

**FIELD                    ENGINEERING AND TECHNOLOGY****Review of *Civil Plant Management, Civil Plant Operation, Civil Construction Supervision, Civil Construction Works, Civil Project Management, Road Construction, and Roading Maintenance* unit standards**

<b>Subfield</b>	<b>Domain</b>	<b>Id</b>
Civil Plant Operation and Management	Civil Plant Management	6436-6441, 6464
	Civil Plant Operation	6457, 6465-6470, 8560, 17309-17318, 19675, 20628
Civil Works and Services	Civil Construction Supervision	6427, 6428, 6435, 6442, 6443, 6450, 6451, 6455, 6456, 7743, 7744, 8559, 12563-12565, 12567, 12568, 17319-17321, 17323-17326, 17499
	Civil Construction Works	6452-6454, 6471-6473, 6475-6480, 6482, 6484, 6485, 17327, 17328, 17500, 17501
	Civil Project Management	6429-6434, 11323, 12566
Highway Construction and Maintenance	Road Construction	6483, 6486, 12569-12572, 17330
	Roading Maintenance	11303-11322

InfraTrain New Zealand has completed the review of the unit standards listed above.

**Date new versions published**

**September 2006**

**Planned review date**

**December 2012**

**Summary of review and consultation process**

InfraTrain New Zealand commissioned a review of industry training covering the wider civil construction sector, which resulted in a report in June 2003. The goal of the report was to enable InfraTrain New Zealand to establish:

- a vertically and horizontally integrated framework for Civil Infrastructure sector qualifications;
- a career pathway for trainees;
- a framework for the review of qualifications and the development of new qualifications for the civil sector.

The review took into consideration existing bitumen and pavement gap analysis information, industry needs, proposed amendments to health and safety regulations, and proposed self-regulation of the New Zealand Civil Infrastructure sector.

Feedback was received from 118 individuals through postal surveys and face-to-face interviews. Of respondents, 72% believed the qualifications at that time enabled an individual to follow a career pathway, while 69% believed the qualifications enabled people to move between sectors.

Two areas were highlighted in the feedback. Firstly, project skills described as: understanding of contract documents; scheduling of human and physical resources; risk assessment; and documentation and reporting. Secondly, soft skills described as: people management skills; communication skills; conflict resolution skills; knowledge of employment legislation; and leadership and motivational skills.

InfraTrain New Zealand continued to consult with industry, stakeholders and providers throughout the review process. The organisation believes the adoption of the Civil Infrastructure Health, Safety, and Environment unit standards developed for the Operate Safe programme along with the use of generic unit standards at all levels of the career pathway, will create a vertically and horizontally integrated framework for civil sector qualifications with better linkages to the wider National Qualifications Framework.

### Main changes resulting from the review

The main changes to unit standards include:

- The removal of repetition among unit standards.
- The standardisation of definitions and references across all domains.
- The removal of unit standards, elements, performance criteria and ranges that were not critical to the outcomes desired by the industry eg Unit 17318, *Operate a winch with civil plant*.
- The removal of industry specific unit standards, the coverage of which is appropriately covered by generic unit standards on the National Qualifications Framework eg Unit 17326, *Develop team and individual performance on civil construction works*.
- The consolidation of foreperson and supervisory unit standards eg Unit 7743, *Prepare and maintain supervisor records for civil construction works* and Unit 7744, *Maintain foreperson records for civil construction works*.
- The review of sector-specific unit standards to make them generic across sectors and avoiding duplication eg Unit 20628, *Operate a water cart for earthworks*.

**Unit standards categorised as category C or D expire at the end of December 2008.**

### Impact on existing provider accreditations

Current Accreditation for			Accreditation extended to		
Nature of accreditation	Classification or Id	Level	Nature of accreditation	Classification or Id	Level
Subfield	Highway Construction and Maintenance	4	Standard	11321	5
Subfield	Civil Works and Services	4	Standard	6443	5
			Standard	6430	5
Subfield	Civil Works and Services	3	Standard	22294	4
Domain	Civil Construction Supervision	4	Standard	6443	5
Domain	Civil Construction Works	2	Standard	6484	3
Domain	Civil Plant Operation	2	Standard	6465	3
Domain	Civil Project Management	4	Standard	6430	5
Domain	Roading Maintenance	4	Standard	11321	5
Standard	11318	2	Standard	22286	3
			Standard	22287	2

Current Accreditation for			Accreditation extended to		
Nature of accreditation	Classification or Id	Level	Nature of accreditation	Classification or Id	Level
Standard	12571	4	Standard	22289	3
Standard	12567	4	Standard	22292	4
Standard	7499	3	Standard	22294	4
Standard	7743	3	Standard	22992	4
Standard	7744	4			

### Impact on existing qualifications

Qualifications that contain the reviewed standards or classifications are tabled below.

<b>Affected</b>	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
<b>Not materially affected</b>	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following InfraTrain New Zealand qualifications are affected by the outcome of this review and will be reviewed in 2006. Qualifications that contain unit standards and classifications in both categories are identified in the following table, with the items that generated the *Affected* status in **bold**.

Qualification title	Standard in the qualification
National Certificate in Civil Construction Works (Foreperson) with optional strands in Kerb and Channel, Concreting, High Capacity Highways, and Roothing [Ref: 0208]	6435, <b>6473, 7744, 8559, 12564, 12565, 12568, 12570-12572, 17319, 17325, 17330, 17499, 17500</b>
National Certificate in Civil Construction Works Supervision with optional strands in Demolition, Drainage, Earthworks, Survey and Set Out, High Capacity Highways, Road Construction, Road Maintenance, Traffic, and Training [Ref: 0209]	6428, <b>6430, 6434, 6435, 6442, 6443, 6450, 6454, 6455, 7743, 11321, 11322, 12563, 12564, 12570-12572, 17323, 17324, 17326, 17499, 17500</b>
National Certificate in Civil Plant Management [Ref: 0253]	<b>17326</b>
National Certificate in Pavement Surfacing (Application) with strands in Asphalt, and Chipseal [Ref: 0465]	<b>6465</b>
National Certificate in Pavement Surfacing (Plant Operation) with strands in Asphalt Paving, and Chipseal [Ref: 0468]	<b>6465</b>
National Certificate in Roadmarking (Skilled Operator) with optional strands in Long-life Products, Extruded Thermoplastics, Screeded Thermoplastics, Sprayed Thermoplastics, and Testing [Ref: 0617]	<b>8559</b>
National Certificate in Civil Construction Works (Introductory Skills) [Ref: 0770]	<b>6454, 6476</b>
National Certificate in Civil Works and Services [Ref: 0771]	<b>6465, 6482, 6484, 6485, 6486, 17330</b>
National Certificate in Road Construction [Ref: 0772]	<b>6465, 6482, 6484, 6485, 6486, 6473, 12570, 17330</b>
National Certificate in Roothing Maintenance [Ref: 0773]	<b>6465, 6485, 11307, 11309, 11311-11316, 11318, 11319, 11320</b>
National Certificate in Civil Plant Operation with strands in Skilled, and Multi-Skilled [Ref: 0774]	<b>12565, 17310, 17311, 17318, 17500</b>

National Diploma in Civil Engineering [Ref: 0881]	<b>6430</b>
National Certificate in Civil Works and Services (Road Opening - Trenching) with optional strands in Electricity Supply, Gas Distribution, and Water Services [Ref: 1000]	<b>6454, 6476</b>
National Certificate in Civil Works and Services (Road Opening - Site Co-ordination) [Ref: 1001]	6435, <b>6443, 6454, 8559, 12570, 17325</b>
National Certificate in Civil Construction Works (Forestry Earthworks) [Ref: 1083]	<b>17310</b>
National Certificate in Demolition (Introductory Skills) (Level 2) [Ref: 1085]	<b>6454</b>
National Certificate in Demolition (Equipment Operator) (Level 3) with optional strands in Crane, and Winch [Ref: 1086]	<b>6454, 6476, 17318</b>
National Certificate in Demolition (Site Supervisor) (Level 4) [Ref: 1087]	<b>6454, 6476, 7743, 8559, 17319</b>
National Certificate in Civil Plant Operation (Bulk Earthmoving) [Ref: 1094]	<b>17310, 17311, 20628</b>
National Certificate in Civil Infrastructure Health, Safety, and Environment (Supervision) [Ref: 1179]	6435

The following qualifications are also affected by the outcome of this review. The standard setting bodies (SSBs) have been advised that they require revision.

Qualification Title	Classification or Id	SSB Name
National Certificate in Water Reticulation (Service Person) with strands in Water, and Wastewater [Ref: 0247]	<b>6454</b>	Agriculture ITO
National Certificate in Gas Industry (Gas Engineering) with strands in Gas Network Operations, Gas Network Planning and Development, and Gas Utilisation [Ref: 0635]	<b>6430</b>	NZ Extractive ITO
National Certificate in Extractive Industries (Introductory Skills) with strands in Surface Extraction, and Underground Extraction [Ref: 0247]	<b>17310, 17311</b>	

## Summary of main changes

All changes are in **bold**.

### Key to review category

- A** Dates changed, but no other changes are made - the replacement standard carries the same Id and a new version number
- B** Changes made, but the overall outcome remains the same - the replacement standard carries the same Id and a new version number
- C** Major changes that necessitate the registration of a replacement standard with a new Id
- D** Standard will expire and not be replaced

Subfield Civil Plant Operation and Management

Domain Civil Plant Management

Id	Title	Level	Credit	Review Category
6436	Inspect civil construction plant and equipment	4	5	B

<b>Id</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>Review Category</b>
6437	Manage the hire of civil construction plant and equipment	4	8	B
6438	Prepare civil plant, equipment, and vehicle replacement schedule and recommendation	5	10	B
6439	Prepare and implement civil plant, equipment, and vehicle maintenance schedule	5	8	B
6440	Assess the utilisation and productivity of civil plant, equipment, and vehicles	5	10	B
6441	Cost civil plant for purchase or hire <b>Cost civil plant for purchase, lease or hire for a project</b>	4	15	B
6464	Manage civil plant and equipment maintenance tasks <b>Manage civil plant and equipment</b>	4	8	B

## Domain Civil Plant Operation

<b>Id</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>Review Category</b>
6457	Use generator and compressor for civil construction	2	2	B
6465	Operate a power-driven rotary broom	2 <b>3</b>	2 <b>6</b>	B
6466	Convey civil construction plant by transporter	3	20	B
6467	Operate a plate compactor on civil construction materials	2	4	B
6468	Operate a mechanical rockbreaker	3	10	B
6469	Maintain small plant and equipment on civil construction works	1	2	B
6470	Operate a handheld pavement breaker	2	4	B
8560	Deliver, stockpile, and spread aggregates with truck and trailer	3	12	B
17309	Operate a wheeled loader on civil construction sites	3	20	B
17310	Operate a hydraulic excavator on civil construction sites	3	25 <b>20</b>	B
17311	Operate a motor grader for earthworks	3	30 <b>20</b>	B
17312	Operate a motor grader for road maintenance	3	30	B
17313	Operate a motor grader for road construction	3	30	B
17314	Operate a motor scraper on civil construction sites	3	20	B
17315	Operate a self-propelled roller on civil construction sites	3	20	B
17316	Operate a bulldozer on civil construction sites	3	20	B
17317	Operate an articulated dump truck on civil construction sites	3	20	B
17318	Operate a winch with civil plant	3	15	D
19675	Operate a road saw	2	4	B

<b>Id</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>Review Category</b>
20628	Operate a water cart for earthworks <b>Operate a water cart in civil construction</b>	3	12 10	B
22269	<b>Demonstrate knowledge of wheeled loaders in civil construction</b>	3	3	New
22270	<b>Demonstrate knowledge of graders and scrapers in civil construction</b>	3	3	New
22271	<b>Demonstrate knowledge of self-propelled rollers in civil construction</b>	3	3	New
22272	<b>Demonstrate knowledge of bulldozers in civil construction</b>	3	3	New
22273	<b>Demonstrate knowledge of operating articulated dump trucks in civil construction</b>	3	3	New
22275	<b>Operate a roadsweeper in civil construction</b>	3	10	New
22276	<b>Operate a suction cleaning vehicle in civil construction</b>	3	6	New
22277	<b>Operate a road mill in civil construction</b>	3	20	New
22278	<b>Operate a reclaimer stabiliser in civil construction</b>	3	20	New
22279	<b>Operate a skid steer in civil construction</b>	3	10	New
22280	<b>Operate a stabilising spreader in civil construction</b>	3	10	New
22281	<b>Operate an excavator for facing and benching</b>	3	5	New
22282	<b>Operate an excavator for rock placement</b>	3	5	New

Subfield Civil Works and Services  
Domain Civil Construction Supervision

<b>Id</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>Review Category</b>
6427	Allocate plant, equipment, and vehicles to civil construction projects	4	8	B
6428	Survey and set out for civil construction projects <b>Demonstrate knowledge of engineering survey and set-out for civil construction work</b>	4	20	B
6435	Notify members of the public who may be affected by civil construction activities <b>Notify members of the public affected by civil construction activities</b>	3	3	B
6442	Supervise tasks on civil construction projects <b>Supervise civil construction activities on a single site</b>	4	10	B
6443	Supervise construction activities on behalf of a civil construction contractor <b>Supervise civil construction activities on multiple sites</b>	4 5	15	B
6450	Prepare and apply schedules of quantities for civil construction projects <b>Apply plans and specifications to calculate quantities for civil construction projects</b>	4	8	B

<b>Id</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>Review Category</b>
6451	Implement notifiable work and permit requirements on civil construction works	4	5	B
6455	Co-ordinate civil construction subcontractors <b>Supervise civil construction subcontractors</b>	4	4 <b>8</b>	B
6456	Organise the supply and storage of materials for civil construction	3	4	B
7743 and 7744	Prepare and maintain supervisor records for civil construction works Maintain foreperson records for civil construction works	4 3	10 3	C
<b>22992</b>	<b>Prepare and maintain records for civil construction works</b>	<b>4</b>	<b>10</b>	
8559	Apply foreperson leadership and communication skills on civil construction site	4	6	D
12563	Adapt civil construction work programme to site conditions	4	8	D
12564	Supervise the preparation of worksites for civil construction <b>Supervise earthworks preparation for civil construction</b>	5 <b>4</b>	5 <b>8</b>	B
12565	Apply working drawings and specifications to civil construction tasks	3	12	D
12567	Supervise field sampling for testing of civil construction materials <b>22292 Demonstrate knowledge of field sampling for testing of civil construction materials</b>	4 <b>4</b>	18 <b>10</b>	C
12568	Plan and supervise site drainage and dewatering work on civil construction sites	4	12 <b>8</b>	B
17319	Supervise tasks on a civil construction site	3	10	D
17320	Supervise civil construction earthworks	4	15	B
17321	Supervise subsoil and culvert drainage on civil construction works	4	15	B
17323	Supervise cement and lime stabilisation on civil construction sites <b>22293 Demonstrate knowledge of pavement stabilisation on civil construction sites</b>	4 <b>4</b>	15 <b>10</b>	C
17324	Supervise construction of reinforced earth retaining walls and gabions for civil construction	4	15	D
17325	Demonstrate knowledge of statutes, codes, and NZS 4402 for civil construction forepersons	3	15	D
17326	Develop team and individual performance on civil construction works	4	5	D
17499	Supervise the setting of levels and positions in civil construction projects <b>22294 Set out levels and positions in civil construction projects</b>	3 <b>4</b>	8 <b>10</b>	C

## Domain Civil Construction Works

<b>Id</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>Review Category</b>
6452	Maintain, transport, and store temporary roadwork signs for civil construction works	2	3	B
6453	Demonstrate knowledge of civil construction works	2	3	B
6454	Demonstrate knowledge of safety principles and maintain safety on civil construction works	2	5	D
6471	Dismantle decommissioned services for civil construction	2	2	B
6472	Carry out manual excavation for civil construction works	1	2	B
6473	Construct kerb and channel	3	12	C
<b>22284 and 22285</b>	<b>Construct kerb and channel</b>	<b>3</b>	<b>10</b>	
	<b>Prepare for kerb and channel construction and reinstate site</b>	<b>3</b>	<b>8</b>	
6475	Maintain records for civil work <b>Maintain records for civil construction work</b>	2	2	B
6476	Read and interpret civil construction plans	1 <b>2</b>	3 <b>2</b>	B
6477	Hand-spread materials and assist mechanical compacting plant on civil construction works	1	3	B
6478	Maintain and disestablish temporary civil works sites	2	3	B
6479	Locate and identify services on civil construction sites	3	4	B
6480	Assist with survey and set-out on civil construction works	1	3	B
6482	Construct interlocking concrete block pavements on civil construction works <b>Construct interlocking pavers on civil construction works</b>	3 <b>3</b>	6 <b>18</b>	B
6484	Install gabion baskets for civil construction works	2 <b>3</b>	4 <b>8</b>	B
6485	Install guard rails, hand rails, and safety barriers on civil construction works <b>Install hand rails or sight rails on civil construction works</b>	3 <b>2</b>	5 <b>4</b>	B
17327	Communicate on civil construction sites	2	3	B
17328	Demonstrate fundamental knowledge of earthworks	2	5	B
17500	Apply quality and testing requirements on civil construction works	3	3	C
<b>22290</b>	<b>Demonstrate knowledge of quality assurance requirements on civil construction works</b>	<b>3</b>	<b>3</b>	
17501	Demonstrate knowledge of foundation and subgrade on civil construction works	3	5	B
<b>22283</b>	<b>Identify the occupational areas and structures associated with the NZ civil infrastructure industry</b>	<b>1</b>	<b>2</b>	<b>New</b>

Id	Title	Level	Credit	Review Category
22993	<b>Install guard rails or wire rope barriers on civil construction works</b>	3	15	New

Domain Civil Project Management

Id	Title	Level	Credit	Review Category
6429	Manage civil project construction activities undertaken by contract	6	20	B
6430	Demonstrate knowledge of conditions of contract for civil projects	4 5	8	B
6431	Prepare an estimate or quotation and submit tenders for civil construction work	5	12	B
6432	Instruct supervisor on civil construction contract tasks	5	10	B
6433	Interpret civil construction contract specifications	5	10	B
6434	Liaise with client, consultant, and service authority on behalf of civil construction contractor	5 4	12	B
11323	Report on civil construction activities	5	10	B
12566	Demonstrate knowledge of the Resource Management Act 1991 for civil construction activities	5	25	B

Subfield Highway Construction and Maintenance  
Domain Road Construction

Id	Title	Level	Credit	Review Category
6483	Install pipe culverts and structures on road construction works	3	15	B
6486	Construct vehicle crossings <b>Construct concrete vehicle crossings</b>	3	5	B
12569	Demonstrate knowledge of the design, construction, and maintenance of road drainage systems	4	15	B
12570	Demonstrate knowledge of the materials used in road formation	4	8 10	B
12571	Plan and supervise the installation of traffic service poles, signage, and roadside furniture	4	12	C
22289	<b>Prepare and install traffic service poles, signage, and roadside furniture</b>	3	8	
12572	Supervise the construction of road pavement layers	5 4	18 30	B
17330	Demonstrate knowledge of the installation and repair of road drainage systems <b>Demonstrate knowledge of the installation set-out and maintenance of road drainage systems</b>	3	8 5	B

Domain      Rooding Maintenance		Level	Credit	Review Category
Id	Title			
11303	Maintain road by repairing unbound pavement layers	2	5	B
11304	Maintain road by repairing chipsealed surfaces	2	3	B
11305	Adjust the height of surface boxes for rooding maintenance	2	3	B
11306	Restore pavement using stabilisation techniques	2	5	B
11307	Maintain road bridge structures <b>Maintain road bridge surface and furniture</b>	3 <b>2</b>	3 <b>5</b>	B
11308	Maintain road bridge waterways	2	3	B
11309	Maintain road by cleaning and repairing open drainage system <b>Maintain road by manually cleaning and repairing open drainage system</b>	3	2 <b>7</b>	B
11310	Maintain road by repairing subsoil drainage systems <b>Maintain road subsoil drainage systems</b>	3	3	B
11311	Maintain road drainage structures	3	3 <b>7</b>	B
11312	Maintain piped stormwater drainage systems in road reserve	3	3 <b>5</b>	B
11313	Maintain footpath in road reserve	2 <b>3</b>	3 <b>5</b>	B
11314 <b>22288</b> <b>and</b> <b>22291</b>	Maintain road clear of snow and ice <b>Maintain road clear of ice</b>  <b>Maintain road clear of snow</b>	2 <b>3</b>  <b>3</b>	3 <b>5</b>  <b>5</b>	C
11315	Maintain road by removing surface detritus and litter <b>Maintain road reserve by removing detritus and litter</b>	3 <b>2</b>	3	B
11316	Maintain road by installing and refurbishing traffic signs and delineators	2 <b>3</b>	2 <b>8</b>	B
11317	Install and maintain roadside amenities	2	3	B
11318 <b>22286</b> <b>and</b> <b>22287</b>	Maintain rooding median strips and traffic islands <b>Maintain rooding kerb lines and channels</b>  <b>Maintain rooding median strips, berms and traffic islands</b>	2 <b>3</b>  <b>2</b>	2 <b>5</b>  <b>2</b>	C
11319	Trim and remove trees for rooding maintenance <b>Trim and remove vegetation for rooding maintenance</b>	2	2	B
11320	Install and maintain roadside grass verges	2	2	D
11321	Plan and supervise road maintenance contracts	4 <b>5</b>	15	B
11322	Forecast rooding maintenance work	4	10	D