
CHRISTCHURCH CITY COUNCIL

CONSTRUCTION STANDARD SPECIFICATION

PART 1 – GENERAL

CSS: PART 1 2025

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APPENDICES

- 1 Compliance Requirements Checksheet
- 2 Tramway Route
- 3 Application to Work Near Tram Tracks
- 4 Accidental Discovery Protocol

STANDARD DETAILS

Trench Restoration	SD 101	Trench Restoration
Tree and Vegetation Protection	SD 110	Tree Drip Line

1 FOREWORD

This Specification forms Part 1 of the Christchurch City Council Civil Engineering Construction Standard Specification (abbreviated as CSS). All parts of the CSS should be read in conjunction with each other and the Infrastructure Design Standard (abbreviated as IDS).

The full Specification includes the most recently published versions of the following Parts:

CSS: Part 1 - General
CSS: Part 2 - Earthworks
CSS: Part 3 - Utility Drainage
CSS: Part 4 - Water Supply
CSS: Part 5 - Lighting
CSS: Part 6 - Roads
CSS: Part 7 - Landscapes

Each Part of the Standard Specification includes those Standard Details (SD) relating to that part of the specification only. The Standard Details are not to scale and all units are in millimetres (mm) unless otherwise shown. All rights reserved on Standard Details.

2 RELATED DOCUMENTS

The latest versions of the following documents shall be read and form part of this standard specification, together with revisions, replacements and amendments up to the date of calling tenders. The requirements of this specification supersede the requirements of any related documents listed or referred to within this specification, except acts of parliament. Where this document is referred to in a contract, the requirements of that contract supersede the requirements of this specification.

Fisheries Act 1996
Freshwater Fisheries Regulations 1983
Conservation Act 1987
Wildlife Act 1953
Resource Management Act 1991
Local Government Act 2002
Health and Safety at Work (Asbestos) Regulations 2016
Christchurch City Council RMA92019127 Global Consent for Works Affecting Protected Vegetation
Christchurch City Council Guidelines for Entering and Working in Confined Spaces

Christchurch City Council Schedule of Local and Special Conditions to the National Code for Utility Operators' Access to Transport Corridors 15 July 2019

<http://nzuag.org.nz/wp-content/uploads/2019/07/National-Code-approved-version-150719.pdf>

Christchurch City Council Fish Salvage Guideline for Works in Waterways.

<https://ccc.govt.nz/assets/Documents/Consents-and-Licences/construction-requirements/Construction-Environmental-Management/Fish-Salvage-Guidance-for-Works-in-Waterways.pdf>

Christchurch City Council Infrastructure Design Standards 2022

<https://www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/download-the-ids/>

CTOC Best Practice for TTM impacting bus services

<http://tmpforchch.co.nz/best-practice-for-ttm-impacting-bus-services/>

Code of Practice for Temporary Traffic Management (CoPTTM)

<http://www.nzta.govt.nz/resources/code-temp-traffic-management/copttm.html>

NZS 3104: 2003 Specification for concrete production

NZS 3910: 2013 Conditions of contract for building and civil engineering construction

NZS 4402:1986 Soil testing for engineering purposes

NZS 4407: 2015 Methods of sampling and testing road aggregates

NZS 4454: 2005 Composts, soil conditioners and mulches

NZS 6803: 1999 Acoustics – construction noise

Waka Kotahi NZ Transport Agency Standards and Guidelines

National Code of Practice for Utility Operators' Access to the Transport

Corridors 15 July 2019 <http://nzuag.org.nz/wp-content/uploads/2019/07/National-Code-approved-version-150719.pdf>

NZTA Minimum Standard for Utility Identification and Protection on Road Projects

<https://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/zero-harm-minimum-standards/utility-identification/>

New Engineering Contract Edition 3 (NEC3)

Worksafe Guidelines for the Management and Removal of Asbestos Amended December 2016

<http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/new-zealand-guidelines-for-the-management-and-removal-of-asbestos-3rd-edition>

Worksafe Guide for Safety with Underground Services

<http://www.worksafe.govt.nz/worksafe/information-guidance/all-guidance-items/underground-services-guide-for-safety-with/underground.pdf>

Canterbury Regional Council Canterbury Regional Pest Management Strategy
2018-2038

Environment Canterbury Erosion and Sediment Control Guide

<http://www.escanterbury.co.nz/advice/your-land/earthworks-soil-erosion/pages/soil-erosion-sediment-guidelines.aspx>

NZQA Unit Standard 25832 Use a nuclear density meter to measure
compaction of soils, sands and gravels

LINZ Specifications for the Protection of Survey Marks – Retaining or
Replacing Marks

https://www.linz.govt.nz/system/files_force/media/file-attachments/specification-reinstating-replacing-marks-v2-2.pdf?download=1

3 DEFINITIONS

The following definitions apply in the CSS, unless inconsistent with the context. These definitions are additional to those definitions in the District Plan and the IDS.

Engineer	as defined in NZS 3910 “Conditions of contract for building and civil engineering construction”. (Note this is different from the Engineer as Professional Advisor definition in IDS: Part 1 – Introduction.)
Qualified arborist	a person who is in possession of a recognised arboriculture degree, diploma or certificate, and on the job experience, is familiar with the equipment and hazards involved in arboriculture operations, has demonstrated proficiency in inspecting, analysing and treating hazardous trees and has demonstrated the ability to perform the tasks involved. A Certificate as referred to in this definition shall consist of a minimum of 240 New Zealand Qualifications Authority credits of learning (i.e. Level 4) or equivalent.

4 APPROVAL OF MATERIALS, OPERATORS/CONTRACTORS, LABORATORIES AND WORKMANSHIP

‘Approved’ in this document means:

- A material listed on the Approved Materials List, with a current Certificate Status and an Approval Status permitting that use.
- A Council-approved contractor authorised to do that specific work and listed on the relevant register.
- approved by the Engineer.

Schedules of approved materials and contractors can be found on the Christchurch City Council web page at:

www.ccc.govt.nz/consents-and-licences/construction-requirements/approved-materials-list/search/

www.ccc.govt.nz/consents-and-licences/construction-requirements/approved-contractors/

Selected materials are specified in this document.

Council prefers that sustainable business practices and materials be used for Council infrastructure. To help achieve this, Council will be incorporating a tender attribute reflecting the incorporation of sustainable materials and processes. Contractors demonstrating sustainable practices will receive credit through the attribute assessment as part of the tender analysis process.

These practices could include utilising materials that contain a recycled component or that are able to be recycled at the end of their life or by proposing processes with reduced environmental impact e.g. drilling pipes as an alternative to open trenching.

Approved laboratories are IANZ accredited to carry out the particular test being requested.

5 QUALITY ASSURANCE

Any work on Council’s water supply or drainage reticulation or on infrastructure that will be vested in Council shall only proceed when design acceptance has been confirmed through the “CWW” stamping of the construction drawing(s) by Council.

5.1 Quality Plan

All Project Quality Systems and the Contract Quality Plan shall comply with IDS: Part 3 - Quality Assurance, as specified.

Where the Contractor is responsible for aspects of design, the Project Quality System shall also cover details of this.

Examples of Compliance Requirements Checksheets are appended to each part, where available.

5.2 Personnel

Personnel shall comply with the requirements of IDS: Part 3 - Quality Assurance.

5.3 Reporting

Records of testing and maintenance inspections shall comply with the Contract Quality Plan, including the interval of supply. Further information is available in IDS: Part 3 - Quality Assurance.

5.4 Audits

The Engineer may carry out audits and inspections during the Contract, which may include checks of the Contractor's Quality System and records. They shall be kept up to date and be available for audit at all times during construction. If so instructed, the Contractor shall forward copies of all or part of the records to the Engineer.

Records shall be kept on site, where specified.

5.5 Completion Certificate

The Contractor shall certify that all work has been carried out in accordance with the Contract, prior to the issue of the Certificate of Practical Completion, for the whole or parts of the works as appropriate.

5.6 Construction Records

Provide construction and as-built records as specified in IDS: Part 12 – As-Built Records and the relevant part of the IDS e.g. IDS clause 7.3 – Quality Assurance Requirements and Records.

The particular requirements for as-built records for each type of work are set out in clause 17 – Environmental Management Plan, CSS: Part 2 clause 7.8 – As-Built Records, CSS: Part 3 clause 19.0 – As-Built Records, CSS: Part 4 clause 20.0 – As-Built Records, CSS: Part 5 clause 13.0 – Completion Procedures and Certification, CSS: Part 6 clause 27.0 – As-built Records or CSS: Part 7 clause 16.0 – As-built Records.

5.7 Measurement of Works and Basis of Payment

All costs involved in the establishment and operation of the Project Quality System, including supplying records to Council, shall be borne by the Contractor, if not scheduled separately.

All costs involved in the obtaining and providing of as-built records shall be paid as a lump sum.

6 CORRIDOR ACCESS REQUEST (CAR)

Access to the Transport Corridor shall be obtained in accordance with the ‘National Code of Practice for Utility Operators’ Access to the Transport Corridors.

As the Corridor Managers for Christchurch City, Council utilises a website <http://myworksites.co.nz/> to process and manage Corridor Access Requests (CARS). The Contractor shall apply for Corridor Access Requests via MyWorksites to obtain permission to access the Transport Corridor. The Traffic Management Plans applicable to the Christchurch area must be submitted to Council using this system also.

6.1 Measurement of Works and Basis of Payment

All costs involved in the CAR process shall be included in the cost of Temporary Traffic Control.

7 TEMPORARY TRAFFIC CONTROL

Temporary traffic control shall be carried out in accordance with the “Code of Practice for Temporary Traffic Management” (CoPTTM) or its subsequent replacement, except where amended by the following clauses.

Christchurch City Council (CCC) utilise a website <http://myworksites.co.nz/> for the submission of Traffic Management Plans (TMP) within the CCC Network. All Traffic Management Plans applicable to the CCC Network must be submitted to Council using this system.

CoPTTM or its subsequent replacement shall be amended by the CCC Local Operating Procedures for Temporary Traffic Management (LOP). Details of the LOP are available at <https://ccc.govt.nz/transport/legal-road/traffic-management-news-and-information>

7.1 Traffic Management Plans (TMP)

Each TMP must be designed, installed and managed by a qualified person as defined by CoPTTM or its subsequent replacement.

Site specific situations may demand particular requirements of the TMP, which will be detailed in the contract documents.

7.2 Amendments to the “Code of Practice for Temporary Traffic Management” by the Road Controlling Authority

Christchurch road level classifications are available at <https://ccc.govt.nz/transport/legal-road/traffic-management-news-and-information/>. Roads not detailed on this list are classed as low volume roads in accordance with the CoPTTM.

7.3 Road Closures

A temporary road closure is required where a road will be closed to the movement of vehicular traffic. Temporary road closures shall be applied for using the Temporary Road Closure Application Form, available at the web address. This form can be completed and submitted online. A TMP shall be submitted as part of the application.

An application for a road closure shall be made between 10 working days in advance, prior to public notifications needing to be undertaken. Further information, including signage requirements, is available at the web address.

7.4 Events

A Traffic Management Plan is required for any event affecting the normal operating conditions of any road and its road reserve. Temporary road closures shall be applied for using the Temporary Road Closure Application Form, as detailed in clause 7.3 - Road Closures.

An application for a road closure for an event shall be made either 30, 60 or 120 days in advance, depending on the closure type. Further information is available in the Road closure for events – 3 stage event classification and process sheet, which is available at the web address.

7.5 Working Near the Tram Tracks

Site specific Traffic Management Plans for work within legal roads that are travelled over by the Christchurch Tram shall be submitted to the Road Controlling Authority. Generic diagrams may be included in the Traffic Management Plan. The tramway route is shown in Appendix 2.

The Traffic Management Plan shall include an ‘Application To Work Near Tram Tracks’. A form template is appended to this part. This form should be signed by the Contractor and the Tramway Company before presentation with the Traffic Management Plan. Also note the requirements in clause 11.1 – The Christchurch Tram.

The form is intended for Christchurch Tramway Ltd.’s use and recordkeeping.

7.6 Measurement of Works and Basis of Payment

Payment will be in accordance with Appendix D of the “Code of Practice for Temporary Traffic Management”. The duration of the traffic management services shall be from the date the Contractor commences construction on site to the Work Completion Date as defined below.

The Work Completion Date shall be the earliest of either:

- The Date of Practical Completion.
- The Contract Completion Date as stated in the Special Conditions of Contract, or as otherwise extended by the Engineer by approved time extensions.

- The date after which temporary traffic control is no longer required.

The Contractor must provide temporary traffic control between the Contract Completion Date and the Date of Practical Completion, at their expense, where the Date of Practical Completion is after the Contract Completion Date.

8 START WORK NOTICES

Prior to starting work and erecting any signage on site, the Contractor shall check with the Engineer that the start work notice has been produced and distributed. Start work notices must be physically distributed by the Contractor or Council staff between five and ten days before work starts and any site signage is displayed.

Where the Contractor is instructed to produce start work notices, these must use one of two Council templates: one for use at the start of a project and one for updates throughout lengthy or changing projects. Works notices shall be written using simple, concise language.

The templates can be obtained by contacting the City Services Business Support Team at businesssupport@ccc.govt.nz. No additional Contractor logos may be added to the template.

All notices (both at the start and throughout the project) shall be submitted to the Council for review and approval prior to being formally issued. An electronic copy of the final work notice shall be given to Council so that the notice can be distributed via internal distribution lists prior to external distribution.

The start work notice distribution area shall cover all those properties affected, considering the noise impact area and traffic detour routes, which may be larger than the physical site.

8.1 *Measurement of Works and Basis of Payment*

All costs involved in the production and distribution of start work notices, shall be included in the schedule of rates if no specific line item is provided in the schedule of prices.

9 NOTICE BOARDS

The Contractor shall erect the notice board at each end of and immediately adjacent to the physical works in a suitably lighted position, visible to pedestrians and traffic. The proposed locations shall be confirmed with Council prior to board erection. The notice board shall be erected 5 to 10 days prior to works commencing on site and shall be removed within two weeks of Practical Completion. The notice board shall not obstruct sightlines or inconvenience the public or property owners.

Start Work Notices (if required) shall be distributed prior to the erection of notice boards. Final notice board wording shall be reviewed by Council and shall align to any associated Start Work Notice.

Each notice board shall display the 'Contractor's Name' and 24-hour phone number. The expected construction period and the specified type of work e.g. "... upgrading the water supply" shall be included.



Where specified, the joint Council/NZTA template (as shown above) shall be used. In all other instances, the notice board shall incorporate only the Christchurch City Council logo.

The Christchurch City Council logo and sign specification can be obtained by contacting the City Services Business Support Team at BusinessSupportCS@ccc.govt.nz or on the Council [webpage](#).



Notice Boards shall have dates refreshed as required to reflect any adjustments to start or completion dates during the contract period.

Prior written approval is required from asset owners of poles/posts to which the signs may be attached. This written approval shall be submitted with the noticeboard wording for review by council.

The erection and removal of signs shall be included for approval in any submitted Traffic Management Plans.

Where work is being carried out on behalf of other parties, e.g. trenching for Utility Operators, land development, a similar sign shall be erected displaying the Principal's name in place of the Christchurch City Council name and logo.

9.1 *Measurement of Works and Basis of Payment*

Notice boards shall include the supply, erection, refreshing, maintenance over the period of physical works and removal.

10 ACCEPTANCE OF SITE

Before work commences, the Contractor shall notify the Engineer of any existing defects that may impact on works. The Contractor shall take sufficient records (e.g. photographs, videotapes) of any pre-existing conditions or defects to allow a true assessment of any deterioration in their condition caused by their operations.

11 EXISTING SERVICES

The Contractor should obtain the latest information from the respective authorities on all services.

Any group of services of the same nature belonging to the same authority and with an overall dimension less than 600mm horizontally and vertically shall be regarded as one service for payment purposes.

The Contractor shall apply the processes detailed in Worksafe Guide for Safety with Underground Services and NZTA Minimum Standard for Utility Identification and Protection on Road Projects.

11.1 The Christchurch Tram

The tramway comprises 1435mm gauge steel track supported by a continuous reinforced concrete foundation pad. Power is supplied to the system with a 600-volt direct current single overhead wire at an average height of 6.0 metres. The track is used as the return current conductor and could form an electrical hazard if broken. Note that the track may be live in areas even though the overhead is not erected.

Where any excavation occurs which could affect the stability of the tram track, appropriate technical advice as to its safety shall be sought and appropriate measures taken to rectify the situation.

No person or mechanical plant shall work any closer than 4 metres from the overhead contact system without permission from the Tramway Operations Manager.

12 PROTECTION OF LINZ SURVEY MARKS

It is a statutory requirement to obtain the approval of Land Information New Zealand (LINZ) prior to removing or disturbing (even by millimetres) a survey mark, as prescribed in section 55 of the Cadastral Survey Act 2002.

Construction works shall not commence until the Contractor has received from the Engineer either; a copy of the approved mark protection survey plan for the site, or confirmation that a mark protection survey is not required.

The Contractor shall preserve and maintain, in their true position, all survey boundary marks within the work site. The Contractor shall arrange replacement, at the Contractor's own cost, of any survey boundary marks that are destroyed or disturbed by site works, unless specified. The replacement of boundary marks must be undertaken by a Licensed Cadastral Surveyor.

In the event of accidental discovery, the Contractor shall cease work immediately and notify the Engineer. The Engineer will confirm if a mark protection survey is required.

Mark Protection Survey Process for Council procured work

12.1 Design by Council

The designer shall provide the Technical Services and Design Survey Team with a copy of the construction plans prior to tender.

The Technical Services and Design Survey Team will:
identify all survey marks likely to be affected by the construction works, and
undertake a mark protection survey for any affected marks prior to the contractor taking possession of the site.

The approved mark protection survey plan will be included with all engineering plans provided by Council and will form part of the plans for the construction works.

12.2 Design by External Parties

The external party shall:

- notify LINZ of the proposed construction works at www.beforeudig.co.nz,
- for works situated in rural areas email a copy of the design plans to CRM_Geodetic@linz.govt.nz,
- engage a Licensed Cadastral Surveyor at Council's cost to assess and if necessary, undertake a mark protection survey(s) for any marks identified by LINZ as being affected,
- ensure the mark protection survey is completed prior to the contractor taking possession of site, and
- provide a copy of the approved mark protection survey plan to Council's Technical Services and Design Survey Team for their records.

The mark protection survey shall comply with LINZ Specification for the Protection of Survey Marks.

The approved mark protection survey plan will be included with all engineering plans provided by the external party and will form part of the plans for the construction works.

13 NOTIFIABLE WORKS

All work in confined spaces shall be subject to the conditions set out in the Christchurch City Council "Guidelines for Entering and Working in Confined Spaces". Prior to the commencement of work the Contractor shall present proof to the Engineer that any person entering a confined space holds a current 'Confined Spaces Entry Permit'.

All excavation and construction works around overhead power lines, poles and towers are subject to the conditions set out in the New Zealand Code of Practice for Electrical

Safe Distances 34:2001 (NZECP34:2001). Prior to the commencement of work the Contractor shall present proof to the Engineer of the written consent from applicable line owner, pole owner, and / or tower owner as per the conditions set out in NZECP34:2001.

The Contractor shall not start any notifiable work until written notice has been lodged with the Occupational Safety and Health Service of the Department of Labour, as required under the Health and Safety in Employment regulations 1992.

These notifications may include work in any excavation greater than 1.5 metres deep and having a depth greater than the horizontal width.

14 TOILET FACILITIES

The Contractor shall provide an on-site toilet for the use of the contract or sub-contract staff for the full duration of all on-site work.

15 HOURS OF WORK

No work shall be undertaken on Sundays, Public Holidays, or outside the hours of 7.00 am to 6.00 pm without the Engineer's prior consent.

Work is deemed to include any plant activity associated with the running up of operating pressures for hydraulic and lubricating systems and the cooling down of plant drive systems.

16 NOISE

Noise shall be limited to comply with the requirements of NZS 6803 "Acoustics - Construction Noise".

The Contractor shall adopt the best practical option to minimise the effects of noise generation and comply with the requirements of NZS 6803 "Acoustics - Construction Noise" by including, in the planning of the work, factors such as placing of plant, programming the sequence of operations and other management functions, noise insulation and silencers.

17 STOCKPILES AND SURPLUS MATERIALS

17.1 Stockpiles

The size and location of stockpiles shall be in accordance with the Traffic Management Plan. The Engineer shall approve the location of all stockpiles prior to their formation.

Only in the event of all other alternatives being deemed inappropriate shall the Contractor seek the Engineer's permission to use a reserve for a stockpile site.

Note that the use of a reserve will incur costs and must be approved in writing by the Transport and Greenspace Manager.

Stockpiles shall not block existing drainage paths. The Contractor shall remove all surplus material from the site without undue delay. Areas used for stockpiles shall be restored to existing or better condition.

17.2 Disposal of Surplus Materials

The Contractor shall keep a register of all disposed materials including details of quantities, date of disposal, type of materials, disposal method (e.g. recycled, donated, sent to landfill etc) and owner or location of disposed materials. The disposal register shall be in spreadsheet format.

In addition to the disposal register, where hazardous waste is identified, the Contractor shall provide a disposal plan to the Engineer. The disposal plan shall detail the type of material, method of extraction, transportation, and location of the disposed material. Hazardous waste shall not be sold or donated.

When requested, the Contractor shall provide a copy of the disposal register to the Engineer and email address cccassetdisposal@ccc.govt.nz.

17.3 Measurement of Works and Basis of Payment

Transportation of new unused or recycled materials or disposal of surplus materials shall be included in the rates for the replacement items being constructed.

18 WORK ON OR ADJACENT TO PRIVATE PROPERTY

18.1 Agreements and Notifications

All agreements to carry out work in private property shall be in writing.

The Contractor shall give each owner and/or occupier written notice of the intended time of entering the property at least two weeks before doing so or a lesser time where agreed with the owner/occupier.

The Contractor shall keep the Engineer fully informed of any negotiations with the owners and/or occupiers and shall supply copies of all correspondence concerning these negotiations.

18.2 Progress of Work

The Contractor shall cause as little inconvenience as possible to the owners and occupiers and shall restrict all operations to the areas agreed by the owners and occupiers or as specified.

Once work in private property has started, this portion of the work shall proceed with as much speed as possible and no other work shall be undertaken which will hinder progress on this portion.

18.3 Excavation at Property Boundary

Any fences, paths, structures or other private property disturbed, damaged or removed by the Contractor's operations shall be restored as soon as possible to an equivalent condition and to the satisfaction of the owner.

The Contractor shall provide adequate support to the excavation when working in close proximity to the road boundary to prevent any damage or subsidence into the excavation. Any subsidence or damage shall be remedied immediately to the property owner's satisfaction at the Contractor's cost.

18.4 Clearance

A written clearance from each owner or owner's agent shall be obtained before the "Certificate of Practical Completion" is issued.

The Engineer may also require that the Contractor obtain a written clearance from nearby owners if their properties have been affected by the Contractor's operations.

19 POTABLE WATER CONTAMINATION

Where pressurised watermains are damaged and any leakage occurs, positive pressure shall be maintained in the damaged pipe, to prevent contamination of the water supply.

Only the Council's nominated water supply maintenance contractor may turn off the water flow in a pipe.

Where contamination is found, the Council is required to immediately isolate and remove the source of the contamination, because it could impact severely on the health of consumers, particularly the elderly, infants and people with immune deficiencies.

Where this contamination is caused by work carried out by a Contractor, this Contractor shall incur the costs of remedial work.

19.1 Standpipes

Any contractor wanting to access the Council's water supply shall apply for a water connection and hire a Council approved standpipe from Humes' Pipelines, 48 Hazeldean Road, Christchurch, phone 339 5909 or 0800 101 999.

These standpipes are fitted with a backflow prevention device and water meter.

Applications for water connections shall be made by completing a WS1 form available at <https://ccc.govt.nz/consents-and-licences/building-consents/types-of-projects/inside-and-around-your-property/connection-to-the-council-water->

[supply](mailto:water.connections@ccc.govt.nz) and e-mailing this through to the water connections mailbox (water.connections@ccc.govt.nz).

19.2 Measurement of Works and Basis of Payment

All costs involved in the prevention of contamination of Christchurch's water supply shall be borne by the Contractor.

20 ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT PLAN

Contractors shall design and implement an Environmental Risk Assessment and Management Plan (EMP), in accordance with IDS clauses 2.5.5 – Environmental Considerations, 3.8.2 – Environmental Management and the supporting information in IDS Part 3 Appendix 1. The EMP shall include all discharge consents, authorisations and details of permitted activities.

In addition to the following clauses, the EMP shall include the management of: noise (refer to clause 16.0); potable water contamination (refer to clause 19.0); erosion, sediment and dust control (refer to clause 21.0); the protection of natural assets and habitats (refer to clause 22); archaeological discovery (refer to clause 23.0).

20.1 Asbestos

Removal and disposal of asbestos shall comply with the Health and Safety at Work (Asbestos) Regulations 2016 and “Guidelines for the Management and Removal of Asbestos”. Provide proof of current competency certification with the Health and Safety Plan.

20.2 Wastewater Diversion or Spills

The EMP shall include methods for diverting wastewater in accordance with the requirements of CSS: Part 3 clause 11.5 - Fluming of Disconnected Laterals. It shall also include an Accidental Spill Prevention and Response Plan.

20.3 Dewatering

The EMP shall include methods for dewatering where required, in accordance with the requirements of CSS: Part 3 clause 6.7 – Dewatering and the Erosion and Sediment Control Plan.

20.4 Contaminated materials and HAIL sites

The EMP shall include contaminated material handling methodologies, where specified, or accidental discovery protocols.

Any material imported from a recorded HAIL site shall be tested to confirm it is not increasing the contamination level of the work site. Soil test results shall be provided as part of the completion documentation at Practical Completion.

Material removed from site, including from planting or stump grinding, may be contaminated. Where possible, reuse excavated soil to limit the amount of spoil potentially removed from site.

20.4.1 Coal Tar

In the event that Coal Tar is exposed in carriageways and/or footpaths during excavation cease work in the affected areas immediately and notify the Engineer.

Accidental discovery and contaminated material handling protocols shall be applied to this work. Methods of treating coal tar, in order of preference, include:

- Leave undisturbed.
- Remove coal tar and dispose to landfill.
- Stabilise in situ with foamed bitumen.

The Engineer shall accept the method of treatment. The Contractor shall record the coal tar location and treatment in the RAMM database.

20.5 Measurement of Work and Basis of Payment

All work to manage environmental risks and to prevent contamination shall be included in the rates for the relevant items being constructed. The provision of as-built records to clause 5.0 – Quality Assurance is scheduled separately.

21 EROSION, SEDIMENT AND DUST CONTROL

21.1 Dust Nuisance

The Contractor shall take all reasonable precautions to mitigate the dust nuisance to adjacent properties and the public.

Where the Contractor stockpiles material on or off the site, any measures required to prevent a dust or litter nuisance shall be taken at the Contractor's cost.

Should the Contractor fail to take immediate action to satisfactorily control dust or litter when instructed to do so by the Engineer, or if the Contractor cannot be contacted, the Engineer may have the necessary work carried out and recover all costs incurred from the Contractor.

21.2 Stormwater and Land Drainage

Contractors shall design and implement an Erosion and Sediment Control Plan (ESCP), in accordance with IDS clause 4.9 – Erosion, Sediment and Dust Control, to control the discharge of contaminants during construction. The ESCP shall be in accordance with the Environment Canterbury Erosion and Sediment Control Guide. The Contractor shall submit the ESCP to Council one week before construction starts.

The Council will audit the Erosion and Sediment Control Plan for compliance over the period of the works.

Possible sources of contaminants from construction activities additional to those in IDS clause 4.9 – Erosion, Sediment and Dust Control, include sawcutting, grooving, waterblasting, dewatering and uncontrolled runoff. Possible contaminants include slurries from cutting pavers, dust from stockpiles, bituminous materials and fine silts removed by dewatering activities.

21.3 Measurement of Works and Basis of Payment

All work to control erosion, sediment and dust and to prevent contamination shall be included in the rates for the relevant items being constructed.

22 PROTECTION OF NATURAL ASSETS AND HABITATS

The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna is a matter of national importance and is a statutory requirement for councils under s6(c) of the Resource Management Act (RMA). Section 7 of the RMA requires councils to have regard to the intrinsic values of ecosystems (s7(d)); the maintenance and enhancement of the quality of the environment (s7(f)); and any finite characteristics of natural and physical resources (s7(g)). And sections 30 and 31 require councils to maintain indigenous biodiversity per se within their districts.

Natural assets and habitats for indigenous biodiversity include:

- naturally occurring,
- human induced, or
- planted/artificially established plant and animal communities and ecosystems.

They include natural landscapes and features such as waterways, wetlands, vegetated areas and their wildlife, indigenous grasslands, mossfields, forests, trees, shrubs, restoration or amenity plantings, gardens, turf areas, and any associated structures.

22.1 Existing Features

Before the commencement of the work, the Contractor shall clearly identify all potentially affected natural assets and habitats that are to be avoided, remedied, or mitigated, from potential damage.

Any waterway and their associated margins and setbacks shall be outside of the Contractor's work site unless the contract specifically states otherwise.

22.2 Protection of Sites of Ecological Significance

Sites of Ecological Significance (SESS) are listed and mapped in the Christchurch District Plan. They support indigenous vegetation, and/or habitats for indigenous fauna, which require protection through the RMA. They are subject to development and vegetation clearance rules in the District Plan.

There are numerous ways in which development within and/or adjacent to SESs might adversely affect the values of these areas. Development also has the potential to maintain and enhance the values of these sites if it is carried out appropriately.

Work within and/or adjacent to either 1) SESs, 2) PSESs (Proposed Sites of Ecological Significance) listed in the Christchurch District Plan, or 3) any other site of potential ecological value, which includes any clearance of indigenous vegetation per se, must not be carried out without prior engagement with a Christchurch City Council ecologist.

Council ecologists can be contacted through the City Services Environmental Advise/Ecology Experts hub portal
<http://intranet.ccc.govt.nz/Teams/CityServices/environmental-advice/SitePages/Ecology%20Experts.aspx>

22.3 Protection of Indigenous Wildlife

22.3.1 Protection and Salvage of Indigenous Fish

When working in rivers the Freshwater Fisheries Regulations require that indigenous, or native, fish shall not be knowingly destroyed (s70).

All works that require the salvage of fish shall be undertaken in accordance with the Fish Salvage Guideline for Works in Waterways.

Permits or approvals must be obtained under any relevant legislation including the Freshwater Fisheries Regulations, the Fisheries Act, and/or the Conservation Act.

22.3.2 Protection and Salvage of Indigenous Lizards

New Zealand indigenous lizard species are absolutely protected under the Wildlife Act and their habitats are protected by the Resource Management Act. It is an offence to 'hunt or kill' absolutely protected wildlife (section 63) unless there is lawful authorisation. This includes 'pursuing, disturbing, or molesting' any wildlife during the course of works (the offence provision does not require an intent to do harm).

The disturbance of areas that may contain lizard habitat shall be assessed by a licensed herpetologist prior to the commencement of any construction. Indigenous lizard species often occupy habitats of otherwise low ecological value (i.e., weedy vegetation, vegetation margins) throughout Christchurch. It includes, but is not limited to, urban and rural land, unmown areas of rank grass, rocky areas, piles of abandoned material (wood, concrete, old tyres etc.). The Port Hills in particular contains valuable areas of habitat for skinks and geckos. All works that require the salvage and relocation of lizards shall be undertaken by a licensed Herpetologist working under a Wildlife Authority.

22.3.3 Protected Bird Species and their Breeding Areas

Works in the active nesting areas of protected bird species (= most native species and game birds) shall be undertaken with the advice and guidance of an ornithologist to ensure impacts on bird nesting areas are avoided, and that penalties are not triggered under the provision of the Wildlife Act.

This includes both ground-nesting, waterway riparian-nesting and vegetation-nesting birds. Sites that are regularly used as bird breeding or colonial sites, or as regular roosting sites, but are not occupied at time of works, should also be assessed well prior to any works or site disturbance. Native species can be lost from an area if their regular breeding or roosting sites are lost or damaged and such losses undermine Council obligations under the Local Government Act. Some, but not all, of these sites are identified under the SES programme.

22.4 Protection of Trees and Vegetation

Trees and vegetation under this clause include any Council and private trees and vegetation within or immediately adjacent to the work site.

All trees and vegetation in parks, public open spaces and road corridors (including gardens, shrub borders, roadside landscaping, etc.), vegetation within waterbody setbacks, sites of ecological significance and indigenous vegetation on non-Council owned land within or immediately adjacent to the worksite shall be protected from damage.

Works within the vicinity of trees and protected vegetation must comply with the Christchurch District Plan and any relevant resource consents. The Global Consent for works affecting significant and other trees (RMA/2018/2857) applies to Christchurch City Council works but excludes some protected trees/vegetation. Separate resource consents will be required where the global consent does not apply, and where the global consent is used, the conditions of consent must be adhered to. Refer to the Christchurch District Plan and the global consent (RMA/2018/2857) to confirm the District Plan rules and compliance requirements.

The following relates to trees and any other vegetation.

22.4.1 Tree Protection Zone

The Tree Protection Zone of a tree is defined as the dripline (canopy spread/outer edge of the branch spread) or half the height of a tree, whichever of the two measurements is greater (as illustrated in SD110). With irregular shaped trees (e.g. leaning trees) the dripline is calculated by determining the greatest radial spread of the canopy from the trunk in a full circle around the tree.

22.4.2 Tree Management Plan

Where it is not possible to complete the works without encroaching within the Tree Protection Zone, a proposed methodology in the form of a Tree Management Plan,

which is produced by a technician arborist, shall be submitted to the Council's arborist for approval at least 5 working days prior to work commencing within the vicinity of any tree/vegetation.

- The Tree Management Plan shall include the following:
- All relevant District Plan requirements and resource consent conditions.
- A brief tree/vegetation assessment; including the species, size (height, canopy spread and trunk diameter), the condition of the trees/vegetation, any existing damage or decline with photographic evidence, and identification numbers where known/applicable.
- A description of the proposed activities, the potential direct and indirect effects on all affected trees/vegetation, recommendations and the mitigation measures to be implemented for the duration of the works.
- A site plan that clearly shows the precise location of the subject trees/vegetation, Tree Protection Zones, where temporary protective fencing and ground protection is to be installed, and the locations of any relevant works activities, access and storage areas, and temporary buildings, structures, tanks and toilets. The site plan shall also include the precise location of any trees/vegetation to be removed and any replacement tree/vegetation planting.
- Where a tree/vegetation is proposed to be pruned, a description of the pruning and reasons. All relevant consents and tree owner/asset manager approvals will be required prior to the tree/vegetation being pruned. Where Council owned trees require pruning, this work is to be carried out by Council's tree maintenance contractor.
- Where a tree/vegetation is proposed to be removed, a detailed assessment of the condition of the tree/vegetation and reasons for the tree removal. All relevant consents and approvals will be required prior to the tree/vegetation being removed. Replacement tree/vegetation planting and establishment will be required as defined by the Engineer and as specified in CSS Part 7 – Landscapes.
- The name/s, contact details and qualifications of the technician arborist and the supervising arborist/s.

22.4.3 Supervising Arborist

A council approved Supervising Arborist shall be on site when any earthworks are being undertaken within the Tree Protection Zone of a tree/vegetation and any other site work activities that could result in tree/vegetation damage. This applies to trees on Council land and trees/vegetation on adjacent private properties (and where branches or roots extend into the legal road or other Council administered land).

The Supervising Arborist shall clearly identify the tree/vegetation protection requirements, attend pre-commencement site meetings to confirm the approved tree/vegetation protection methodologies prior to the works occurring, and to ensure that the Contractor's personnel (including any subcontractors) are aware of the tree/vegetation protection requirements. The approved Tree Management Plan relating to the works and any relevant resource consents must be available on site at all times.

22.4.4 Tree/Vegetation Protection Methods

The extent of tree/vegetation protection required is tree, site and activity specific.

Before any materials or machinery are brought on site, or before any demolition, or site development begins, protective fencing must be erected around all trees/vegetation which are to be retained. Trees/vegetation on adjacent properties that are potentially affected by the works must also receive appropriate protective fencing. Exceptions may occur on a site-by-site basis with the prior approval of the Council's arborist. The protective fencing shall not be removed or moved until that section of work is complete without the prior approval of the Council's arborist.

The protective fencing shall be strong and appropriate to the degree of construction activity taking place on the site and located to provide adequate tree/vegetation protection. An example of protective fencing is self-install steel mesh site fencing panels (with a height of approximately 1.8 - 2.1 metres) erected at the extremity of the Tree Protection Zone. In some locations smaller pedestrian/crowd control fencing is appropriate.

Where works activities are undertaken from existing hard surfaces within the tree protection zone, and within the vicinity of a tree or trees, additional protection shall be erected around tree trunks in the form of a wooden cladding frame or similar protection to minimise the risk of accidental impacts.

In some situations, temporary ground protection surfacing will be required within the Tree Protection Zone of trees/vegetation to allow vehicle and machinery movements or storage of materials to occur without causing soil displacement or compaction. Temporary ground protection surfacing shall be effective in the distribution of surface loading in relation to size/weight of vehicles and machinery that are used.

No chemicals, fill, equipment, machinery or vehicles shall be stored or operated within the Tree Protection Zone of a tree/vegetation, except on existing hard surfaces or approved temporary ground protection surfacing. Water used for washing down equipment/machinery shall not run off within the Tree Protection Zone unless on an existing sealed surface or designated contained wash down area. There must not be any direct contact between wash down water, chemicals, curing concrete, fill, equipment or machinery and the root system of a tree/vegetation.

Unless prior approval from the Council's arborist has been obtained, all underground services within the Tree Protection Zone of a tree shall be installed by trenchless methods, and at a depth of at least 0.8m below ground level or greater depths where required.

Excavations within the Tree Protection Zone shall be carried out by hand, air spade, or another approved method, and the Supervising Arborist shall be present on site at all times whilst these works are being undertaken. Alternatively, the works shall be redirected around the tree/vegetation at a distance that is unlikely to cause adverse effects.

Hand excavation is typically carried out using hand-held and non-motorised tools that are used manually (such as spade, shovel, pick, breaker bar, etc). There is a potential for damage to result even where hand excavation occurs. Air-spade (air-lance) tools can be used effectively without causing damage to tree roots, and this is usually an acceptable method of excavation within the Tree Protection Zone of trees/vegetation. Excavation shall be carried out under the direction of the Supervising Arborist.

Machine excavation under arborist supervision for the removal of existing pavement, kerbing, roading materials, turf or fill within the Tree Protection Zone of trees/vegetation is usually permitted where the removal of materials can be undertaken with care to avoid damage to tree/vegetation roots underlying the pavement, kerbing, road or turf.

In some locations hand boxing and installation of kerb and channel by hand will be required to minimise the extent of excavation and prevent damage to tree roots.

Hydro excavation has caused severe and irreparable damage to trees in Christchurch and is not permitted for excavation within the vicinity of trees/vegetation without the approval of the Council's arborist.

All root pruning is to be carried out by the Supervising Arborist, and roots shall be severed cleanly with a pruning saw or shears to the excavation face or the root collar where secondary roots are removed. All roots larger than 25mm diameter shall be retained in an undamaged state and protected, unless the Council's arborist gives permission for them to be pruned. No ripping or tearing of roots shall occur. Irrespective of size, any roots which have a significant effect on the health and stability of a tree/vegetation shall not be removed without the prior approval of the Council's arborist, which may include tree roots that are less than 25mm diameter. All exposed tree/vegetation roots and cut root ends shall be protected from damage and desiccation with damp sacking/scrim or similar material if not backfilled immediately.

In some situations, a 100mm layer of sand (or approved topsoil in soft surface areas) may be carefully compacted by non-mechanical hand tamping methods around retained roots prior to backfilling and compacting an excavated area. Geotextile material will be required to wrap retained roots to minimise contact between backfill material and the roots, especially where tree/vegetation roots are located near the top of an excavated area, and the backfill material shall be carefully compacted by non-mechanical hand tamping methods around retained roots.

Where cement is installed, roots will require protection from potential damage caused by chemical leaching, and polythene or similar impermeable sheeting shall be used to prevent contamination.

22.4.5 Tree/Vegetation Pruning

Any tree/vegetation canopy pruning will require approval from the Council's arborist or the tree/vegetation owner if the tree is located on private property. In some situations, a resource consent may be required (e.g. pruning of protected

trees). Where the Council's arborist provides approval for pruning of Council owned trees, this work is to be carried out by Council's tree maintenance contractor.

22.5 *Damage to Existing Features*

All accidental damage to the temporary protective fencing/barriers or the trees/vegetation, other natural assets or habitats must be reported to the Engineer immediately. Works occurring within the vicinity of protected site features shall cease immediately until adequate protection measures are rectified. The Contractor shall make a record of the damage and action remediation measures in consultation with the Engineer, the Council's arborist and/or Ecologist.

Where non-conformance has occurred and potentially resulted in tree/vegetation root system damage, as and when required by the Council's arborist, the Contractor shall re-excavate a site to establish the extent of damage to a tree/vegetation at the Contractor's cost. Any investigations, reporting and remedial work (including any associated costs, such as traffic management, etc.) that is required as a result of the non-conformance shall be at the Contractor's cost.

The Contractor shall compensate the Council for any damage done to existing features and the loss of amenity value of any trees/vegetation by means of a monetary sum and/or by the repair or replacement of that feature (including establishment maintenance). The Engineer will determine any compensation for damaged trees/vegetation in consultation with the Council's arborist and/or Ecologist.

Where non-conformance results in damage to protected items such as trees/vegetation, water bodies, habitats, ecological areas, etc., the Contractor may also be liable for prosecution due to non-compliance within the Christchurch District Plan rules and the conditions of any relevant resource consents.

Where damage to trees/vegetation has occurred that is not related to the Contractor's works, the Supervising Arborist shall note and photograph the damage and advise the Council's arborist prior to the commencement of works, where this information is not included or appended to the Contractor's Tree Management Plan.

22.5.1 Tree/Vegetation Removal

No trees/vegetation shall be removed unless all required consents and approvals have been confirmed, and the trees/vegetation have been specifically identified and marked during a joint inspection by the Engineer and the Contractor. Trees/vegetation shown on the drawings as conflicting with the works, but without an explanation of whether or not they are to be removed, must not be removed until they are identified as above.

The Contractor shall notify the Engineer of trees/vegetation which are not shown on the drawings, but which appear to be in conflict with the works prior to the works occurring.

Replacement tree/vegetation planting and establishment will be required. The extent of replacement planting will be defined by the Engineer. Tree/vegetation planting and establishment shall be carried out as specified in CSS Part 7 – Landscapes.

22.6 Measurement of Works and Basis of Payment

All work around existing features shall be included in the rates for the relevant items being constructed.

23 ARCHAEOLOGICAL DISCOVERY

An archaeological authority is required if there is “reasonable cause” to suspect that an activity may affect any archaeological material. An authority is required regardless of the legal status of the land on which the site is located, whether the activity is permitted under the District or Regional Plan or whether a resource or building consent has been granted.

Incorporate the Accidental Discovery Protocol as attached in Appendix 4 into the Environmental Management Plan in all other instances. If previously unknown archaeological material is uncovered during earthworks follow the steps in the Accidental Discovery Protocol.

24 NOTIFICATION OF AUDIT INSPECTIONS

The Contractor shall give a minimum of two working days’ notice to the Engineer when works are ready for audit inspections. Audit inspections include standards and material compliance inspections of all aspects of work.

25 ACCESS AND TEMPORARY BRIDGING

Access to properties shall be maintained at all times when the Contractor is off-site. Access to commercial properties shall be maintained at all times during business hours (unless by mutual agreement with the owner or occupier). Access to all other properties shall be maintained at all times unless by mutual agreement with the owner or occupier.

The Contractor shall contact each property owner or occupier at least three days prior to commencing work near their property and inform them of the length of time that property will be affected by the work. The Contractor shall keep diary notes and records of contact and discussions with property owners and occupiers.

25.1 Temporary Bridging

Should steel plates be used as temporary bridging they shall be:

- 12mm thick with chamfered edges.
- secured to the carriageway without a gap between the plate and the road surface.
- placed to prevent noise from vehicles when being crossed.
- used to span a maximum distance of 1.0m.
- wide enough to ensure that the sides of the trench remain stable.

Steel plates shall not be used as temporary bridging within the carriageway for more than 24 hours. The Engineer shall approve their use before installation.

25.2 Measurement of Works and Basis of Payment

The provision of adequate temporary crossings and bridging shall be included in the rates for the relevant item being constructed.

26 METER SHROUDS

The Contractor shall obtain the necessary parking meter shrouds where metered spaces are being used during the course of the works. The cost of obtaining meter shrouds shall be borne by the Contractor.

27 TAXI STANDS

Where work on roads obstructs adjacent taxi stands, the Contractor shall make arrangements for alternative taxi stands, including the covering of signs that are temporarily not in use.

The Contractor shall notify the Taxi Federation where temporary stands are not immediately adjacent to the relocated stand.

27.1 Measurement of Works and Basis of Payment

The provision of taxi stands shall be included in the rate for the item affecting them.

28 BUS INFRASTRUCTURE

Buses should not be delayed and where possible priority shall be given to their movements.

Bus stop, bus lane and bus detour impacts must be included in the TMP. Refer to CTOC Best practice for TTM impacting bus services.

All in-use bus stops shall be accessible to all intending passengers, including those with disabilities. Access should be via a smooth, unobstructed path a minimum of 1200mm wide and of materials suitable for the smooth operation of a wheelchair.

28.1 *Measurement of Works and Basis of Payment*

The provision of temporary bus stops and bus route detours shall be included in the rate for the item affecting the bus infrastructure.

29 SURFACE BOXES

29.1 *Access to Fire Hydrants and Sluice Valves*

Fire hydrants shall remain visible and accessible at all times.

If a sluice valve is covered, its location shall be marked with offset pegs.

The Contractor shall provide immediate access to any covered valves on request.

29.2 *Adjustment of Fire Hydrant, Sluice Valve and Combination Boxes*

Fire hydrant, sluice valve and combination surface boxes shall be adjusted in accordance with CSS: Part 4 clause 12.4 – Surface Boxes Installed or Adjusted Separately from Watermain Works.

29.3 *Roadmarking of Fire Hydrants and Sluice Valves*

Roadmarking of fire hydrants and sluice valves shall be carried out in accordance with the requirements of CSS: Part 4 clause 19.0 – Location Marking of Fire Hydrants and Sluice Valves.

29.4 *Adjustment of Manholes*

Manholes shall be adjusted in accordance with CSS: Part 3 clause 16.0 – Adjusting Manholes to Altered Surface Levels.

29.5 *Adjustment of Other Network Assets*

All network assets not owned by the Christchurch City Council shall be adjusted in accordance with that utility operator's requirements.

29.6 *Measurement of Works and Basis of Payment*

All work to provide access to fire hydrants and sluice valves shall be included in the rates for the relevant item being constructed.

30 TRAFFIC SIGNAL LOOPS

All signalised intersections have wire detector loops sawcut into the road surface. These loops are either approximately 1.5m or 30m behind the limit lines. They are vital to the operation of the traffic signals at the intersection and, in many cases, the surrounding signalised intersections. The loops must be kept in operation as long as possible, by cutting them at the last instance and restoring them as soon as practicable. To facilitate this, the following procedure shall be followed.

30.1 *Permission*

Permission to cut any loop shall be gained from the CCC Real Time Operations Team, phone 941-8620, 48 hours prior to the proposed cutting.

Permission is not automatic and may be withheld, for instance until after special events or until other work is completed. Generally, only one intersection per street shall be cut at any one time. However, where extenuating circumstances can be proven, this restriction may be lifted after consultation with the CCC Real Time Operations Team.

30.2 *Loop Reinstatement Fee*

The Contractor will not pay the fee, unless otherwise specified. Where it is specified that the Contractor pay the fee, it shall be paid to Christchurch City Council before permission will be given to cut any loops. It is also payable where the loop has been reinstated again as set out in the “Timing” clause below.

Fees to reinstate loops will be individually determined. Typically, the fee to have one loop reinstated in a Level 1 road is \$500.

Where permission has not been obtained prior to cutting the loop, a penalty of \$250 will be added to this fee.

30.3 *Replacement*

30.3.1 *Timing*

The Contractor shall give notice that the loop is ready to be replaced no more than three days after it has been cut.

If notification is not received within this time, Council shall issue a 24-hour notice of its immediate intention to reinstate the loop. The Contractor may be liable for the cost of a further loop reinstatement if the completion of the works necessitates cutting the loop again.

30.3.2 Extensions to Reinstatement Timing

If the Contractor considers that the time allowed above is inadequate for reinstatement and notification, they should contact the CCC Real Time Operations Team, who may extend these periods where extenuating circumstances can be proven.

Where the works to allow loop reinstatement cannot be completed within an acceptable time frame, e.g. works including porous asphalt, the loop may need to be installed into a temporary surface and then reinstated when the final surfacing is applied. In this circumstance, the loop fee will be paid twice. Milling, stripping or resurfacing in conjunction with this reinstatement, as set out in the following clause, may also be required.

30.3.3 Damage to Road Surface through Multiple Loop Cutting

Where the works will result in three separate loop cuts in the final road surface, the area of the loops shall be resurfaced. These cuts may exist prior to the work or be new cuts necessary due to the Contractor's works.

The Contractor shall mill or strip and resurface the area to the same standards as the final surfacing of their excavation. This resurfacing shall be completed prior to loop reinstatement.

30.4 *Measurement of Works and Basis of Payment*

Traffic loop reinstatement, where specified, shall include the fees as set out above, any temporary installations required, milling, stripping and resurfacing where necessary as stated above.

Where traffic loop reinstatement is not specified separately, the Contractor shall allow for any milling, stripping and resurfacing as stated above in the rates for the relevant items being constructed.

Where the traffic loop reinstatement is due to damage or lack of notification on behalf of the Contractor, all fees, any temporary installations required, milling, stripping and resurfacing where necessary as stated above shall be at the Contractor's cost.

31 EXCAVATION

Excavation carried out to permit the installation of network services in legal roads shall be carried out in accordance with the particular requirements regarding materials and their depths of the Works Access Permit for that work. Apply for a Corridor Access Request (CAR) at <http://www.beforeudig.co.nz/#> to obtain the Works Approval Notice.

Note that www.beforeudig.co.nz does not provide information on the location of Orion's reticulation or of reticulated gas services within Christchurch. Search at

<https://online.oriongroup.co.nz/maprequests/default.aspx> for Orion's reticulation and contact lpgasbuiltrequest@contactenergy.co.nz for reticulated gas.

All works must comply with the National Code for Utility Operators' Access to Transport Corridors and the CCC Local and Special Conditions.

Where pipes or other services or structures in the vicinity of the works may be structurally endangered by subsoil dewatering, the Contractor shall stop pumping and make suitable arrangements to prevent the removal of these sediments.

The Contractor shall notify the Engineer when the base of the excavation may be unsuitable. The Engineer may order extra excavation to remove this material.

Specific requirements regarding the excavation for network services are detailed in that Part e.g. CSS: Part 4 clause 9.0 - Excavation.

The Council webpage 'Working on our roads' <https://ccc.govt.nz/transport/working-on-our-roads/> contains further information.

32 BACKFILLING

Backfill includes filling to trenches and other excavations and excludes haunching, bedding and metalcourses or topsoil. Backfill material shall be as specified. The Engineer may approve the use of excavated material for backfill.

32.1 Backfilling Within Legal Road

The backfilling and maintenance of excavations for the installation of network services in legal roads must be carried out in accordance with the particular requirements regarding materials and their depths of the Works Access Permit for that work. All works shall also comply with the National Code for Utility Operators' Access to Transport Corridors and the CCC Local and Special Conditions, except where superseded by the CSS series or the contract documents.

Excavations in permanent surfaces shall be sealed within five days of backfilling.

32.2 Trafficked Areas

CCC Pitrun and CCC AP65 shall be compacted to a minimum dry density of 2,150kg/m³.

The dry density shall be determined in accordance with NZS 4402.4.1.1 "New Zealand standard compaction test" for stabilised materials or NZS 4402.4.1.3 "New Zealand Vibrating Hammer Compaction Test" for granular materials, unless otherwise specified.

32.3 Pedestrian Areas

CCC pitrun and CCC AP65 shall be compacted to a minimum dry density of 2,150kg/m³.

The dry density shall be determined in accordance with NZS 4402.4.1.1 “New Zealand standard compaction test” for stabilised materials or NZS 4402.4.1.3 “New Zealand Vibrating Hammer Compaction Test” for granular materials, unless otherwise specified.

32.4 Landscape Areas

Backfill material shall be compacted to 70% of that material’s maximum dry density (MDD).

The dry density shall be determined in accordance with NZS 4402.4.1.1 “New Zealand standard compaction test” for stabilised materials or NZS 4402.4.1.3 “New Zealand Vibrating Hammer Compaction Test” for granular materials, unless otherwise specified.

32.5 Quality Assurance

The Contractor shall ensure that sufficient records are kept to show that the backfill complies with the above requirements. **CCC may request records of compaction tests on work carried out under a Works Access Permit.**

32.5.1 Compaction Tests

Compaction tests, by Nuclear Densometer, Clegg hammer or other approved impact device, shall be carried out on each compacted layer. Nuclear density testing shall be carried out by an operator holding Unit Standard 25832 Use a nuclear density meter to measure compaction of soils, sands and gravels. All compaction testing appliances shall hold current calibration certificates. All nuclear densometer testing and results must be provided by an IANZ accredited tester.

As a guide, a minimum Clegg Impact Value of 35 in the carriageway, right of way or commercial crossing or 25 in other areas shall be achieved at any point on any layer.

33 RESTORATION AND FINAL SURFACING

Restoration and final surfacing shall be carried out in accordance with the requirements in CSS: Part 6 - Roads or CSS: Part 2 - Earthworks and CSS: Part 7 - Landscapes for that type of work.

33.1 Restoration and Final Surfacing in Legal Roads

Restoration, final surfacing and excavation maintenance in legal roads shall be carried out in accordance with the particular requirements regarding materials and their depths of the Works Access Permit for that work.

Where the work is included within contract works, it shall be carried out in accordance with the particular requirements, regarding materials and their depths, of the specified restoration type, as detailed in SD 101.

Work shall also comply with the National Code for Utility Operators' Access to Transport Corridors and the CCC Local and Special Conditions, except where superseded by the CSS series or the contract documents.

33.2 *Lengths of Open Trench*

Trenches are considered 'open' until within 10mm of the finished surface.

Trench restoration or final surfacing shall be continually carried out to ensure the maximum lengths of open trenching, as specified in the particular parts, are not exceeded. These lengths may be reduced at intersections and where crossing carriageways.

34 WATER AND WASTEWATER PERMIT TO WORK

34.1 *Water Supply and Wastewater Reticulation Pipe Assets*

A Permit to Work is required where Contractors intend to carry out works on water supply and wastewater reticulation pipe assets which:

- for water supply, result in a shutdown of water supply and interruption for longer than four hours on pipes of 200mm and larger (i.e. overnight shut down)
- for wastewater, require over pumping or bunting when workmen are not on-site, i.e. if a section of wastewater main is left in that state overnight with a pump going to keep the flow going with no one on-site.

34.2 *Water Supply and Wastewater Headworks Assets*

A Permit to Work is required where Contractors intend to carry out works on water supply and wastewater headworks assets (pump stations, reservoirs) which:

- are likely to have or cause a noticeable impact on a pump station (water or wastewater) or reservoir.
- require work inside any of the pump stations or reservoirs (i.e. locking and tagging out valves, altering the position of any valve or equipment, shutting down pumps etc)
- will require the shutdown of a pump station or the shutdown of a major trunk main that will affect station operations.
- involves removal of plant within a pump station.

34.3 *Water Supply and Wastewater Assets*

A Permit to Work is required where Contractors intend to carry out works on water supply and wastewater assets that will impact the normal operation of the network such as:

- isolating a pump station from the network

- plugging the gravity going into a pump station resulting in abnormal operation and alarms
- diverting flow away from one pump station to another
- isolating parts of the network for the purpose of flow monitoring.

Permits to Work shall be applied for using the form available at:

<https://www.ccc.govt.nz/consents-and-licences/construction-requirements/three-waters-contractor-portal/permit-to-work/>

An application shall be made at least five working days in advance but pump station and reservoir permits may require a longer processing time.

35 CCC AGGREGATE GRADINGS AND SPECIFIC REQUIREMENTS

Metalcourses may contain up to 5% of recycled glass, providing the material complies with all other specified requirements. Council will be incorporating a tender attribute reflecting the incorporation of sustainably produced materials.

All testing shall be carried out in accordance with the relevant test procedure in NZS 4407 “Methods of sampling and testing road aggregates”. Testing shall be carried out in an approved laboratory.

35.1 CCC Pitrun

Pitrun does not have a specified grading however it shall meet the following criteria:

- Pitrun shall not be gap graded.
- Pitrun shall be free of organic matter.
- The fraction passing the 75-micron sieve shall be substantially non-plastic.
- Pitrun shall not contain stone larger than 150mm.

River-run material from Waimakariri River sources downstream of the railway bridge adjacent to Main North Road, or any material excavated from below water level, is not acceptable as sub-base material.

35.2 CCC AP65 / Crushed AP65

Grading Requirement

<u>Sieve Size</u>	<u>Percent Passing</u>
65.0 mm	100
37.5 mm	60 - 90
19.0 mm	45 - 65
9.5 mm	30 - 50
4.75 mm	20 - 40
2.36 mm	10 - 28
1.18 mm	7 - 22

0.600 mm	5 - 16
0.300 mm	4 - 12
0.150 mm	3 - 8
0.075 mm	3 - 6

35.2.1 CCC AP65

- CCC AP65 shall be free of organic matter.
- Less than 10% fines shall pass a 2.36mm sieve after a crushing resistance test with a 130kN load.
- CCC AP65 shall either have a sand equivalent greater than 25 or the fraction of the aggregate passing a 0.075mm sieve shall have a clay index less than 3 or the fraction of the aggregate passing a 0.425mm sieve shall have a plasticity index less than 5.

35.2.2 Crushed AP65

- Crushed AP65 shall be free of organic matter.
- Less than 10% fines shall pass a 2.36mm sieve after a crushing resistance test with a 130kN load.
- Crushed AP65 shall have a sand equivalent greater than 25.
- Crushed AP65 shall have 50% of the aggregate by weight with 3 or more broken faces when tested according to NZR 4407:2015 test 3.14 Broken Faces Test

35.3 CCC GC 65-40

<u>Sieve Size</u>	<u>Percent Passing</u>
75.0 mm	100
63.0 mm	80 – 100
37.5 mm	0 - 5

- 50% of the aggregate by weight shall have 2 or more broken faces.
- Aggregate shall be free of deleterious material.

35.4 CCC RCC M/4:AP40

Recycled crushed concrete (RCC) M/4:AP40 shall comply with the NZTA M/4 Specification.

35.5 CCC Drainage AP40

<u>Sieve Size</u>	<u>Percent Passing</u>
45.0 mm	100
37.5 mm	95 - 100
19.0 mm	50 - 100

9.5 mm	25 - 50
2.36 mm	0 - 15
0.600 mm	0 - 8

- 50% of the aggregate by weight shall have 2 or more broken faces.
- Aggregate shall be free of deleterious material.
- Fines (percentage passing 0.425mm sieve) shall be non-plastic.

35.6 CCC Stabilised AP40

<u>Sieve Size</u>	<u>Percent Passing</u>
37.5 mm	100
19.0 mm	80 - 95
9.5 mm	50 - 75
4.75 mm	30 - 50
2.36 mm	20 - 38
1.18 mm	17 - 33
0.600 mm	14 - 28
0.300 mm	10 - 23
0.150 mm	8 - 20
0.075 mm	5 - 12

- 50% of the aggregate by weight of total quantity retained on a 4.75mm sieve shall have 2 or more broken faces.
- Aggregate shall be free of deleterious material.
- Fines (percentage passing 0.425mm sieve) shall have a plasticity index less than 5.

The percentage of material within the given fractions shall be as follows:

<u>Sieve Size</u>	<u>Percent</u>
19.0 - 4.75 mm	17 - 56%
9.5 - 2.36 mm	12 - 27%
2.36 - 0.600 mm	10 - 20%

35.7 CCC Stabilised AP20

<u>Sieve Size</u>	<u>Percent Passing</u>
19.0 mm	100
9.5 mm	55 - 80
4.75 mm	35 - 60
2.36 mm	25 - 45
1.18 mm	22 - 40
0.600 mm	18 - 35
0.300 mm	15 - 30
0.150 mm	12 - 23
0.075 mm	8 - 15

- 50% of the aggregate by weight of total quantity retained on a 4.75mm sieve shall have 2 or more broken faces.
- Aggregate shall be free of deleterious material.
- Fines (percentage passing 0.425mm sieve) shall have a plasticity index less than 5.

The percentage of material within the given fractions shall be as follows:

<u>Sieve Size</u>	<u>Percent</u>
9.5 - 2.36 mm	20 - 45%
2.36 - 0.600 mm	5 - 25%

35.8 CCC Embedment AP20

<u>Sieve Size</u>	<u>Percent Passing</u>
19.0 mm	100
9.5 mm	43 - 63
4.75 mm	20 - 40
2.36 mm	0 - 25
1.18 mm	0 - 15
0.600 mm	0 - 10
0.300 mm	0 - 5
0.150 mm	0

The grading shall produce an even curve.

- 50% of the aggregate by weight of total quantity retained on a 4.75mm sieve shall have 2 or more broken faces.
- Aggregate shall be free of deleterious material.
- Fines (percentage passing 0.425mm sieve) shall have a plasticity index less than 5.

35.9 CCC GC 22-16

<u>Sieve Size</u>	<u>Percent Passing</u>
26.5 mm	100
22.4 mm	95 - 100
16.0 mm	0 - 5
13.2 mm	0

- 50% of the aggregate by weight of total quantity retained on a 4.75mm sieve shall have 2 or more broken faces.
- Aggregate shall be free of deleterious material.
- AGD:ALD shall be less than 2.25.

35.10 CCC GC 14-10

<u>Sieve Size</u>	<u>Percent Passing</u>
19.0 mm	100
16.0 mm	95 - 100
9.5 mm	0 - 5

- 90% of the aggregate by weight shall have 2 or more broken faces.

35.11 Swale (2A) Sand

<u>Sorting</u> (d ₆₀ /d ₁₀)	<u>Mean grain size (d₅₀) mm</u>	
	Minimum	Maximum
1.0	0.13	0.59
2.0	0.15	0.75
3.0	0.20	1.15
5.0	0.58	2.40
17.0	5.40	5.40

- The sand shall be free of organic matter.
- d_x is the sieve size that x% of the sample, by weight, shall pass.

The two columns in the above table set out the axes for plotting the material envelope.

To determine the above sorting and mean grain size values of any material, first plot its sieve analysis. Then, to determine the d₁₀ value for example, read from the plotted sieve analysis the particle size (mm) equating to the 10% passing point on the curve.

35.12 Backfilling Sand

<u>Sieve Size</u>	<u>Percent Passing</u>
9.5 mm	100
0.075 mm	0 - 12

- The sand shall be free of organic matter.
- Fines (percentage passing 0.075mm sieve) shall be non-plastic.

35.13 Stiff Flowable Mix

<u>Material</u>	<u>Proportion</u>
CCC Stabilised AP20	1m ³ (loose)
Hydrated Lime	60kg
Cement	120kg
Water (total)	120 litres

- Site mixed material requires the Engineer's prior approval.

35.14 Firm Mix

<u>Material</u>	<u>Proportion</u>
CCC Stabilised AP20	1 m ³ (loose)
Hydrated Lime	60kg

- Site mixed material requires the Engineer's prior approval.

35.15 Lime Stabilised Backfill

<u>Material</u>	<u>Proportion</u>
CCC Stabilised AP40	1 m ³ (loose)
Hydrated Lime	40kg

- Site mixed material requires the Engineer's prior approval.

35.16 Filter Medium

<u>Sieve Size</u>	<u>Percent Passing</u>
26.5 mm	100
19.0 mm	90 - 100
9.5 mm	55 - 80
4.75 mm	40 - 60
2.36 mm	36 - 52
1.18 mm	26 - 42
0.600 mm	18 - 30
0.300 mm	8 - 18
0.150 mm	0 - 5

- 50% of the aggregate by weight of total quantity retained on a 4.75mm sieve shall have 2 or more broken faces.
- Aggregate shall be free of deleterious material.
- Fines (percentage passing 0.425mm sieve) shall have a plasticity index less than 5.

36 CCC ASPHALTIC CONCRETE GRADING

All asphaltic concrete shall be manufactured to the requirements of the current NZTA M/10 Specification and supplied by an asphalt plant certified to AS/NZS ISO 9001: 2000 "Quality management systems – Requirements".

36.1 CCC AC5

AC5 shall be manufactured to the gradings below.

<u>Sieve Size</u>	<u>Percent Passing</u>
6.7 mm	100
4.75 mm	90 - 100
2.36 mm	60 - 80
1.18 mm	40 – 60
0.600 mm	27 - 43
0.300 mm	18 – 32
0.150 mm	12 – 22
0.075 mm	6 – 12

- Bitumen shall be 80/100 penetration grade complying with the requirements of TNZ M/1.
- Air voids shall be between 2.5 and 3.5%.
- Sufficient bitumen shall be incorporated in the mix so that a minimum stability of 6.6kN is achieved. (Bitumen content will be generally about 7.0%).

36.2 CCC AC7

AC7 shall be manufactured to the gradings below.

<u>Sieve Size</u>	<u>Percent Passing</u>
6.7 mm	100
4.75 mm	75 - 90
2.36 mm	60 – 75
1.18 mm	40 – 60
0.600 mm	30 - 47
0.300 mm	20 – 35
0.150 mm	12 – 22
0.075 mm	6 – 12

- Bitumen shall be 80/100 penetration grade complying with the requirements of TNZ M/1.
- Sufficient bitumen shall be incorporated in the mix so that a minimum stability of 6.6kN is achieved. (Bitumen content will be generally about 7.0%).
- Air voids shall be between 3.0 and 3.5%.

37 CCC LAWN SEE MIXTURES

- All ryegrasses shall contain a live endophyte content of no less than 80%, have 98% purity and 90% germination unless otherwise specified.
- The Engineer shall approve all cultivars prior to sowing.
- The Contractor shall provide seed certificates to the Engineer confirming purity, germination and endophyte information if requested. These certificates shall be less than 12 months old.
- Proportions of mix shall be by weight.

37.1 *Amenity Area Mix*

Amenity area mix shall contain:

70%	Sports (dwarf) ryegrass (a mixture of up to 3 cultivars may be used)
25%	Chewings type red fescue
5%	Brown top

37.2 *Berm Mix*

Berm mix shall contain:

75%	Winter active ryegrass (a mixture of up to 3 cultivars may be used such as Collosseum, Arena and Tambour)
12%	Chewings type red fescue
12%	Creeping type red fescue
1%	Colonial bentgrass (Brown top)

37.3 *Pasture Mix*

Pasture mix shall contain:

70%	Pasture ryegrass with no endophyte
10%	Cocksfoot
10%	White clover
10%	Red clover

37.4 *Playing Field Mix*

Playing field mix shall contain:

100%	Sports turf ryegrass with 80% endophyte
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37.5 *Swale Mix*

Swale mix shall contain:

35%	Chewings type red fescue
35%	Red fescue
25%	Turf type rye grass (winter active)
5 %	Colonial bentgrass (Brown top)

37.6 *Infiltration Basin Mix*

Infiltration basin mix shall contain either:

100%	Couch seed (Cynodon dactylon)
OR 100%	Stolon couch (Cynodon dactylon)

38 TOPSOIL

38.1 *Imported First Class Topsoil*

Topsoil shall be sourced from an **original** ground surface layer that has been subject to minimal prior disturbance.

Topsoil shall exhibit the presence of biological activity as evidenced by adequate aggregation and organic matter content. The material shall be acceptable for growing all of the appropriate species, given adequate management, and shall not contain any substances injurious to plant growth.

Soil arising from re-claimed land, industrial sites, or land that has been used for the disposal of any industrial, domestic or agricultural wastes shall not be used.

38.1.1 Topsoil Characteristics

The topsoil shall contain less than 5% by dry weight of solid detritus and debris (brick, concrete, glass, metal, plastic, wood, rubber, tree roots). The stone content shall be less than 10% by dry weight. The topsoil shall not contain any object larger in dimension than 30 mm.

Soil shall be well aerated, as evidenced by an absence of mottling and grey/blue colours. There shall be no traces of a sewage-like smell.

The clay content shall not exceed 25% by dry weight. The soil shall have an organic matter content between 3.5% and 20% by dry weight. Topsoil containing recognisable remains of fresh plant or organic material is unacceptable.

Organic matter is defined as the remnants of fully decomposed material of biological (primarily plant) origin. Undecomposed or partly decomposed plant material visible to the naked eye is not classified as organic matter.

38.1.2 Topsoil Structure

The topsoil shall be loose and friable, breaking down by hand to aggregates of 1-10 mm in diameter.

Samples of such soils shall exhibit a stability ratio of more than 40% and a mean weight diameter of more than 0.50 mm under standard wet sieving conditions (as determined by NZSTI structural stability assessment test).

Soil with coarse aggregates, mainly 30-70 mm in diameter, or large clods, (greater than 50mm in diameter) with roots present only in cracks between clods and needing considerable force to break them apart, is unacceptable.

38.1.3 Soil Handling and Storage

Topsoil that has been handled in any way when its moisture content is above field capacity is unacceptable. Topsoil that has had its structure modified by milling, crushing or any comparable processing, is unacceptable. Topsoil

that has been rotary hoed more than twice since it was 'mined' is unacceptable.

Sieving, with the exception of through any mesh finer than 30mm, is acceptable only where screened topsoil is specified.

Topsoil may be stored in the open for up to 3 months provided stockpiles are less than 3m in height. Topsoil may be stored for longer periods if under cover and air-dry and with a stockpile height of less than 3m.

38.1.4 Nutrient Content and Soil pH

Topsoil shall have a soil pH of between 5.5 and 7.5.

Nutrient amendment may be required.

38.1.5 Testing

The Engineer may require test results to confirm the topsoil complies with this specification. Testing shall be carried out in an approved laboratory.

The basic soil nutrient test shall include pH, phosphorus, extractable cations, cation exchange capacity and total base saturation.

38.2 *Imported Second Class Topsoil*

Second class topsoil shall not contain any substances injurious to plant growth.

Soil arising from re-claimed land, industrial sites, or land that has been used for the disposal of any industrial, domestic or agricultural wastes shall not be used.

The Engineer may approve excavated material for use as second class topsoil.

38.2.1 Second Class Topsoil Characteristics

Second class topsoil shall contain less than 5% by dry weight of stones, solid detritus and debris (brick, concrete, glass, metal, plastic, wood, rubber, tree roots). Second class topsoil shall not contain any object larger in dimension than 30 mm.

The clay content shall not exceed 20% by dry weight. The soil shall have an organic matter content over 2.5% by dry weight. Second class topsoil containing recognisable remains of fresh plant or organic material is unacceptable.

Organic matter is defined as the remnants of fully decomposed material of biological (primarily plant) origin. Undecomposed or partly decomposed plant material visible to the naked eye is not classified as organic matter.

38.2.2 Soil pH

Second class topsoil shall have a soil pH of between 5.5 and 7.5.

38.2.3 Testing

The Engineer may require test results to confirm the second class topsoil complies with this specification. Testing shall be carried out in an approved laboratory.

38.3 *Measurement of Works and Basis of Payment*

Testing of topsoil shall be included in the rate for supply.

39 MULCH

39.1 *Recycled Mulch*

The purpose of recycled mulch is to suppress the growth of weeds and to conserve soil moisture content.

Particles shall be screened woody waste material and shall not include fine particles which would act as a medium for the germination of weed seeds.

Fine particles would also break down quickly requiring re-mulching after a relatively short period of time.

Particle size for bark mulch grades shall be determined using a sieve test conducted by an approved lab to the method specified in NZS 4407.

Recycled mulch shall consist of the following grades:

- Normal grade, where at least 80% of the mulch shall be particles between 5mm and 30mm in diameter. No more than 10% of the mulch shall be particles less than 5mm in diameter. No more than 10% of the mulch shall be particles greater than 30mm in diameter.
- Coarse grade, where at least 80% of the mulch shall be particles between 20mm and 50mm in diameter. No more than 10% of the mulch shall be particles less than 20mm in diameter. No more than 10% of the mulch shall be particles greater than 50mm in diameter.

39.2 *'Bark' Mulch*

'Bark' mulch is primarily derived from bark. Bark mulch shall not have more than 25% wood chips. The inorganic component of bark mulch shall not exceed 1.0%.

Particle size for bark mulch grades shall be determined using a sieve test conducted by an approved lab to the method specified in NZS 4407 "Methods of sampling and testing road aggregates".

'Bark' mulch shall consist of two grades:

- Normal grade, where at least 80% is between 5mm and 30mm in diameter. No more than 10% of the mulch shall be particles less than 2mm in

diameter. No more than 10% of the mulch shall be particles greater than 20mm in diameter.

- Coarse grade, where at least 80% is between 10mm and 40mm in diameter. No more than 10% of the mulch shall be particles less than 10mm in diameter. No more than 10% of the mulch shall be particles greater than 40mm in diameter.

Premium grades shall have less than 5% wood chip and shall be subject to approval by the Engineer.

40 SOIL CONDITIONERS OR COMPOST

40.1 Soil Conditioner

All soil conditioners shall be pasteurised composted soil conditioners complying with the requirements of NZS 4454 “Composts, soil conditioners and mulches”.

40.2 Compost

All composts shall be pasteurised composted composts complying with the requirements of NZS 4454 “Composts, soil conditioners and mulches”.

41 STRUCTURAL SOIL

This two-part engineered soil blend is designed to provide a free draining, stable base for hard surfaces such as driveways, footpaths, cycle lanes, kerbs, and other urban applications. It also creates an environment that allows root growth beneath these surfaces.

Structural soil shall consist of an aggregate and soil mix which is to be approved by the Engineer. Slow release fertiliser, to the manufacturer’s recommendations, shall be incorporated. The Engineer shall inspect all site mixed material prior to placement.

Particle size testing shall be carried out in accordance with the relevant test procedure in NZS 4407 “Methods of sampling and testing road aggregates”.

41.1 Structural Aggregate

- Structural aggregate shall have at least 80% of particles between 40mm and 60mm in diameter. There are to be no fines and free of clay and unwanted materials.
- 75% of the aggregate by weight shall have 2 or more broken faces.

41.2 Soil Mix

The soil mix shall be unscreened first class topsoil or as directed by the Engineer.

42 ANNUAL BEDDING MIX

Annual bedding mix shall contain:

- 15% sand
- 10% compost.
- 75% first class topsoil

The compost shall be manufactured in compliance with NZS 4454 “Composts, soil conditioners and mulches”.

To each cubic metre add 1.5kg dolomite lime. If the mix will be planted within one month, add 4kg/m³ of 9 month controlled release fertiliser.

43 TREE PIT MIX

Tree Pit Mix has three purposes-

- To provide support for the tree so that it remains in a stable upright position.
- To provide water holding, particularly in the first year or two while the tree's roots become established.
- To provide nutrients for the tree's growth.

Tree pit mixes consist of two grades-

- Normal grade, where 70% by volume of the mix is first class topsoil and 30% is compost.
- Premium grade, where 60% by volume of the mix is first class topsoil, 20% is compost and 20% is coarse coir.

pH shall be adjusted so that it is between 5.5 and 7.5 and 4kg/m³ of 12 month controlled release fertiliser shall be incorporated.

The compost shall be manufactured in compliance with NZS 4454 “Composts, soil conditioners and mulches”.

44 BATCHED CONCRETE

Where any concrete is used in construction, it shall be concrete from an approved concrete batching plant complying to NZS 3104 “Specification for concrete production” and batched to the specifications stated in the contract documents.

Bagged concrete will not be accepted on any work site.

Remote, small scale work such as non-structural post holes should have the concrete batched and transported to site or mixed in a controlled environment on site to NZS 3104 Specification for concrete production.

APPENDIX 1 COMPLIANCE REQUIREMENTS CHECKSHEET – GENERAL

ITEM	CSS REF	TASK	TEST STD/ DESCRIPTION	COMPLIANCE REQUIREMENTS	TEST FREQ.	PASS YES/NO	TEST BY	ACTIONS
1		CONTRACTURAL						
	H&S Act	H&S	Inspect	Measures in place				
	Pt 1 5.1	QA and CQP	Inspect	Measures in place				
	Pt 1 5.2	Personnel	Inspect	Qualifications comply				
	Pt 1 5.6	Construction records	Inspect	Records available for audit				
2		NOTICE BOARDS						
	Pt 1 7.0	Notice board layout	Inspect	1200mm x 900mm, correct details				
	Pt 1 7.0	Notice board installation	Inspect	Erected 2 weeks before work commences, lit and visible, not obstructing				
3		SITE MANAGEMENT						
	Pt 1 13.0	Noise	Inspect	Measures in place to control				
	Pt 1 6.0	TMP	Inspect	Measures in place				
	Pt 1 9.0	Existing services	Inspect	Service plans obtained				
	Pt 1 10.0	Notifiable works – confined spaces	Inspect	Complies with CCC guidelines, entry permit held, close approach obtained, OSH notified				
	Pt 1 11.0	Toilet	Inspect	Available on site				
	Pt 1 12.0	Hours of work	Inspect	Programmed works comply with restrictions				

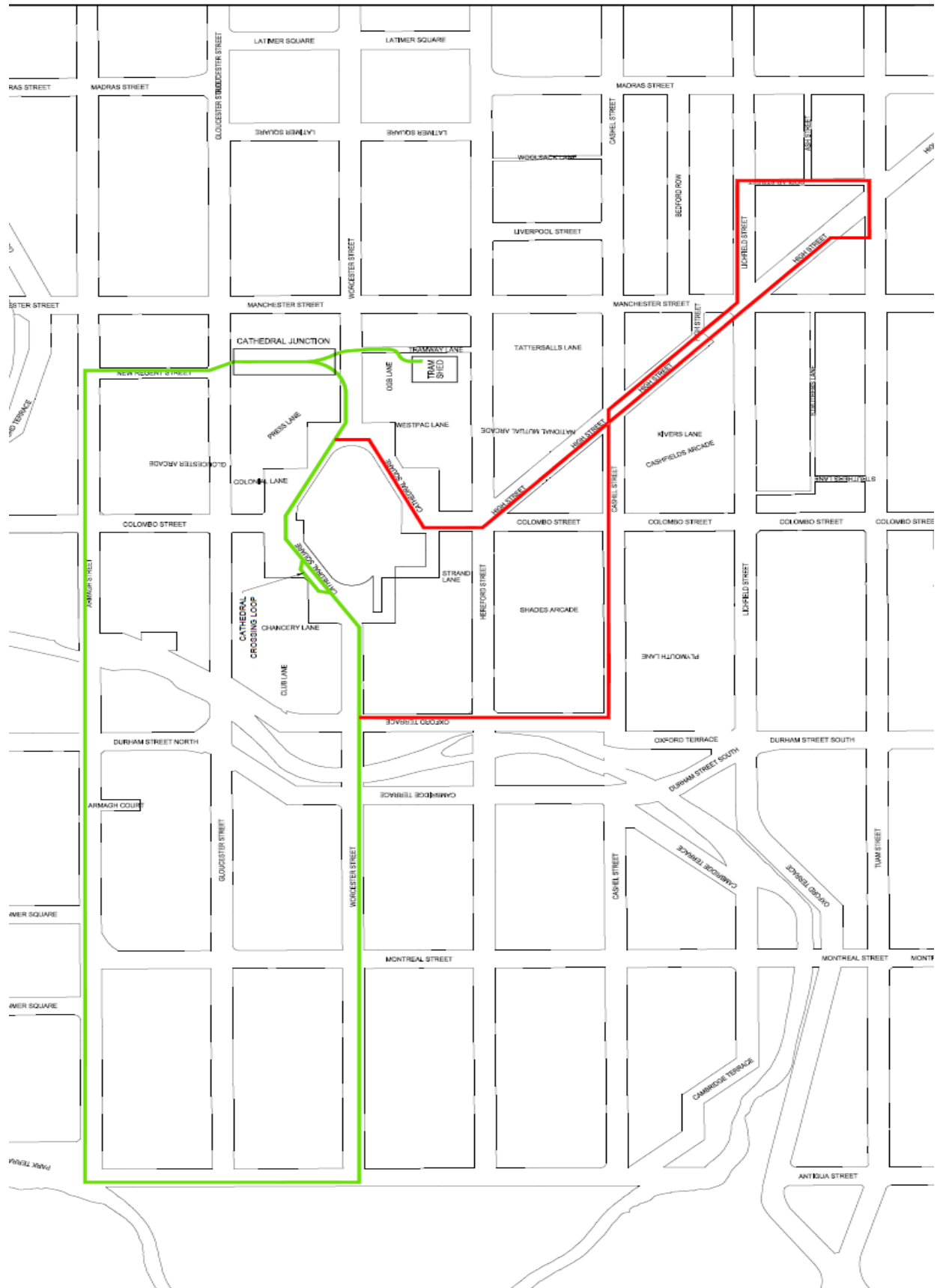
ITEM	CSS REF	TASK	TEST STD/ DESCRIPTION	COMPLIANCE REQUIREMENTS	TEST FREQ.	PASS YES/NO	TEST BY	ACTIONS
	Pt 1 14.0	Stockpiles	Inspect	Covered by TMP and approved by engineer				
	Pt 1 21.0	Audit inspections	Inspect	Adequate notice to carry out				
4		PRIVATE PROPERTY						
	Pt 1 15.1	Agreements	Inspect	Written agreement prior to work				
	Pt 1 15.1	Notification	Inspect	Written notice given 14 days before work				
	Pt 1 15.4	Clearance	Inspect	Written clearance received				
5		POTABLE WATER CONTAMINATION						
	Pt 1 16.0	Potable water contamination	Inspect	Positive pressure maintained through damaged pipe				
	Pt 1 16.1	Standpipes	Inspect	Approved standpipes used				
6		ENVIRONMENTAL MANAGEMENT						
	Pt 1 17.1	Asbestos	Inspect	Certified person				
	Pt 1 17.2	Wastewater diversion and spills	Inspect	Spill kit on site				
	Pt 1 17.4	Archaeological sites	Inspect	Accidental discovery protocol on site				
	Pt 1 17.4	HAIL sites	Inspect	Inbound and outbound material complies				

ITEM	CSS REF	TASK	TEST STD/ DESCRIPTION	COMPLIANCE REQUIREMENTS	TEST FREQ.	PASS YES/NO	TEST BY	ACTIONS
	Pt 1 17.4.1	Coal Tar	Inspect	Methodology accepted, as built records taken				
7		EROSION SEDIMENT AND DUST CONTROL						
	Pt 1 18.1	Dust	Inspect	Measures in place to control				
	Pt 1 18.2	Land drainage water contamination	Inspect	Site complies with General Authorisation or specific resource consent				
	Pt 1 18.2	Water control	Inspect	All contaminants intercepted and controlled				
8		PROTECTION OF NATURAL ASSETS & HABITATS						
	Pt 1 19.1	Existing features	Inspect	Features to be preserved marked				
	Pt 1 19.3	Tree and vegetation protection	Inspect	Complies with resource consent				
	Pt 19.4	Existing trees	Inspect	Fence installed outside drip line prior. No trees removed unless identified				
	Pt 1 19.4.1	Tree roots	Inspect	Protective measures taken, hand or trenchless excavation near tree				
9		ACCESS						
	Pt 1 22.0	Access and temporary bridging	Inspect	Access provided				
	Pt 1 22.0	Notification	Inspect	Contact made > 3 days prior				
	Pt 1 24.0	Taxi stands	Inspect	Relocated prior				

ITEM	CSS REF	TASK	TEST STD/ DESCRIPTION	COMPLIANCE REQUIREMENTS	TEST FREQ.	PASS YES/NO	TEST BY	ACTIONS
10		BUS INFRASTRUCTURE						
	Pt 1 25.0	Bus stops	Inspect	Relocated prior to TMP				
	Pt 1 25.0	Bus detours	Inspect	Priority given, to TMP				
	Pt 1 25.0	Bus lanes	Inspect	Kept clear, to TMP				
11		SURFACE BOXES						
	Pt 1 26.1	Access to fire hydrants & sluice valves	Inspect	Fire hydrants accessible Sluice valves offset marked or accessible				
	Pt 1 26.2	Fire hydrant & sluice valve adjustment	CSS part 4	Complies with specification				
	Pt 1 26.3	Fire hydrant & sluice valve roadmarking	CSS part 4	Complies with specification				
	Pt 1 26.4	Manhole adjustment	CSS part 3	Complies with specification				
	Pt 1 26.5	Adjustment of other service boxes	Inspect	Complies with operator's specification				
12		TRAFFIC SIGNAL LOOPS						
	Pt 1 27.1	Traffic signal loops	Inspect	Permission to disturb received				
	Pt 1 27.2	Loop reinstatement fee	Inspect	Fee paid before permission requested				
	Pt 1 27.3	Loop reinstatement timing	Inspect	Loop able to be reinstated within 3 days				

ITEM	CSS REF	TASK	TEST STD/ DESCRIPTION	COMPLIANCE REQUIREMENTS	TEST FREQ.	PASS YES/NO	TEST BY	ACTIONS
13		EXCAVATION, BACKFILLING AND RESTORATION						
	Pt 1 28.0	Excavation in legal road	WAP	Complies with WAP and National Code of Access to Transport Corridors				
	Pt 1 29.1	Backfilling in legal road	WAP	Excavations shall be sealed within 5 days				
	Pt 1 29.2	Trafficked area backfill	NZS 4402.4.1.1	Compacted to 2150kg/m ³				
	Pt 1 29.3	Pedestrian area backfill	NZS 4402.4.1.1	Compacted to 2150kg/m ³				
	Pt 1 29.4	Landscape area backfill	NZS 4402.4.1.1	Compacted to 70% MDD				
	Pt 1 29.5	QA	Inspect	Records kept and available				
	Pt 1 29.5.1	Compaction tests	Measure	Test results on layers available				
	Pt 1 30.0	Restoration and final surfacing - berms	Inspect	Complies with requirements in CSS Part 2 and 7				
	Pt 1 30.0	Restoration and final surfacing – plant beds	Inspect	Complies with requirements in CSS Part 2 and 7				
	Pt 1 30.0	Restoration and final surfacing - paths	Inspect	Complies with requirements in CSS Part 6				
	Pt 1 30.0	Restoration and final surfacing - road	Inspect	Complies with requirements in CSS Part 6				
	Pt 1 30.1	Restoration in legal road	WAP	Complies with requirements of WAP, sawcutting, resurfacing widths				
	Pt 1 30.2	Lengths of open trench	Measure	10m when offsite				

ITEM	CSS REF	TASK	TEST STD/ DESCRIPTION	COMPLIANCE REQUIREMENTS	TEST FREQ.	PASS YES/NO	TEST BY	ACTIONS
	Pt 3 6.4.1	Lengths of open trench - drainage	Measure	Lesser of one manhole length or 50m				
	Pt 4 9.1	Lengths of open trench - water	Measure	<50m in commercial area or <100m elsewhere				
14		WATER AND WASTE PERMIT TO WORK						
	Pt 1 31.0	Permit to work	Inspect	Obtained prior to work				

TRAMWAY ROUTE

**(Form 32)****CHRISTCHURCH TRAMWAY LIMITED**

Phone: 03 366 7830 Fax: 03 366 6943

APPLICATION TO WORK NEAR TRAM TRACKS

Permit Number :	
Name of Contractor :	
Address of Contractor or Contractor's Agent:	
Phone Number:	Fax Number:
Mobile Number:	Contact Tel NR:
Detail of work to be carried out:	
Period required:	Period required:
From: / /AM/PM	To: / /AM/PM
Street /Location where work is to be carried out:	

A copy of the Application Form, signed by both parties, must be submitted to the Christchurch City Council along with the Traffic Management Plan for Approval prior to any work commencing.

IF WORK TO BE CARRIED OUT IS CLOSER THAN 2.2M FROM THE CENTRE OF THE TRACK EXTRA CONDITIONS WILL APPLY:	
SIGNATURE FOR CONTRACTOR CARRYING OUT WORK:	
PRINT NAME OF RESPONSIBLE PERSON ON SITE:	
WORK TO BE CARRIED OUT IS APPROVED WITH THE ABOVE CONDITIONS	
SIGNATURE- CHRISTCHURCH TRAMWAYS LTD:	SIGNATURE - CCC TRANSPORT & GREEN SPACE ASSET PROTECTION ENGINEER:
PRINT NAME:	PRINT NAME:
DATE:	DATE:



HERITAGE NEW ZEALAND
POUHERE TAONGA

Heritage New Zealand Pouhere Taonga Archaeological Discovery Protocol

In the event that an unidentified archaeological site is located during works, the following applies:

1. Work shall cease immediately at that place and within 20m around the site.
2. The contractor must shut down all machinery, secure the area, and advise the Site Manager.
3. The Site Manager shall secure the site and notify the Heritage New Zealand Regional Archaeologist. Further assessment by an archaeologist may be required.
4. If the site is of Maori origin, the Site Manager shall notify the Heritage New Zealand Regional Archaeologist and the appropriate iwi groups or kaitiaki representative of the discovery and ensure site access to enable appropriate cultural procedures and tikanga to be undertaken, as long as all statutory requirements under legislation are met (*Heritage New Zealand Pouhere Taonga Act, Protected Objects Act*).
5. If human remains (koiwi tangata) are uncovered the Site Manager shall advise the Heritage New Zealand Regional Archaeologist, NZ Police and the appropriate iwi groups or kaitiaki representative and the above process under 4 shall apply. Remains are not to be moved until such time as iwi and Heritage New Zealand have responded.
6. Works affecting the archaeological site and any human remains (koiwi tangata) shall not resume until Heritage New Zealand gives written approval for work to continue. Further assessment by an archaeologist may be required.
7. Where iwi so request, any information recorded as the result of the find such as a description of location and content, is to be provided for their records.
8. Heritage New Zealand will determine if an archaeological authority under the *Heritage New Zealand Pouhere Taonga Act 2014* is required for works to continue.

It is an offence under S87 of the *Heritage New Zealand Pouhere Taonga Act 2014* to modify or destroy an archaeological site without an authority from Heritage New Zealand irrespective of whether the works are permitted or a consent has been issued under the Resource Management Act.

Heritage New Zealand Southern Office contact number 03 3631880.