **Outcome 4**

Lay and joint pipes and carry out initial inspection.

#### **Evidence requirements**

- 4.1 Methods of lifting pipes for laying are described in accordance with manufacturer's instructions and company requirements.
- 4.2 Pipes are orientated and laid ensuring continuous contact and support of collars and barrels in accordance with contract specifications.
- 4.3 Pipes are firmly bedded in accordance with contract specifications for compaction.
- 4.4 Pipes are jointed in accordance with contract specifications and manufacturer's instructions.
- Range at least one of – rubber ring, solvent cement, butt, thermo butt, bevel joint, steel weld, thermo weld, solvent weld.
- 4.5 Culvert and joints are visually inspected on completion of bedding to ensure they meet contract specifications.

#### **Outcome 5**

Install inlet and outlet structures.

#### **Evidence requirements**

- 5.1 Area for structure is excavated in accordance with contract specifications and site conditions.
- 5.2 Pipe ends are prepared for fitting to structure in accordance with contract specifications.
- Range may include but is not limited to – removal of collar, scabbling, sawcutting.

5.3 Structures are installed in accordance with contract specifications.

Range at least one of – precast, in-situ structure, gabion basket, rockwork, geotextile bag, flume.

5.4 Area around structure is backfilled, compacted, and shaped in accordance with contract specifications.

**Outcome 6**

Backfill trench and apply surfacing.

**Evidence requirements**

6.1 Trench is backfilled in accordance with contract specifications.

Range material type, layer depth, compaction, suitable compaction equipment, testing requirements.

6.2 Trench is surfaced in accordance with contract specifications.

**Outcome 7**

Inspect and clean up sites.

**Evidence requirements**

7.1 Culvert and structures are inspected to ensure they meet contract specifications and company requirements.

7.2 Quality assurance records are completed in accordance with company requirements.

Range includes but is not limited to – as-built records.

7.3 Surplus materials and debris are removed from site in accordance with contract specifications and company requirements.

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<b>Planned review date</b>	31 December 2019
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	30 July 1996	31 December 2014
Revision	2	9 March 1999	31 December 2014
Review	3	30 May 2000	31 December 2014
Review	4	25 September 2006	31 December 2016
Review	5	19 February 2015	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0101
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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 (CMR). 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 the Infrastructure ITO [qualifications@infrastructureito.org.nz](mailto:qualifications@infrastructureito.org.nz) if you wish to suggest changes to the content of this unit standard.