PART 2: GENERAL REQUIREMENTS

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2.1 REFERENCED DOCUMENTS

The reference documents outlined in Part 1: Introduction were utilized in the development of this Part, along with the following documents for additional input.

Planning and Policy

- Heritage New Zealand Pouhere Taonga Act 2014
- Health and Safety at Work Act (2015)
- Wildlife Act 1953

Where a conflict exists between any Standard and the specific requirements outlined in the Infrastructure Design Standard (IDS), the IDS takes precedence (unless deemed otherwise at the discretion of the Timaru District Council).

2.1.1 Source documents

This part of the Timaru District Infrastructure Design Standard (IDS) is based on Part 2 of the CCC Infrastructure Design Standard (CCCIDS), by agreement and with the consent of Christchurch City Council.

This Part of the IDS is based on Part 1 of NZS 4404:2004, by agreement, and with the consent of Standards New Zealand.

2.2 INTRODUCTION

The IDS serves as <u>a basis of compliance</u> for projects carried out by the Council as part of its capital works programme, as well as the subdivision and development of land.

This Part of the IDS includes both those components of the design process common to all developments or not restricted to one asset type and those components particular to the subdivision of land.

The provisions of the IDS must be read subject to the provisions of the *Timaru District Plan* (*TDP*) and to any applicable statutes, regulations, and bylaws.

2.3 RELATIONSHIP WITH ACTS OF PARLIAMENT

2.3.1 Resource Management Act

The *Resource Management Act 1991* (*RMA*) is the principal statute under which the use and subdivision of land is controlled.

The *TDP* is a resource management instrument tasked with the purpose of achieving the promotion of sustainable management of natural and physical resources, which is the overarching purpose of the *RMA*.

The IDS serves as a technical compliance manual and, although outside the *TDP*, its provisions are referred to and given effect through conditions of resource consent and through capital works' project briefs.

2.3.2 Building Act

The *Building Act* provides a national focus for building control to ensure that buildings are safe and sanitary and have suitable means of escape from fire. The *Building Regulations* made under the Act provide the mandatory requirements for building control in the form of the *New Zealand Building Code*¹. The *Building Code* contains the objective, functional requirements and performance criteria that building works must achieve.

Where infrastructural development associated with capital works and the subdivision or development of land involves the creation of structures with associated site works, you must observe the requirements of the *Building Act*. Nothing in the IDS shall detract from the requirements of the *Building Act* or the *Building Code*.

¹ <u>New Zealand Building Code</u>

2.3.3 Local Government Act

The mechanism for requiring contributions under the Local Government Act, through land or cash, is set out in the Timaru District *Long Term Plan 2021-2031*².

2.4 DETERMINING REQUIREMENTS FOR CONSENTS

The design and construction of utilities carried out as part of a land development or subdivision is controlled by the subdivision and the building consent processes.

The Building Act Part 1 Section 8 includes within its definition of a building, "a mechanical, electrical or other system" but only if the system is attached to a temporary or permanent movable or immovable structure and "the system is required by the building code... or if installed, is required to comply with the building code." The provision of water, stormwater and sewer reticulation within private land, e.g. an access lot or new access, therefore requires consent under the Building Act. Evidence of compliance is provided by obtaining a building consent, carrying out the works in accordance with that consent and the issue of a code compliance certificate by the Council.

https://www.timaru.govt.nz/services/building/overview/additional-consent-info/formsand-checklists

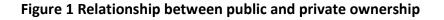
https://www.timaru.govt.nz/ data/assets/pdf file/0010/334576/Building-IS-122-Guidance-Notes-Essential-Features-of-a-Producer-Statement.pdf

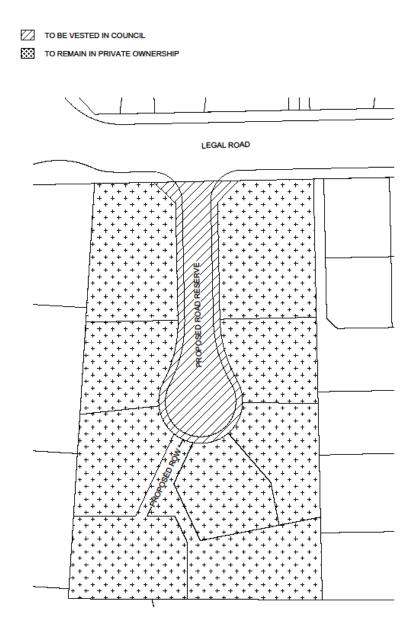
The Council will accept the IDS as an alternative design solution under a Building Consent but only for reticulation which is not covered by an acceptable solution in the *Building Code*. This enables the IDS to be used to design both private and public systems, removing inconsistencies in standards between these ownership types.

Systems owned or operated by a network operator (e.g. the Council) that are external to a building and are connected to, or intended to be connected to, the building to provide for the successful functioning of the network utility operator's (NUO) system in accordance with the system's intended design and purpose are not included in the definition of a building and therefore are exempt from the provisions of the *Building Act*. Authorisation to carry out this work is provided through the conditions of a subdivision consent. Evidence of this compliance is provided through certification in accordance with Part 3: Quality Assurance.

² Timaru Long Term Plan 2021-2031

Figure 1 indicates those parts of a subdivision that remain in private ownership and therefore would be covered by a building consent, and those covered by the subdivision consent and therefore the requirements of the IDS. This diagram applies equally to infill, unit title, greenfield and brownfield development.





As shown, reticulation of any size installed in private land will remain private, with the exception to that covered by an easement in gross in favour of the Council. The only exception to the requirement for private reticulation to be installed under a building

consent is for a lateral laid from a main 600mm into a lot. The portion which is private i.e. the 600mm over the legal boundary and within the lot, does not require installation under a building consent.

2.5 EXPANDING ON DISTRICT PLAN REQUIREMENTS

2.5.1 Fees

The Council Fees and Charges³ includes an application fee for Subdivision Consent applications. This fee is a deposit with the true and actual cost calculated of processing time spent by Council staff, then invoiced upon issuance of the consent decision. The balance of the full cost of processing the application is payable before the release of the Section 224(c) certificate.

2.5.2 Pre-application meeting

Developers and designers of "greenfield" subdivisions that will result in substantial infrastructural assets being vested to the Council, or smaller complex subdivisions on the hills, are strongly advised to request a pre-application meeting at which issues and options can be discussed with the Council.

You should submit a concept plan before this pre-application meeting.

Council staff including District Planning Consents Team Leader, Infrastructure Planner, and representatives from the Drainage and Water and Land Transport Unit should be present at any pre-application meeting.

2.5.3 Future development

Where further development upstream of, or adjacent to the area under consideration is provided for in the *TDP*, the Council may require infrastructure or additional capacity to be constructed to the upper limits of the development.

You must make allowance for these requirements where specified by the Council in the consent conditions or project brief.

2.5.4 Balancing landform choices

Working with and balancing of natural landforms is key creation of a good design and helps prevent the introduction of adverse effects on the surrounding land.

³ TDC Fees and Charges

The final choice of landform for a development is dependent on factors specific to the site, such as:

- relationship with surrounding landscapes.
- natural drainage patterns.
- size of the development.
- proposed and existing roading patterns.
- preservation of natural features.
- enhancement of natural features where compromised by fragmentation or reduction due to the proposed development.
- stability of the land.
- function and purpose of the development.
- potential for flooding, erosion, and other natural events.

The order of importance of these factors will vary from project to project.

The final choice of landform must represent the most desirable compromise between the development requirements, the preservation of natural features including the existing soil profile, and the natural quality of the landscape. Also refer to clause 4.6.1 – Suitability of landform (Geotechnical Requirements).

2.5.5 Environmental considerations

Planning advice and scoping of potential environmental impacts should be completed during the investigative stage of projects. This ensures that the site and its surroundings are fully understood prior to the commencement of design.

The Council has environmental policies designed to protect and enhance the district's natural environment. It also encourages parties to retain and enhance the natural environment in tandem with development works. When carrying out a design, you should evaluate its overall impact on the environment for both the construction and operational phases, in a manner consistent with legislation, *National Policy Statements, Regional Plans* and the *TDP*.

An archaeological site is any place in New Zealand that was associated with human activity occurring before 1900 and which may provide evidence relating to the history of New Zealand. Any work on any part of these sites will require an archaeological authority from Pouhere Taonga - Heritage New Zealand and possibly a resource consent to alter an historic item.

Wherever possible, one should avoid environmentally significant areas. Some examples of these areas include:

- stands of native vegetation, bushland (Significant Natural Areas, QE2 Land, etc.),
- habitats of threatened native species including lizard and bat habitats,

- waterways and floodways.
- wetlands, swamps, estuaries, sand dunes, foreshore areas.
- community drinking water supply zones
- archaeological sites, heritage item precincts and cultural sites.
- Department of Conservation scenic reserves and protected species.
- ecologically significant sites or habitats including protected trees.
- Maori relics and significant indigenous sites.
- *Hazardous Activity and Industries List* (HAIL) sites including parks, cemeteries, landfill sites and contaminated land.
- areas of aggressive ground conditions, e.g. acid sulphate soils and aggressive ground waters.

The Wildlife Act 1953 protects most native species. The Department of Conservation can issue permits to translocate or destroy species protected under the Wildlife Act, e.g. native bat populations in the Geraldine Downs,, however mitigation and compensatory conditions may apply. It is preferable to avoid impacts on protected species.

The National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil to Protect Human Health ensures land that is potentially affected by contaminated soil is identified and assessed before work commences. Small scale works on confirmed sites may be permitted, but others require a resource consent administered by Timaru District Council.

When it is not possible to avoid environmentally sensitive areas, address the following environmental issues in the design strategy and construction methodology and through an Environmental Management Plan (EMP) which complies with clause 3.8.2. Environmental management issues:

- The environmental impact of the construction;
- Protection of trees and ecologically significant vegetation;
- Protection of waterways and site restoration;
- The use of low impact methods and design solutions such as trenchless technology, rain gardens, eco-sourced native plants, wetlands and other mitigation methods;
- The impact of construction equipment on the site and surrounding area;
- Mitigation of key environmental risks including erosion, sediment and dust control, spills, wastewater overflows, dewatering and excavation and disposal of material from contaminated sites.

Ensure that the appropriate authorisations are obtained from The Timaru District Council, Canterbury Regional Council – Environment Canterbury, Pouhere Taonga Heritage New Zealand, and the Department of Conservation and that the work is carried out in accordance with the Council's requirements.

2.5.6 Road name signs

When the development contains new roads, private ways or access lots that require signage, the developer will pay a fee to Council for the manufacture and erection of any new nameplates and posts. Any roundabout chevron signage is additional to this signage and must be organised and paid for by the developer. The developer is responsible for moving existing signage, where the new work affects its placement.

2.5.7 Coastal hazards

Council's flood modelling incorporates the 100-year projection of 1.2m sea level rise in the mapping of Coastal High Hazard (Erosion and Inundation) Areas. Information on design floor levels is available at https://timaru.isoplan.co.nz/eplan/.

Consider the impact of climate change on coastal areas and the upstream effect on groundwater levels and flooding when developing land or infrastructure.

The *TDP* does not directly address climate change and its effects on coastal inundation and erosion. Supporting information on coastal hazards, including the *Timaru District Coastal Hazard Assessment*⁴ is available on the Council's webpage. Further explanation and clarification of the interpretation of this information is available from Council.

2.6 URBAN DESIGN AND THE INFRASTRUCTURE DESIGN STANDARD

A useful definition of urban design is:

'The art of **making places for people**. Urban design is concerned with the **way places work** as well as how they **look**. It concerns the **connections** between people and places, **movement** and **urban form**, **open space** and **buildings**, and the **process** of creating successful neighbourhoods, towns, and cities.

Urban design is important in creating **sustainable** developments that support **economic** life and **social** integration.'

This definition highlights the importance urban design has in creating successful places where people want to live, work and play. Urban design skills and principles are commonly used to coordinate various parts of a development to ensure each design decision is complementary to the next, over a range of scales.

⁴ <u>Timaru District Coastal Hazard Assessment</u>

Many of the standards in the IDS could simply be 'ticked off' in a piecemeal way but developers are encouraged to think more holistically and to understand how their development fits into the 'big picture'.

New developments should reinforce the broader strategic objectives for the Timaru District. These strategies and plans aim to incrementally shape the future growth of the Timaru District in a sustainable way (including environmentally, socially and economically). The success of these strategies is largely dependent on how well individual developments contribute to the bigger picture. The strategies include:

- <u>Timaru Growth Management Strategy</u>,
- <u>City Hub Strategy</u>,
- Active Transport Strategy,
- 2018-2048 Stormwater Strategy

The Council also recognises that some places have their own character, which may require a different approach to infrastructure design. For some of these special areas the Council will or has prepared place-based plans and may require new developments in these areas to conform to these plans. Check whether the development falls within one of these areas.

Development Area Plans will be produced soon for new growth areas within the district. Currently we have Outline development plans for Gleniti Residential 6 Zone, Washdyke Industrial Expansion Zone, and Broughs Gully Development Area. The existing development areas and associated rules are available on the Proposed District Plan ePlan⁵.

The Council has a few non-regulatory guidelines on urban design best practice. These are targeted particularly at public space, such as streets and parks that will be vested to the Council. However, the configuration of public space has a direct influence on what can be achieved within private areas, including the mix of land uses, different residential densities, lot layout and built form. Non-regulatory guidelines include:

- Roading also has policies on:
 - Sealed Road Surfacing Policy
 - Street and Amenity Lighting Policy
 - Urban Street Trees Policy
 - Vehicle Crossings Policy

The Council encourages designers and developers to seek further guidance, particularly when considering the relationship between the public and private areas. The Council

⁵ <u>Timaru District Proposed District Plan ePlan</u>

recommends that developers commission professional consultants to carry out the site design or to peer review respective proposals.

2.7 REQUIREMENTS FOR DESIGN AND CONSTRUCTION

2.7.1 Investigation and design

All investigation, calculations, design, supervision, and certification of the works, as outlined in the IDS, must be carried out by or under the control of persons who:

- are experienced in the respective fields;
- hold appropriate membership in the respective professional bodies;
- have appropriate professional indemnity insurance.

The provisions of the IDS do not reduce the responsibility of those professionals to exercise their judgement and devise appropriate solutions for the circumstances of each development or project.

For projects that will affect strategic transportation routes, consult with Council's Land Transport Unit regarding the construction methodology and temporary traffic management needs.

2.7.2 Construction

All works carried out in any development must be done by persons who:

- have the appropriate experience in the relevant areas;
- have the appropriate equipment;
- are approved for that type of work e.g. authorised drain layers, authorised water supply installers, Site Traffic Management Supervisors. Refer to Timaru District Council's Infrastructure Approved Contractor List⁶ for details.

2.7.3 Quality assurance

All quality aspects of the investigation, design and construction must comply with Part 3: Quality Assurance. If any or all the certificates or other documents referred to in Part 3: Quality Assurance are not supplied, the Council may refuse to accept the work and refuse to issue a certification for the work pursuant to Section 224(c) of the RMA.

⁶ <u>TDC Infrastructure Approved Contractor List</u>

2.8 SURVEY REQUIREMENTS

2.8.1 Level datum

Design and as-built information must be supplied in New Zealand Transverse Mercator 2000 (NZTM2000) projection and Lyttelton (1937) vertical datum.

All plans are required to state the datum used. All levels are to be stated in height above Mean Sea Level (in metres).

For Drainage requirements refer to Stormwater (Part 5) Section 5.4.2.

2.8.2 Benchmarks

Timaru District Council Construction Standard Specifications⁷

These standard specifications set out the technical requirements for the construction of Infrastructure (Roading and Drainage and Water) Assets undertaken both on behalf of Timaru District Council or that are intended to be taken over or maintained by Timaru District Council.

Construction of assets which are outside the scope of the current specifications (including legacy specifications) will require specific approval from the Timaru District Council. If the relevant specification is not listed, please contact Timaru District Council.

2.9 DRAWINGS

Engineering drawings must be legible, clear, readable, and complete. They must clearly illustrate the proposal and enable both assessment of compliance with the IDS and accurate construction. Produce drawings on A3 series format. Follow the draughting requirements attached in Appendix I - Standard Draughting Layout and Format Requirements.

Engineering drawings generally include the following:

- A locality diagram giving the overall layout and location of the works;
- Detailed drawings, longitudinal sections, cross sections and diagrams of the proposed developments and/or works;
- Special details where the standard drawings are not sufficient;
- Benchmarks at a maximum spacing of 650m;

⁷ <u>TDC Construction Standard Specifications</u>

- A north point, preferably pointing above the horizontal (i.e. in the top 180 degrees);
- Standard sheet notes;
- Set out information;
- A service legend, where services are shown on the drawing;
- A planting key or clearly labelled planting, where it is shown on the drawing.

If the project is large, provide a separate landscape drawing. On smaller projects, landscaping details may be shown on the engineering drawings. In both cases, show landscape planting areas on the roading construction drawings, by shading or hatching.

2.9.1 Content of drawings

Show the following information on the drawings:

- The extent of the works showing existing and proposed roads, and the relationship of the works with adjacent works, services and/or property, including adjacent property levels;
- Proposed and existing property boundaries and street numbers;
- Significant existing vegetation to be removed and any special or protected trees, and any areas of heritage significance that may be affected by the works;
- The extent of earthworks, including earthworks on proposed reserves, existing and proposed contours, areas of cut and fill, batter slopes, proposed stockpiles, subsoil drainage, erosion and sediment control measures both temporary and permanent;
- Details and location of existing and proposed stormwater primary and secondary flowpaths;
- The design of proposed roads (and their connections with existing roads), including plans, longitudinal and cross sections, horizontal and vertical geometry and levels, typical cross sections, details of proposed pavement and surfacings, kerbing, berms, footpaths, cycleways, tree planting, road marking and signage and all other proposed street furniture;
- Details and location of existing water, wastewater and stormwater mains and service connections, valves, hydrants, manholes, sumps, bends, tees, thrust blocks, meters and backflow devices;
- The horizontal and vertical alignment and location, including invert levels, physical grades, lengths, sizes, materials, types, minimum cover, cut to invert, position relative to other services of all proposed water, wastewater and stormwater mains and service connections, valves, hydrants, manholes, sumps, bends, tees, thrust blocks, meters and backflow devices, and services that may be reconnected or plugged;
- Details and location of mechanically restrained portions of pipelines, pipeline bridges, pumping stations, reservoirs, intake and outlet structures, headwalls,

swales, basins, ponds and the location of surface obstructions, hazards, or other features that may be affected by the works;

- In respect of water mains chlorination points, pressure reducing valves with upstream and downstream design pressures;
- The street lighting layout showing the location and type of each light, proposed and existing significant road features (e.g. kerbs, property boundaries, planting and traffic management features) and property addresses;
- Details and location of existing and proposed telecommunications, electricity and gas supply, including proposed underground and above-ground junction boxes, transformers and similar equipment;
- The bedding and backfill depths, design compactions and trench restoration details for all underground services;
- Details of proposed landscaping of roads and allotments, and details of proposed reserve development including earthworks, landscaping features, landscaping structures, tree planting, irrigation, hard and soft surface treatment, park furniture and playground equipment. Include details of ongoing maintenance requirements, where appropriate.

This information may be expanded in the upcoming relevant chapters.

2.9.2 Form of drawings

Provide all drawings in electronic form and as a .pdf - details are included in Section 12.4 As-Built Records. Prepare electronic drawings in Arc GIS shapefiles (.shp), Digital Exchange Files (.dxf), Microstation (.dgn), 12Da or AutoCAD format.

All drawings must be legible at A3 size. Street lighting drawings can be either 1:500 or 1:1000 scale.

2.10 ACCEPTANCE OF DESIGN

This clause applies to works carried out under subdivision consent.

Include stage boundaries on all plans that are submitted for engineering acceptance where the project is being constructed incrementally.

2.10.1 Documents to be submitted for engineering acceptance

The Council will require a design report to be submitted. Clause 3.3.2 – Design report (Quality Assurance) sets out in detail what is required in a design report.

Submit the design records, incorporating drawings, calculations, specifications, material specifications where not detailed elsewhere, graphical representations and calculations of infrastructure where requested, with the design report. This information should enable the process to be followed easily and should allow for replication of the results.

Include the geotechnical engineer's report on the suitability of the land for subdivision and/or development, including any site investigations.

Each separate Part of the IDS sets out those aspects particular to that Part which must be covered by the design or design report, where relevant.

2.10.2 Cost benefit or life cycle costing

Where required by the Council, one must carry out a cost benefit or life cycle costing of a proposal. This will typically be for larger, unique projects where new network or a significant shift from standard practice is proposed.

Life cycle costing may be used to consider options within a proposal or for a proposal as a whole. In undertaking life cycle costing, consider the initial costs borne by the developer or the Council and the maintenance and replacement costs borne by the future owners and/or the Council. Maintain a reasonable balance between these shortterm and long-term costs, which can be assessed by suitably qualified asset management professionals.

2.10.3 Engineering acceptance

When the Council is satisfied that both the design and design report meet the requirements of the IDS, the Council shall notify the designer that the design and Design Report has been accepted and stamp the plans as accepted. For this acceptance, the Council may require amendments to any quality plans, engineering drawings, specifications and/or other documentation and further reports submitted.

2.11 ACCEPTANCE FOR CONSTRUCTION

Work must not commence on the proposed site unless and until:

- A resource consent for the work has been issued, except when no such consent is required;
- The Council has given engineering acceptance for works carried out under a subdivision consent;
- The Contractor has received stamped accepted plans:
- Where required, the Council has accepted the Contract Quality Plan and Engineer's Review Certificate as detailed in clause 3.3.3 Contract Quality Plan (Quality Assurance);
- Any other consent required has been granted e.g. NZ Railways Corporation, Department of Conservation, landowner.

2.11.1 Notification of hold or witness points

Hold or witness points form part of the Contract Quality Plan required for each development. The developer or contractor must notify the Council at all 'hold' or 'witness' points and such other times as the Council may determine, for Council's information and to enable audits or witnessing to be carried out. Hold points may include but are not limited to:

- Pre-Earthworks, Erosion and Sediment Control Inspection
- Compaction Testing of each pavement layer
- Deflection Testing of basecourse
- Concrete Testing of kerb and corbel concrete
- Pressure Testing of installed water supply reticulation
- Sterilization Certification of installed water supply reticulation
- Microbiological Test Results for water supply reticulation
- Hydrostatic Testing for sewer and stormwater mains and manholes

You must give the Council at least one working days' notice and adequate access for audits or tests. Audits will be carried out within one working day of notification if possible. The Council will inform the developer of any problems encountered with these audits so they can be addressed at an early stage.

2.11.2 Testing

Any work required to be tested by the contractor or developer in the presence of the Council must be pre-tested and proved satisfactory before test witnessing by the Council is requested.

2.12 COMPLETION OF LAND DEVELOPMENT WORKS

2.12.1 Defects liability

The defects liability period for all works must be 12 months from the issue of Council's Practical Completion Certificate or Provisional Acceptance of Assets to Vest at the section 224(c) Certification stage of a subdivision. You must maintain the works until they are formally taken over by the Council or to a date specified in a bond for completion of uncompleted works. The developer must also remedy defective works, as defined in NZS 3910, over this period.

You must establish and maintain landscaping, over this period or until the landscape establishment bond is released. Establishment includes achieving vegetation coverage to stabilize disturbed surfaces.

2.12.2 Completion documentation

You must upon completion of all developments, provide completion documentation in accordance with Part 3: Quality Assurance. Additionally, you must provide evidence that reticulation and plant to be taken over by network utility operators has been installed to their standards and will be taken over, operated, and maintained by the network utility operator concerned.

Required completion documentation includes, as a minimum:

- completion certificates as per Part 3: Quality Assurance appendices;
- the geotechnical reports, certificates and as-built records required by Part 4: Geotechnical Requirements;
- an up-to-date Environment Canterbury compliance monitoring report which indicates no significant or major non-compliance;
- Evidence of a complying post construction safety audit for works on or becoming legal road.
- completion documentation required by Part 10: Lighting;
- as-built records of all infrastructure, where required by the subdivision consent or contract, showing the information required by each Part;
- as-built data, where required by the subdivision consent or contract, for all infrastructure taken over by the Council, in RAMM format;
- project and contract records , e.g. inspection and test plans, non-conformance reports;
- other documentation required by the Council including, but not limited to, operation and maintenance manuals and warranties for stormwater treatment facilities and new facilities involving electrical or mechanical plant; asset valuations for all infrastructure to be taken over by the Council;

When all the conditions of approval that are imposed on a resource consent for subdivision have been met, the Council will issue a Section 224(c) Compliance Certificate to that effect.

2.12.3 Approval of uncompleted work

Where in the opinion of the Council it is appropriate, the Council may approve uncompleted work, subject to satisfactory bonds being arranged. This arrangement must be made and agreed on prior to an application for Engineering Clearance or section 224(c) certification under the *RMA*.

2.13 BONDS

A bond template is available in Appendix IV – Bond Form or from Engineering Forms⁸ on the TDC Website.

2.13.1 Uncompleted works bonds

Bonds to cover minor uncompleted works, especially where a subdivision or development has been substantially completed, are recognised as an acceptable procedure, and will be permitted at the discretion of the Council. Council may consider bonding the establishment of planting, lawns and associated works as uncompleted works.

Bonds must be secured by an appropriate guarantee or otherwise must be in cash and lodged with the Council. Where necessary bonds must be executed and registered on the associated record of title.

The amount of the bond shall be the estimated value of the uncompleted work plus a margin to cover additional costs estimated to be incurred by the Council in the event of default.

A bond can be in relation to a specific condition of resource consent which shall be organized and agreed to with the District Planning Unit. If in relation to a specific engineering design component, an agreement can be entered into with the Council's Infrastructure Group.

⁸ TDC Engineering Forms

Appendix I. STANDARD DRAUGHTING LAYOUT AND FORMAT REQUIREMENTS

Provide electronic drawings to a minimum standard that complies with the AS/NZS 1100.501:2002⁹ – Technical Drawing: Structural engineering drawing, including completing the follow:

1 Drawing base data (existing topography)

Draw existing features in a lighter line thickness e.g. 0.18mm or 0.25mm. Draw standard draughting symbols un-shaded for existing features e.g. □.

2 Drawing proposed work

Draw proposed work in a heavier line thickness e.g. 0.35mm and thicker. Use the same line type, to enable clear differentiation between existing features and proposed work. Draw standard draughting symbols filled in for proposed features e.g. ■.

3 Labelling

Draw text at the suggested minimum heights in Table 1.

Table 1 Minimum text heights

Titles and drawing numbers	5mm
Subtitles, headings, view and section	3.5mm
designations	
General notes, material lists,	2.5mm
dimensions	
Road name	7mm
Side road	5mm
Existing property levels	1.8mm
Buildings	3.5mm

Notes: This table is derived from AS/NZS 1100.101: 1992 Table 4.1.

Differentiate between existing features and proposed features by using different formatting:

- lower case or upper case;
- normal format or bold format;
- 0.25mm pen weight or 0.5mm pen weight.

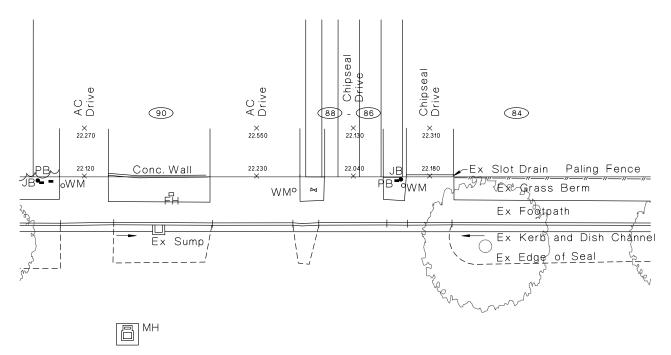
⁹ <u>AS/NZS 1100.501:2002</u>

Use the abbreviations in Table 2.

Table 2 Feature abbreviations

Asphaltic concrete	AC
Edge of seal	EOS
Tangent point	ТР
Curve Tangent point	СТР

Figure 2 Labelling existing street features (1:200 scale)



Ensure notes do not go through other notes and that leaders do not cross.

Place road names above the north road boundary but not through section boundary lines. Show spot levels on the legal boundary and at least 3.0m inside the abutting private property.

Use standard symbols for trees, lights, service covers and boxes. Typical symbols are shown in the example drawings in section 14 of this appendix. Draw symbols to true scale. Typical abbreviations are shown in Tables 2, 3, 4 and 7.

4 Underground services

Use the line types, colours and RGB values set out in Figure 5. Label all high voltage cables and all fibre optic cables or indicate with a slightly heavier line weight.

Figure 3 Service legend

SERVICES LEGEND		COLOUR	RGB
SEWER (Gravity)		Red	255,0,0
SEWER (Pressure)	P P P	Red	255,0,0
WATER		Green	0,176,80
STORMWATER		Blue	50,150,2 55
POWER		Orange	255,128, 0
TELECOM		Purple	128,0,25 5
GAS	<u> </u>	Yellow	194,194, 0

Label all utility structures or boxes. Label water meters (these include the backflow preventers installed as part of the connection on each side).

Table 3 Service abbreviations

Water meter	WM
Fire hydrant	FH
Power box (above-ground)	РВ
Power pole	PP
Sluice valve	SV
Gate valve	GV
Pressure reducing valve	PRV
Backflow preventer	BFP

Note: Label telecommunications boxes, manholes and pillars to suit the development.

5 Drainage

Label all stormwater and sewer pipes with pipe size and flow direction, using similar terminology to that used by the manufacturer to code or classify the pipe e.g. label a 225 diameter stormwater pipe as Ø225 RCRR Class X stormwater or DN225 PVC-U stormwater. Show all laterals.

For major pipes 750mm and above, show the outside width of the pipe and manholes, as the manhole lid may not be on the pipe centreline. Show the actual shape of special manholes.

Label all sumps and manholes with the structure identifier e.g. MH with a unique letter and sump abbreviation with a unique number. Structures that are not affected by the work do not require a unique letter or number. Start at one end of the project and number or letter continuously through. Where an existing sump is being modified, draw the proposed sump over it. Label any structures that are being altered in height.

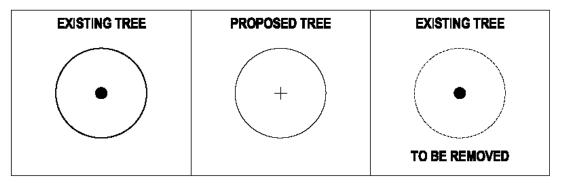
Single Sump	SS
Double Sump	DS
Splay Pit	SP
House Drain Sump	HDS
Hillside Sump	HS
Corner Sump	CS
Manhole	MH
Inspection Chamber	IC
Rodding Eye	RE
Flush Tank	FT
Flush Manhole	FM
Air Gap Separator	AGS
Sewer Pole Vent	PV

Table 4 Drainage structure abbreviations

6 Landscape

Show existing trees, including those to be removed and retained, as well as proposed trees, using the symbols in Figure 5. Label any heritage or protected tree(s). Distinguish existing vegetation from proposed vegetation. Show the full canopy of existing trees that will be retained.

Figure 4 Landscape draughting symbols



Cross reference all other related drawings, including irrigation or lighting. Show underground services and street light locations on planting drawings.

All planting drawings must have a plant list. The plant list must include the botanical name, common name, container size and/or height of plant at time of planting and the quantity. The plant list can also include any abbreviations used, planting centres (plant spacing) as detailed in Figure 6 and any special maintenance requirements to retain the initial concept i.e. hedge heights, park furniture treatments. Where there is a separate plant list for trees only, cross reference any other plant lists/drawings.

Figure 5 Typical plant list

ABBREV.	BOTANICAL NAME	COMMON NAME	SIZE	CTRS	QTY.
Aca.mic	Acaena microphylla	scarlet bidi bidi	Pb5	600mm	
Ane.les	Anemanthele lessoniana	wind grass	Pb5	600mm	
Car tes	Carex testacea	sedge	Pb5		
Cor aus	Cordyline australis		Pb18	n/a	8
lso nod	Isolepis nodosa	knobby clubrush	Rx90	600mm	
Jun pal	Juncus pallidus	rush	Rx90	600mm	5
Rho spp	Rhododendron spp	rhododendron cv	Pb40	n/a	1
Rho C	Rhododendron 'Cockatoo'	rhododendron cv	Pb5	n/a	
Ros FCA	Rosa 'Flower Carpet Appleblossom'	groundcover rose	Pb5		

Note: 1) The abbreviation column is optional.

7 Road lighting

Draw road lighting as specified in Waka Kotahi NZTA *Specification and Guidelines for Road Lighting Design.*

8 Title blocks

The title block must include the following information:

- A project title, including street address;
- A unique number or identifier, preferably the consent or project number;
- The designer's name, signature and contact details;

- The draughtsperson's name;
- The drawing checker's name;
- The design reviewer's name and signature;
- The stage of work e.g. for acceptance, accepted engineering drawings, construction, as-built;
- The date of preparation and of acceptance;
- The scale or scales used;
- A graphic scale;
- The datum and origin;
- The original sheet size;
- A drawing title e.g. Long-section;
- Sheet numbers, including the number in the set;
- An amendment box, including brief description of amendment and sign off by designer.

The scale for drawings is generally 1:200 but other accepted engineering scales may be used to suit the level of details on the drawings. Scales progress in multiples of 10 e.g. 1:1, 1:2, 1:5.

9 Long-sections

Draw horizontal scales generally to match the plan. Vertical scales may be 1:20 or 1:50, to improve clarity.

Show concrete surround on the pipe long-section. Label structures and vertical curves. Use thicker line weights for proposed work.

10 Cross-sections

Label levels with identifiers e.g. K12.400. Use thicker line weights for proposed work. Provide a minimum of one fully detailed typical cross-section per sheet.

Show construction depth outlines for roads, paths, grass berms and landscape planting. Label legal boundaries vertically.

11 Road marking drawing

Use the following line types when detailing roadmarking.

Figure 6 Roadmarking line types

Road Marking Linetypes				
Linestyle:		Used for:	Dimensions	
		Continuous Lines such as Flush Medians, Edge Lines etc	Continous	
		Centre Lines	3m line, 7m gap	
		Continuity Lines	1m line, 3m gap	
		No Stopping Lines less than 10m	1m line, 1m gap	
		No Stopping Lines longer than 10m	1m line, 2m gap	
		Dashed Line (Used parallel to Cycle Lanes)	1m line, 5m gap	

The road marking drawing must show:

- The existing markings to be removed (i.e. sandblasted);
- The new road markings to be installed;
- How the proposed markings mate into the existing markings at the project's extents.

Show roadmarking on a drawing base that is essentially 'as-built' in terms of features such as kerbs and paths. Indicate the type of marker, generally by using the standard symbols and descriptions in Tables 6 and 7.

Table 5 Marker symbols and descriptions

Text Des	cription for drawings	Symbol
<u>RPM</u>	Reflective Pavement Markers	
	WHITE MONO RPM	0
	RED MONO RPM	
	WHITE BI DIRECTION RPM	Ф
	WHITE/YELLOW BI DIRECTION RPM	•
	YELLOW BI DIRECTION RPM	•
<u>KTM</u>	Kerb Top Markers	
	КТМ	•

Note: Specify numbers, spacing's and colours for reflective pavement markers and kerb top markers.

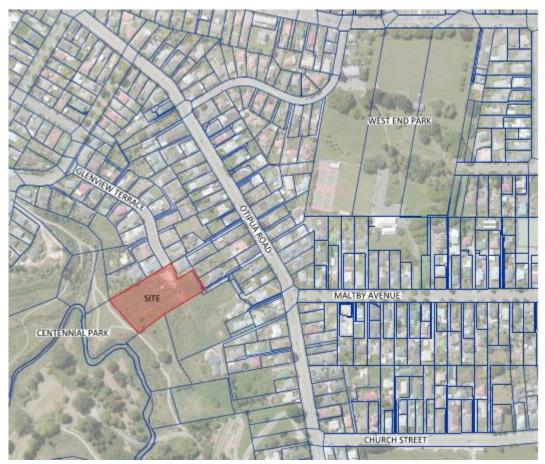
Table 6 Sign types and descriptions

Sign	Text Description for drawings
BRIDGE END MARKERS (always used in pairs)	BEM
HAZARD MARKER	НМ

12 Locality diagram

Show the road boundaries and street names. Show the limit of the development. Draw the locality diagram true to the map orientation or at the same orientation as the engineering drawing.

Figure 7 Locality diagram



Part 2: GENERAL REQUIREMENTS

13 Examples and drawings

Examples of standard drawings follow.

Part 2: GENERAL REQUIREMENTS

Figure 9 Plan View

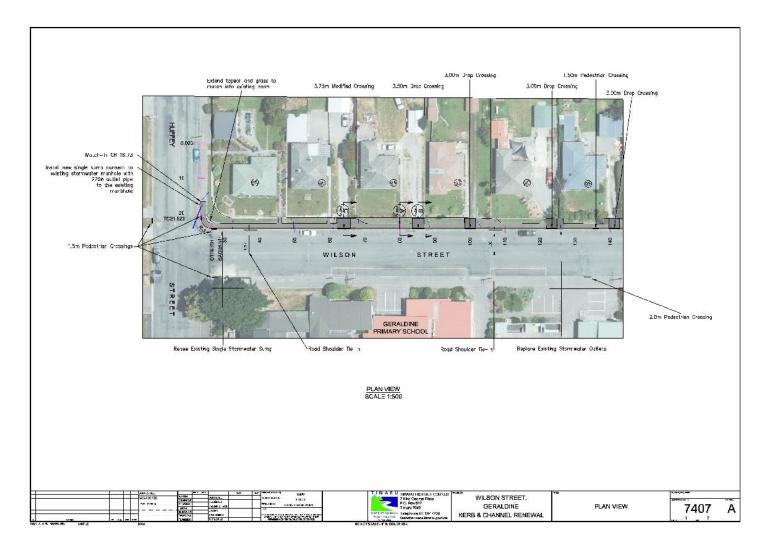
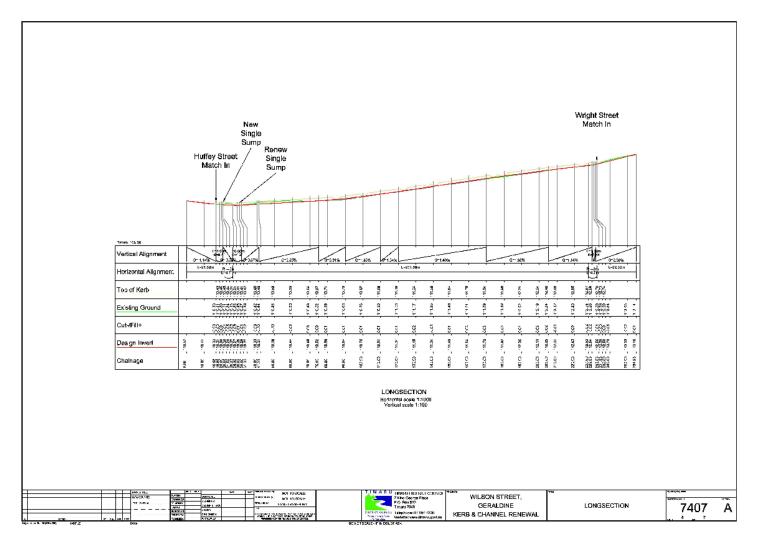


Figure 10 Long-section



Part 2: GENERAL REQUIREMENTS

Figure 11 Services Plan

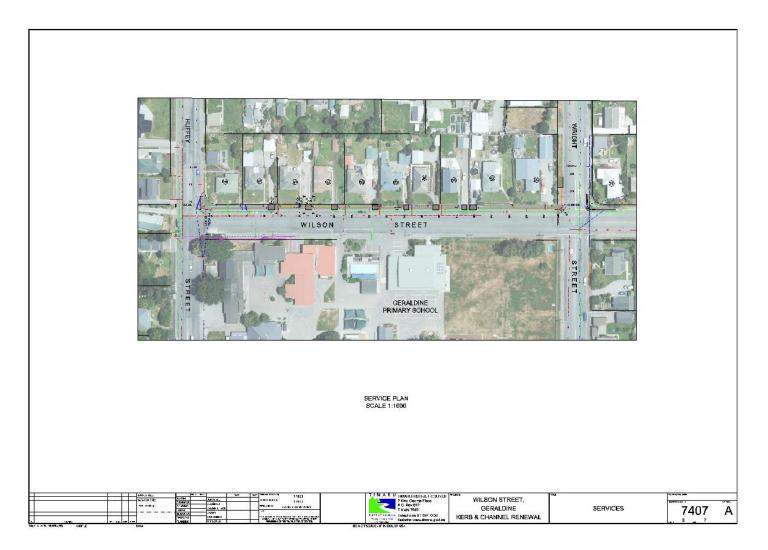


Figure 12 Vehicle Crossing Detail

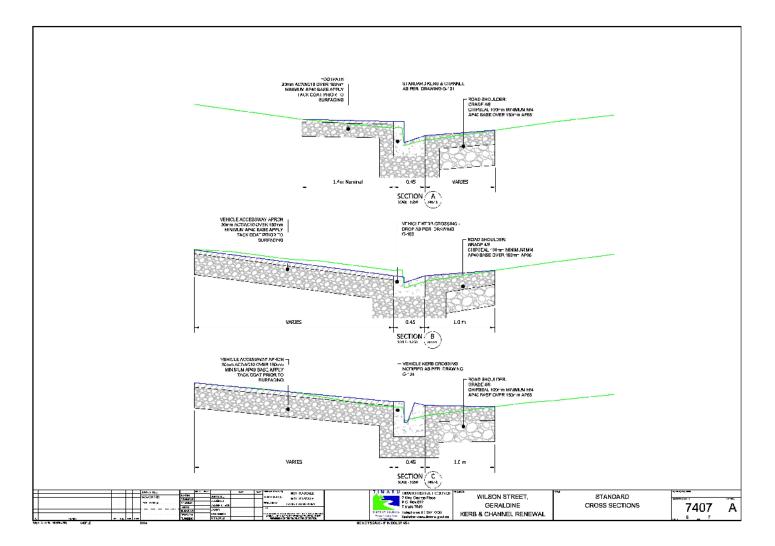


Figure 13 Example Symbol Key

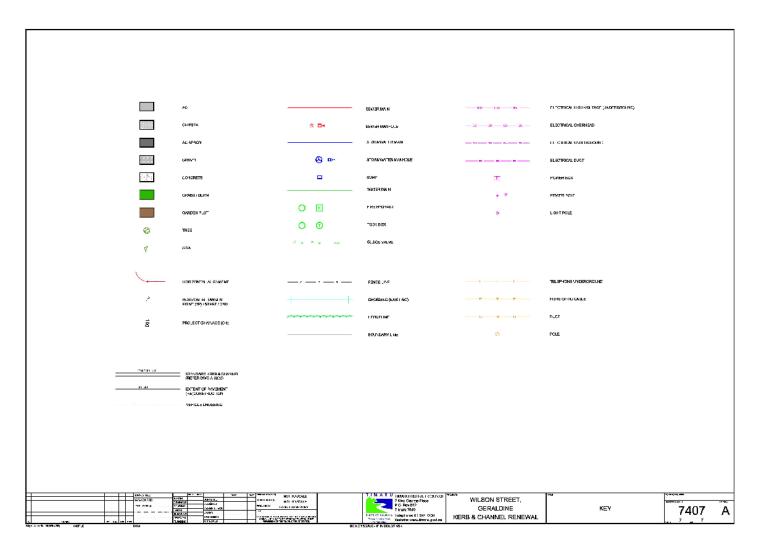


Figure 14 Earthworks Plan



Part 2: GENERAL REQUIREMENTS

Figure 15 Cross-sections

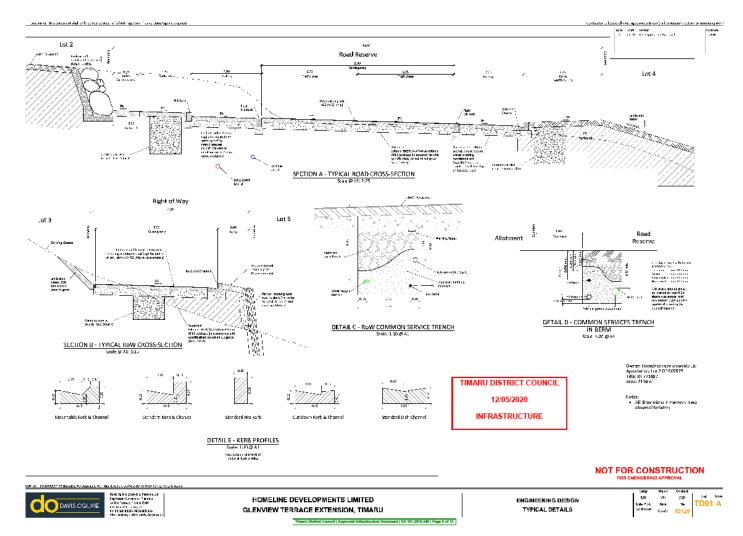


Figure 86 Drainage Layout Drawing

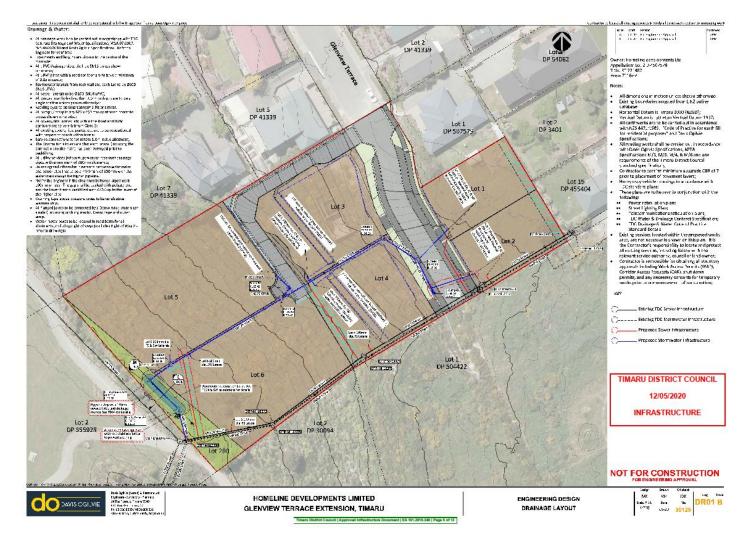
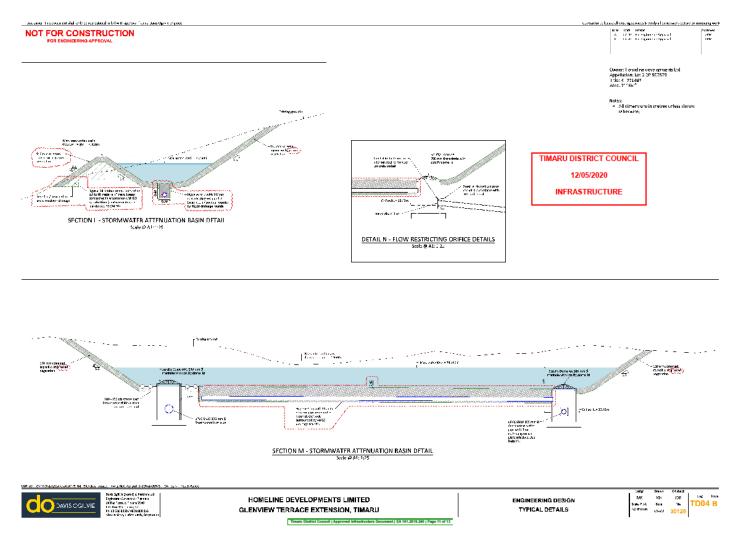


Figure 96 Special drainage details



Appendix II. DRAUGHTING CHECKLIST

DRAWING – (LAYOUT)	
Street names and waterways correctly spelt and orientated with correct text size.	
Running distances are shown at top of drawing - at right angles to drawing.	
Join lines (if any) are shown and labelled.	
North point (should be correctly orientated i.e. not pointing down), service legend and standard notes (bottom right hand corner of sheet) shown. Drawing to be labelled with scale.	
Leader arrows from notes should not cross one another.	
Existing notes and proposed notes do not overlap one another, or the boundary and section lines.	
Title block filled out correctly, including sheet numbers.	
Any amendment to drawing to be indexed in amendments box as a letter (not number) with small description and date.	
Any details or sections to be labelled correctly.	
Related drawings cross referenced.	
Locality diagram labelled and orientated correctly.	
Proposed notes are standard in wording. Benchmark referenced.	
DRAWING – (EXISTING FEATURES)	
Existing kerb and channel correctly labelled.	
All existing manholes, sumps, fences, grass berms, footpaths, driveways and landscape features are labelled.	
Boundaries shown – existing and proposed, including easements.	
Property levels or contours are shown over development, at boundary and 3m outside development.	
All buildings to be hatched and labelled (e.g. DAIRY).	

House numbers shown at correct orientation.	
All existing drainage pipes are correctly labelled with flow direction shown.	
All existing utilities are correctly labelled.	
Existing vegetation, including that to be removed, is clearly shown, in both canopy size a position.	and
DRAWING – (PROPOSED FEATURES)	
Proposed kerb and channel correctly labelled.	
Proposed kerb and flat channel has fender line shown.	
All radii on proposed kerb and channel shown.	
TP's, CTP's on proposed kerb face have 'tick' shown.	
Proposed cutdowns are shown and labelled (particularly at intersections and adjacent t pedestrian islands). Does not apply to standard driveways.	.o
Proposed property/spot levels and contours	
All proposed paths/paving/other hard surfaces are shaded and labelled correctly.	
Correct Peg box attached.	
Manholes being altered or installed have an allocated letter.	
Extent of filling, finished levels shown.	
If landscape planting is shown on drawing there must be a landscape planting key.	
If there is a separate landscape planting drawing, planting to be patterned and labelled roading drawing; cross referenced to the landscape planting drawing.	on
LANDSCAPE DRAWING (additional to layout)	
Proposed features/structures labelled, including furniture/bins/signs/fountains/fencing	ц. 🗌
Proposed playground equipment/softfall areas/sports fields/recreational hard surfaces labelled.	

Proposed vegetation/plant symbols clearly labelled and/or listed in plant list.	
Plant list has correctly spelled botanical names, common names, sizes and quantities.	
LONG SECTION (additional to layout)	
Proposed kerbs, crowns, edge of seals to be labelled. No existing kerbs, edges of seal, are shown (when required, small sections may be shown for clarity).	
Pipe size, class, protection shown, vented manholes labelled.	
Longitudinal section to have title below section.	
Sump numbers/MH letters correspond to the drawing.	
Running distances from easily located point on engineering drawing.	
All required grades shown and labelled.	
Existing and proposed levels shown, including cuts and fills.	
Property boundaries, road intersections, crossing services shown.	
Datum shown to 3 decimal places.	
ROAD MARKING DRAWING (additional to layout)	
RPM'S and KTM's use the symbols and are correctly labelled.	
Correct line types are used for 100 mm WHITE, NO STOPPING, CONTINUITY etc.	
Correct line weights used for 'ex lines to be removed'; 'ex lines to remain' and 'proposed markings'.	
CROSS SECTIONS (additional to layout)	
Every cross section sheet to have at least one typical cross section showing construction in full and labelled correctly with standard notes.	
The word chainage should not appear. Cross sections labelled with chainage value only (ie 20.00 m) to be centred under cross section.	
Proposed kerb and fender, quarter points, crown, interpath channel, and invert of swales to have levels shown.	

Sump numbers/MH letters correspond to the drawing.	
Proposed stormwater pipes, sumps and any services which could be disturbed to be shown	· 🗆
North, south or west and east boundaries to be labelled as such.	
Proposed trees and other plantings are shown in relation to underground services, paths ar carriageways.	nd
Datum text to be positioned at left hand side of cross section on datum line.	

DESIGN CHECK BY: DATE:

Appendix III.BENCHMARK CERTIFICATE

ISSUED BY:
(Surveying firm or suitably qualified surveyor)
ТО:
(Owner/Developer)
TO BE SUPPLIED TO:
(Territorial authority)
IN RESPECT OF:
(Description of benchmark)
AT:
(Address)
On behalf of
(Surveying firm)) (Surveyor)
A Licensed Cadastral / Registered Professional surveyor (delete one) hereby certify that
the benchmark shown on finder diagramas been installed in accordance with the requirements of the Infrastructure Design Standard and current
good survey practice, using
The surveying firm issuing this statement holds a current policy of professional
indemnity insurance of no less than \$
(Minimum amount of insurance shall be commensurate with the current amounts recommended by IPENZ, ACENZ, TNZ, INGENIUM.)
Date:
 (Surveying firm)
(Address)

Appendix IV.BOND FORM

TIMARU	Application to establish an	Resource Consent No.
DISTRICT COUNCIL	Engineering Bond	
Te Kaunihera ā-Rohe o Te Tihi o Maru	Sections 108(2)(b), 108a, 109 and 222(1) of the Resource Management Act 1991	
Annlicant's details		

Applicant's details:

(first name)	(middle name)	(surname)
(hist name)	(made name)	(summe)
(company name / trust name)		
(street address)		
(postal address if different from above)		
(phone number)		(fax number)
(e-mail address)		

Note : A trust will not be accepted as an applicant; if the trust wishes to apply for consent, it must be an application by the trustees and the application should state that they are applying as trustees. In the case of an unregistered company, please provide the name of a natural person. In the case of a registered company, the director's name and signature are required.

Agent's details: (will receive correspondence on behalf of the applicant)

(name of applicant's professional advisor / firm name)	
(contact person)	
(postal address , must be within New Zealand)	
(phone number)	(fax number)
(e-mail address)	
Site details:	
(street address)	
(legal description)	

Payment method:			
Direct debit	YES / NO	Bank bond	YES / NO
Conditions to be bonded:			
(condition numbers)			
(brief description of conditions to	be bonded)		
Reason for bonding:			
(reason)			
(expected date of completion, ma	x 24 months from granting of the bond agre	ement)	

Note: Timaru District Council reserves the right to not allow for the establishment of a bond.

Fees:

An administration fee of \$350.00 to process this bond must be paid to the Timaru District Council at lodgement of this application. Please note that additional costs may be incurred where appropriate.

Amount of bond:

A minimum of 50% contingency over and above the value of the uncompleted work to cover additional costs that may be incurred by the Timaru District Council in the event of default is required.

Note: The applicant is not required to pay the total amount of the bond at this stage but will be required to do so prior to Timaru District Council endorsement of the bond agreement.

Required information:

I/we (the applicant/s) understand that this application must include the following items: (please tick)

- Two quotes from independent Timaru District Council approved contractors on their company letterhead.
- A copy of the Timaru District Council accepted Private Way Design / Engineering Plans. (if required as a condition of resource consent)
- A copy of the Timaru District Council Service Approval for the works. (should approval be required)

Acceptance of responsibility:

I/we (the applicant/s) understand that when entering into a bond agreement with the Timaru District Council I/we agree to all the following: (please tick)

- Incomplete application forms will not be processed.
- The applicant agrees to carry out the bonded works to the satisfaction of the Timaru District Council within the stipulated time frame, regardless of ownership of the affected property, and agrees to inform future or prospective owners of the nature of any bonded works.
- ☐ The applicant agrees to supply the Timaru District Council with right of entry to complete the works from all future owners of the property, until such a time as the terms of this agreement have been met.
- ☐ The applicant may be liable for all costs incurred by Timaru District Council and its agents as a result of processing and administering this bond. This sum may be deducted from the bonded amount if deemed necessary by the Timaru District Council.
- The bond agreement (if approved) is not transferable.

Declaration:

I/we (the applicant/s) request the Timaru District Council accept a bond pursuant to Section 348(2)(b) of the Local Government Act 1974.

Applicant/s:

(signature/s)

.....

.....

(date)

See overleaf for further information on the Completion Certificate / Bond Agreement process.

General information on Engineering Bond Agreements:

The typical process for establishing a Bond is as follows:

- The applicant/s applies for a Bond Agreement using this form.
- Providing all required information is provided, the Timaru District Council will prepare the Bond Agreement and determine the value of the bond.
- Two copies of the Bond Agreement will be sent to the applicant for signing.
- Once signed, both copies are to be returned to the Timaru District Council for signing, payment of the bond is usually made at this time and is required prior to the Timaru District Council signing the Bond Agreement.
- Once signed by the Timaru District Council and provided payment of the bond is made, one of the copies of the Bond Agreement will be returned to the applicant/s and one will be kept on the resource consent file.

Typical Terms and Conditions of a Bond Agreement are as follows:

- 1. Interest will not be paid on the bond deposited with the Timaru District Council.
- 2. If the applicant completes all the work set on in the First Schedule (*this schedule details the works to be bonded*) to the satisfaction of the Timaru District Council within twenty four months of the date of the establishment of the Bond, the Bond shall be refunded to the consent holder in full upon request.
- 3. If the consent holder fails to carry out the works set on in the First Schedule to the satisfaction of the Timaru District Council within twenty four months of the date of the completion certificate, the Timaru District Council may apply the bond towards the completion of the works, or such portion of those works that require completion. Any surplus after completion by the Timaru District Council shall be refunded by the Timaru District Council to the applicant upon request.
- 4. The Timaru District Council's rights under this Bond Agreement will not be affected or prejudiced by any delay, neglect or forbearance on the Timaru District Council's part, in exercising any of those rights.
- 5. Where the bond is not sufficient to fully pay all the Timaru District Council's actual costs under this agreement, then the difference between the actual costs and the bond shall be a debt owing by the applicant, and the applicant is hereby bound to pay those additional costs.

Note: These terms and conditions are subject to change.

The typical process for obtaining a refund of the bond is as follows:

- The applicant/s applies for the refund of the Bond using the enclosed form (additional copies of this form are available from the Timaru District Council).
- Providing all outstanding works have been completed, the Timaru District Council will prepare the refund and a credit for the bonded amount will be sent the applicant/s.