

SPECIFICATION FOR
SERVICE MAINTENANCE OPERATIONS
AND
NEW SERVICE INSTALLATIONS
WITHIN ROAD RESERVE

(Including Trench Excavation and Reinstatement)

PART A : STANDARD CONDITIONS

APRIL 1996



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1 SCOPE

This Specification for Service Maintenance Operations and New Service Installations within Road Reserve (hereafter referred to as the "Specification"), covers the planning, management and execution of any maintenance or repair work of existing services or any new installations, both underground and aboveground including roadside service structures, within the road reserve.

The aim of the requirements of this Specification is to achieve the minimum disruption and disturbance to roadusers and adjacent property occupiers during the work; to ensure that a neat and tidy, well constructed and compacted reinstatement is achieved that does not settle, deform or otherwise deteriorate over time, and to protect the assets of the Road Controlling Authority. In addition, to ensure that the disturbance to the surrounding pavement caused by maintenance or installation operations is kept to a minimum.

To achieve this the Service Owner or his Contractor shall :

- a) Carry out adequate forward planning and liaison with other service owners to ensure the minimum possible disturbance to the road reserve. This shall include formally contacting the owners of other services, and advising them of the work. Any reasonable requirements that other service owners may impose for the protection of their equipment and plant, or to facilitate the installation of any additional services that another service owner may wish to install, shall be met.
- b) Carry out full and appropriate traffic management to ensure adequate traffic control and provide a safe operating environment for the Contractor's employees and roadusers (including pedestrians).
- c) Ensure that all materials used meet specified criteria and that sound construction techniques including compaction as agreed in the approved Quality Plan are adopted, to ensure that the long term performance criteria are met.
- d) Ensure that the site is reinstated to its original condition, that all surplus material is removed from site, especially loose chip, and that the final surfacing is waterproof and meets the required skid resistance for the pavement.

2 DEFINITIONS

The following definitions apply to this Specification:

Road Controlling Authority - the Local Authority, Territorial Authority, Transit NZ, or other organisation or owner responsible for the length of road or state highway.

Service Owner - the network operator or owner of the service eg. Telecom, Clear, Enerco Gas Co., Power Authority, DOSLI, Local or Territorial Authority or other person responsible for on-going maintenance or operation of the service, applying for the Consent for Works Within Road Reserve.

Contractor - the operator nominated by the Service Owner to undertake the physical works and who is recognised by the Road Controlling Authority as being experienced in the nature of the work being undertaken.

Sealing Contractor - the operator nominated by the Service Owner to undertake the final surfacing.

Major Works - Any work carried out by a Service Owner on a road reserve that does not come within the definition of Minor Works. Major works include work which disturbs the traffic lanes, and all longitudinal trenching.

Minor Works - Any work of a minor nature carried out by a Service Owner within the berm, footpath, or carriageway outside the traffic lanes, but excluding all longitudinal trenching or work in specific areas that may be defined in the Special Conditions issued with the Minor Works Consent.

Incidental Works - Any minor work which does not disturb the surface of the carriageway, surface of a footpath, nor impede traffic flow.

Carriageway - that part of the road devoted particularly to the use of travelling vehicles, inclusive of shoulders, parking areas and cycle lanes.

Traffic Lanes - that portion of the carriageway along which vehicles travel under normal traffic flow.

Road - the limits of the road bounded by the legal road boundaries irrespective of the position of the adjacent fence lines.

Engineer - person(s) nominated by the road controlling authority to liaise and observe the work. Where considered necessary the Engineer may test the work for compliance with the performance criteria.

Maintenance Period - the period of time that the Service Owner is responsible for the work meeting the long term performance criteria such as shape, density etc.

Working Day - A calendar day not including Saturday, Sunday or Public Holiday or the period from the 24th Dec to 5th Jan inclusive.

Normal Working Hours - The hours the Road Controlling Authority or Engineer's Office is open.

Quality Plan - defined in Section 8.

3 CONSENT FOR WORKS

3.1 Minor Works

Consent for this type of work may be given to the Service Owner by the Road Controlling Authority upon application, for a designated period of time. The application shall be accompanied with a non-site-specific Quality Plan and Traffic Management Plan. The Notice of Consent will be issued subject to this Specification and any universal Specific Conditions the Road Controlling Authority may require.

The Road Controlling Authority reserves the right to withdraw a Minor Works Consent if the Service Owner is not complying with the requirements of the Consent.

For every minor work, that is not incidental work, a fully completed Notification of Minor or Emergency Works form shall be forwarded to the Road Controlling Authority or nominated Engineer at least 48 hours prior to the proposed start.

3.2 Major Works

A fully completed Application for Consent for Works shall be forwarded to the Road Controlling Authority at least 15 working days prior to the proposed start date for approval. The application will not be accepted until all necessary information required for processing is submitted. If in processing the application, the Road Controlling Authority requires further information the 15 working day period shall be extended by the time taken to submit the additional information.

The Notice of Consent will be issued subject to this Specification and any Specific Conditions the Road Controlling Authority may require. If the works as proposed is not approved for any reason, the Service Owner will be notified as soon as possible in writing and the reasons given.

Specifications, manuals or publications referred to in the Standard Conditions shall be the latest version available on the date that the Notice of the Consent is issued. These may be obtained on request from the Road Controlling Authority.

3.3 Location of Proposed Services

Unless approved otherwise, services shall be installed in the standard alignment within the approved service corridor. For State Highways this is as close to the road reserve boundary as possible. No Consent will be issued until the final alignment has been agreed.

Full details of the position of all power poles, service equipment, ground installations etc shall be submitted with the application for Consent for Works. If required, the positions of all poles shall be set out on the ground and approved by the Engineer.

Where the proposed location of the service is considered to be hazardous for Road Safety reasons, the Service Owner may be instructed to underground or relocate the service.

4 EMERGENCY WORK

The Service owner has the right to undertake emergency repairs to the service. When any such work occurs during normal working hours the Road Controlling Authority shall be notified without delay.

Should emergency work occur outside normal working hours, then notification shall be made the following working day. Following all emergency work the Service Owner shall forward a Notification of Minor or Emergency Work form within five working days.

5 DISCLAIMER

The repair of any damage to a service, its associated ducting and fittings installed in accordance with the terms of this Consent which results from a highway accident, flooding, earthquake or any other cause beyond the Road Controlling Authorities control will be the responsibility of, and at the full cost of, the Service Owner.

Where a service is laid with less cover than that stated in the Special Conditions the Road Controlling Authority will accept no responsibility for, or cost of, repair or relocation of the service if damaged or likely to be damaged through its operations.

At no time during the excavation and reinstatement of the trench shall the Engineer or the Engineer's representative, act or be deemed to act, in any manner whatsoever, for or on behalf of the Service Owner so as to relieve the Service Owner in any way from its responsibilities.

No inspection or interim approval of the works, or any part thereof, made or given by the Engineer or the Engineer's representative, during the execution of the works, and prior to the final acceptance of the works at the end of the maintenance period, in accordance with the terms hereof shall relieve or release the Service Owner in any way of its responsibility indicated above.

6 CONTRACTORS RESPONSIBILITIES

6.1 Legal Requirements

The Contractor shall take all sufficient precautions for the safety of the public and traffic and workmen employed on or near any road and shall comply in full with the Health and Safety in Employment Act 1992 and its amendments. The Contractor shall take all reasonable precautions to safeguard the public while undertaking the work.

6.2 Traffic Management Plan

The Contractor shall prepare a traffic management plan and submit it with the Application for Consent.

The plan shall ensure that the disturbance to roadusers is kept to an absolute minimum, and shall take into consideration the periods of maximum traffic or pedestrian flows, and shall indicate the level of traffic control proposed and details of any proposed detour or bypass.

If considered necessary, a temporary road closure and detour may be permitted. The details shall include the anticipated length of time the road will be closed, and the signs and barricades to be used for traffic control and any details relating to the layout of any proposed bypass.

Any additional requirements that the Road Controlling Authority may consider necessary will be identified in the Special Conditions, and combined with the details submitted form the approved traffic management plan. The Contractor shall comply with all aspects of the approved plan.

Traffic control and warning signs etc. are to be erected and maintained in accordance with the manual 'Working On The Road : A Handbook For Temporary Traffic Control And Safety At Roadworks Sites'. If traffic control by flagmen is required, STOP/GO paddles shall be used as described in the above manual.

The use of drums as traffic control devices is not permitted on State Highways.

6.3 Public Relations

The Service Owner shall take all reasonable steps to ensure that all affected property or occupiers and public transport operators are notified of the effect that the work will have on them, the proposed time frame and the contact person and telephone number(s) (day and night), should they have any problems.

The Contractor shall advise the Road Controlling Authority, Police, New Zealand Fire Service, St John's Ambulance Association and the Automobile Association where the road will be blocked completely at any stage, or where traffic flow will be subject to significant delay.

The Contractor may not delay traffic for individual periods longer than five minutes. Where delays longer than this are proposed the Service Owner shall apply to the Road Controlling Authority for a Road Closure. The issuing of a Consent in no way permits a Service Owner to block or close the road.

6.4 Public Safety

When public safety is compromised as a direct consequence of the work, either during the work itself or the maintenance period, the Road Controlling Authority will require the Service Owner to take all reasonable measures to remedy the situation. If any reasonable request is not complied with the Road Controlling Authority reserves the right to make safe, make good, or stop the work, or otherwise arrange for temporary emergency repairs to be carried out and charge the Service Owner.

6.5 Notifications

Where the Service Owner or their Contactor is required to notify the Engineer or Road Controlling Authority, notice shall be given to the respective Engineer or Road Controlling Authorities office during normal working hours of a working day.

The Service Owner shall give at least 24 hours notification of any change to the proposed start date. Where this affects the Road Controlling Authorities, or the Public's interests in the work, the Consent may be modified or revoked.

7 PUBLIC LIABILITY INSURANCE

The Service Owner shall ensure that the Road Controlling Authority is indemnified against any claims, proceedings, damages and expenses arising out of the maintenance and execution of any work associated with this Consent for Works. The minimum Public Liability Insurance Cover shall be \$ 2,000,000.00.

8 QUALITY PLAN

The Contractor shall submit to the Engineer for approval, a Quality Plan identifying the proposed method of operations, and a schedule of all testing to be carried out by the Contractor to ensure that the performance criteria are met.

The Quality Plan shall incorporate at least the following aspects:

- The methods of testing and recording results
- The programme of regular sampling on a pre-selected statistical basis of backfill material, binder, chip etc.
- Specific methods to be used to check the quality of work carried out

The Contractor has the responsibility of all sampling and testing of materials to determine acceptability for inclusion in the work.

A certificate from a reputable supplier will be accepted as prima facia evidence that the materials comply with the required specification.

In addition the Contractor shall test to ensure that the construction requirements, such as shape, density, bitumen application rates etc are met. Records of all testing shall be kept and shall be made available to the Engineer upon request.

If considered necessary because of conditions at the site the Engineer may require additional testing to that stated in the Quality Plan be carried out at the Service Owners expense.

No work may commence until the Contractor has an approved Quality Plan. Once approved, a copy of the Quality Plan shall be held on-site at all times, and available for inspection by the Engineer on request.

9 HEAVILY TRAFFICKED AREAS

Where required to limit the disturbance during periods of high vehicular or pedestrian traffic no work shall be carried out during the periods defined in the Special Conditions.

For these sites the method of excavation and installation shall be such that two way traffic flow is maintained wherever practical whilst undertaking the work. Single lane traffic flow may be permitted elsewhere provided adequate traffic management is in place. A minimum trafficable lane of 3.5m shall be maintained at all times.

10 PROTECTION OF PROPERTY, ROADSIDE FURNITURE AND EXISTING SERVICES

The cost of repair, replacement or reinstatement of any disturbance or damage to roadway, other services, berms, fences, retaining walls, poles marker posts, sign posts or other structures or property shall be borne by the Service Owner.

The location and orientation of any marker posts, signs or other traffic safety device removed to facilitate the Contractors operations must be noted and unless superseded by other temporary traffic control devices, they shall be reinstated in those locations at the end of each day's work. All permanent signs or roadside furniture shall be fully reinstated at the end of the work. Marker post installation shall be in accordance with TNZ P/15, in particular with regard to orientation, height and embedment length.

11 PARKING AND STORAGE OF PLANT, EQUIPMENT

Parking of plant must comply with all Traffic Regulations and Restrictions and unless

written approval has been given by the Road Controlling Authority, any offending act may lead to the issuing of Parking Infringement or Traffic Offence Notice.

Where the legal speed limit exceeds 50km/hr, no plant or equipment, when not in use, shall be parked closer than 4m from the white edge line or 3m from the edge of seal if no edge line exists, without the approval of the Engineer.

No vehicle, or item of plant, shall be parked or operated at night, or under poor visibility conditions, to the left of the adjacent traffic with the front of the vehicle pointing towards on-coming traffic.

12 UNDERGROUND SERVICES

12.1 Planning

The sketch included as Appendix 1, indicates the area beyond the width of the existing carriageway in the Road Controlling Authority may restrict service placement due to roading needs. The sketch indicates typical widths and depths that may be affected by road works.

It is included for guidance and planning purposes only. Generally it will form the starting point for consideration of a specific proposal to carry out work near the carriageway.

12.2 Minimum Cover

The minimum Cover requirements in Part B : Special Conditions, refers to the minimum cover required by the Road Controlling Authority for it to carry out its activities without physically disturbing the particular service.

If the Service Owner wishes to ensure a depth of cover which will remain undisturbed it will need to add that undisturbed depth to the minimum cover specified.

12.3 Restriction on Opening Trenches

It is the responsibility of the Service Owner to ensure that there is no disturbance to the surrounding area and to prevent this the trench may need to be fully supported or shored using proprietary devices. The Road Controlling Authority may require the Service Owner to use shoring or a box shield.

Trenching that will interfere with vehicular access to property shall only proceed after all reasonable steps have been taken to notify the occupiers at least 24 hours beforehand.

Vehicle access may be restricted for a maximum period of 8 hours unless the affected property occupiers have been given adequate advance notice, in which case it may be extended to a period of 24 hours. All reasonable steps shall be taken to ensure that vehicular access is maintained to commercial properties at all times.

Where required by the Road Controlling Authority, any abandoned service is to be retrieved during the laying of the new service.

Tracked machinery drawn mole-ploughs or steel tracked plant will not be permitted on paved surfaces, concrete, footpaths or urban berms or the carriageway formation unless specifically approved in the Special Conditions. Approval may be granted taking into consideration the asset protection needs of the Road Controlling Authority.

12.4 Thrusting

With due consideration of the location of all existing services and ground condition, the Road Controlling Authority may require thrust boring of services across the road.

The method of thrusting is to be such that no cavities are formed outside the duct or service. Unless otherwise specifically agreed by the Road Controlling Authority, the minimum cover between the duct or service and the overlying carriageway or shoulder shall be one metre. Trenching to facilitate thrusting shall not extend into any portion of the carriageway. The trench width shall be kept to a minimum consistent with the installation of the duct or service.

No excavation to enable thrusting will be permitted within 3.0m of the edge of seal on State Highways, except where the excavation is located behind kerb and/or concrete water channel or dish drain.

12.5 Ducting

Where required by the Special Conditions the service shall be duct sleeved.

12.6 Other Existing Services

Prior to commencing any work the Service Owner shall ensure that all other service owners likely to be affected are given appropriate advance notice of the start of the work. Any reasonable requirements they may impose for the protection of their equipment and plant shall be met. Any request by other service owners to share trenches or ducts shall be a private arrangement between the respective service owners and subject to normal commercial considerations.

All services shall be marked out clearly and accurately on the ground prior to any excavation. Any reasonable request by the Road Controlling Authority for the proposed alignment of the new service to be altered because of its potential impact on other services shall be complied with. The Road Controlling Authority may require, that the proposed alignment of the new service be altered because of its impact on other services.

12.7 Damage to Adjacent Areas

On any section where the sealed surface has been damaged beyond the trench line in any way as a result of the Service Owner or Contractor's operations, the surface is to be resealed over an area that ensures that uniformity of skid resistance of both wheel paths of any particular lane, approved by the Engineer.

Details of the proposed surfacing repair method, including the first and second coat chips sizes, shall be submitted to the Engineer for approval, not less than 5 working days prior to sealing.

If the pavement under the sealed surface is disturbed as a result of the Service Owner's operations it shall be repaired by digging out the full pavement depth, recompacting the

subgrade and then relaying a new pavement layer complying with this specification.

13 EXCAVATION OF TRENCHES

13.1 General

Unless otherwise approved by the Engineer no opened trench shall exceed 50m long on the carriageway nor 200m along the berm. Backfilling and compaction shall commence as soon as possible after excavation.

No excavation shall be left open for longer than 48 hours without specific approval. Vehicles shall be restricted by the use of barricades from travelling closer along a trench, than 1.5m from the edge of the excavation. No longitudinal trench shall be permitted closer than 300 mm from a kerb and channel without specific approval.

13.2 Pre-Excavation Cutting

The width of any trench shall be kept to a minimum consistent with the method of construction and the depth of the service. All trenches in hard surfaced areas such as concrete and bitumen bound seal shall be cut so that a straight edge is left at the completion of the works. When saw cutting concrete, the cut shall extend full depth but shall be replaced with an additional 50mm depth of concrete that underpins the existing concrete in order to reinforce the repair.

Cutting shall be either a diamond sawcut or by a method that produces a similar result along a line at least 150mm outside the edge of the excavation or at the limit of any cracked or damaged pavement. The excavation of cracked or damaged concrete within the trench width plus 300mm shall be at the expense of the Service Owner.

If the area of surfacing broken out approaches to within 300mm of the edge of seal, kerb and channel, construction or control joint, the remaining area shall be removed and included in the area to be reinstated.

13.3 Uplifting Block Paved Surface

Where pavers are to be uplifted, care shall be taken to minimise damage as some pavers are not readily available. Pavers shall be stacked carefully to prevent damage and in such a manner as to enable easy reinstatement.

13.4 Excavated Material

Where approved by the Engineer, excavated material may be used as backfill. Within 50 km/hr speed zones this material may be stockpiled on-site but must be clear of the carriageway and barricaded off, and shall allow access to any water supply hydrants and valves, or sewer, stormwater telephone or gas or electricity manholes. When stockpiled on footpaths, clearly defined pedestrian areas shall be set out around the excavation and stockpile.

Where the legal speed limit exceeds 50km/hr no excavated material shall be stockpiled closer than 4m of the white edge line or 3m of the edge of seal if no edge line exists, without the approval of the Engineer.

13.5 De-watering

The control of water in the excavation is the sole responsibility of the Contractor. All excavation and backfilling shall be carried out in the dry.

14 REINSTATEMENT OF TRENCHES

14.1 Backfill Material

14.1.1 Carriageway Formation

Backfill material shall comply with the following requirements or those detailed in an alternative pavement design submitted to and approved by the Engineer.

Backfill material up to the base of the pavement shall be selected backfill that when compacted shall match the adjacent materials, in particular with regard to density and permeability.

Selected backfill material shall be approved imported, readily compactable, granular material, or if approved by the Engineer shall be material excavated from the trench.

The full pavement depth, or the top 300mm if the pavement depth is greater, shall consist of crushed basecourse to the current TNZ M/4 or local M/5 AP40 Specification.

14.1.2 Pedestrian Pavements or Excavation beyond the Carriageway

Backfill material shall comply with the following requirements or those detailed in an alternative pavement design submitted and approved by the Engineer.

Backfill may be material excavated to install the service, provided that the Contractors Quality Plan can clearly show, including test results where necessary, that the density of the backfilled material in place is not less than that of the material in its original condition prior to the work commencing.

Where this cannot be achieved, backfill up to 150mm below final surface shall be selected excavated material approved by the Engineer.

The backfill shall be placed at near Optimum Moisture Content. The top 150mm shall be selected backfill material complying with Clause 14.1.1.

14.1.3 Grassed Berms within Urban Areas

Backfill up to 100mm below final surface shall be selected excavated material approved by the Engineer. The backfill shall be placed at near Optimum Moisture Content.

The top 100mm shall be backfilled with top soil or material similar to the adjacent soil capable of sustaining vegetative growth. This material shall be free of aggregate, timber or any other material likely to cause damage when mown over.

14.2 Backfill Compaction

14.2.1 General

The use of trenches too narrow for machine tamping will not be permitted. Compaction shall be carried out using a purpose-designed mechanical compactor.

14.2.2 All Trenches except Grassed Berms within Urban Areas

The compaction standard shall be 98% of the maximum density determined by NZS 4402 1986 Test 4.1.2 (NZ Heavy Compaction).

14.2.3 Grassed Berms

The compaction standard shall be 95% of the maximum density determined by NZS 4402 1986 Test 4.1.2 (NZ Heavy Compaction).

14.2.4 Moleplough Installation

Installation of the service using a moleplough may be permitted under some circumstances, and will be subject to special conditions (Refer Clause 12.3 Restriction on Opening Trenches).

14.3 Density Requirements

The above density requirements shall be considered to be met when the following consolidation test results have been achieved.

14.3.1 Vehicular Pavements

Scala Penetrometer Greater than 7 blows necessary for each 50mm penetration into the compacted material.
or

Clegg Hammer A reading of 40 or greater (recorded on the third blow).

14.3.2 Pedestrian Pavements or Trenches Further than 3m from Edge of Seal

Scala Penetrometer Greater than 4 blows necessary for each 50mm penetration into the compacted material.
or

Clegg Hammer A reading of 25 or greater (recorded on the third blow).

14.3.3 Grassed Berms

Scala Penetrometer Greater than 2 blows necessary for each 50mm penetration into the compacted material.
or

Clegg Hammer

A reading of 10 or greater (recorded on the third blow).

14.4 Adequacy of Backfilling

The Contractor shall test the adequacy of the completed backfill in accordance with the approved Quality Plan. If required by the Special Conditions the Engineer shall be advised when the backfill is considered to meet the above criteria and is ready for inspection prior to sealing. The Service Owner's test results shall be made available to the Engineer on request.

The Engineer may undertake random testing. If the Engineer determines that the trench does not meet the above performance criteria the Contractor shall rework the trench.

If the backfilled trench still fails to meet the specified criteria, the Engineer may arrange for the trench to be reworked by a contractor nominated by the Road Controlling Authority and all reasonable costs charged to the Service Owner.

14.5 Finished Backfill Level

14.5.1 Roadways, Sealed Footpaths and Vehicle Crossings

All trenches shall be backfilled to a level that allows for the depth of surface reinstatement material below the adjacent sealed surface with a surface tolerance of +0 -10 mm.

14.5.2 Concrete Vehicle Crossings and Footpaths

Shall be backfilled to 50mm below of the underside of the adjacent concrete surface. Where vehicle crossings require replacement the Contractor shall contact the Engineer for design requirements.

14.5.3 Grassed Berms

Shall be backfilled and compacted to within +15mm -0mm of the adjacent ground level.

14.5.4 Paved Roadways and Footpaths

All trenches shall be backfilled to within 25mm of the underside of the paving block.

14.6 Surface Finish Prior to Sealing

The backfill surface prior to reinstatement of the appropriate surfacing shall be such that the top layer of backfill is tightly bound with no voids and produces a mosaic-like finish after brooming when dry. All loose material shall be removed from the surface to be sealed and the vertical faces of the saw cut edges.

15 SURFACE REINSTATEMENT

15.1 Reinstatement of Carriageway

15.1.1 General

Pavement resurfacing is to be carried out as soon as practical after the final compaction and surface preparation has been completed and within the period specified in the Special Conditions.

Where delays in final surfacing due to public holidays, inclement weather, heavy traffic demands or other reasons, the backfill shall be protected with a temporary surfacing.

15.1.2 Surface Texture Uniformity

Maintenance of uniformity of skid resistance of both wheel paths of any particular lane is considered important, particularly in high demand areas, both for temporary and permanent surfacing.

The surfacing material used to reseal the trench shall match the adjacent surfacing material or as defined in the Special Conditions. Where the existing seal is a chipseal, details of the first and second coat chip sizes will be defined in the Special Conditions.

Should the surface texture fall outside the requirements above within the maintenance period the Service Owner may be required to reinstate the surface to ensure the above skid resistance requirements are met.

15.1.3 Final Surface Shape

The finished final surface level shall match the general profile of the adjacent surface with no sharp ridges, to the tolerances in the table below. No ponding of water will be permitted. Where the transverse or longitudinal shape of the existing pavement is not a straight line the Contractor shall shape the reinstatement work accordingly.

Should the profile fall outside these limits within the maintenance period the Service Owner will be required to reinstate the surface to the above requirements.

Surfacing Material	Tolerance	
Asphaltic Concrete	+ 5mm	- 0mm
Friction Course	+ 5mm	- 0mm
Chipseal	+ 9mm	- 0mm

The above tolerances are for rural locations. Where the work is in an urban environment the tolerances shall be 60% of the above. ie A/C +3mm -0mm

15.1.4 Waterproofing of Finished Backfill Level

To waterproof the finished backfill prior to laying friction course or asphaltic concrete, a seal coat of penetration grade bitumen shall be applied to the surface

of the basecourse.

The rate of application of the seal coat shall be such that the effective residual binder content is not less than 1.0 litres per square metre. For reinstatement in asphaltic concrete pavements a tack coat shall be applied to the sawcut edges of the adjacent asphaltic concrete.

Where horizontal movement of water is required, such as in an existing friction course, care shall be taken to ensure that the adjacent vertical sawcut sides are left free draining.

15.1.5 Temporary Resurfacing of Carriageway

Temporary resurfacing of a trench using a layer of open graded emulsion mix or asphaltic bound material, compacted so as to be stable under traffic will be permitted. This surfacing will be considered a temporary seal only and shall be removed and replaced with a permanent surface within 30 days.

While covered in temporary surfacing the trench shall be maintained in a safe trafficable condition at all times. The surface profile of the temporary surfacing shall match that of the final surface shape.

The Service Owner will be responsible for any maintenance on the temporary reinstatement that may be necessary to repair any loss of shape, settlement or cracking.

The limits of the temporary seal shall be saw cut and the material removed to dump, and the final surfacing prepared as below.

The Service Owner shall give the Engineer 48 hours notice of removal of the temporary surfacing and when the backfill is considered to meet the criteria for permanent surfacing. The Engineer may undertake random testing if considered necessary.

15.1.6 Permanent Resurfacing of Carriageway

15.1.6.1 General

Prior to permanent reinstatement, the existing seal shall be sawcut back a minimum of 150mm beyond the limit of any cracked or damaged seal or sawcut edge, or at the edge of the temporary seal if undamaged.

Pavement resurfacing beyond 150mm from the edge of the trench shall be subject to negotiation with the Road Controlling Authority. The seal shall then be removed and any damage to the underlying pavement caused by the passage of traffic shall be repaired prior to topping off, compacting and final surfacing of the trench.

15.1.6.2 Asphaltic Concrete

Unless specified otherwise, the final surface shall be 25mm thick asphaltic concrete, conforming to the requirements of TNZ M/10 Table 1 Mix 10

and placed in accordance with the requirements of TNZ P/9.

15.1.6.3 Friction Course with Asphaltic Concrete Repair

Unless specified otherwise, existing friction course shall be reinstated with 25mm thick asphaltic concrete in accordance with Clause 15.1.6.2 above. To reinstate the skid resistance of the repair, this shall be surfaced with a chipseal. The size of chip and residual bitumen content, is to be as specified in the Special Conditions.

15.1.6.4 Friction Course

Where indicated in the Special Conditions, final surfacing shall be friction course prepared and laid in accordance with TNZ Specification NRB P/11P. The asphaltic binder used shall be 80/100 penetration grade asphalt cement complying with TNZ Specification NRB M/1.

15.1.6.5 Chipseal

First coat sealing shall be carried out in accordance with TNZ P/3 Specification. The first coat seal shall extend over the saw-cut area. The second coat seal shall take place as soon as practical after the first coat sealing and shall extend sufficiently far to achieve a uniformity of surface texture but not less than 300mm beyond the limits of the excavated area.

15.1.7 Roadmarking

Where a Service Owner intends to remove a painted roadmarking indicating the position of a fire hydrant, the territorial authority shall be notified beforehand so that the marking can be reinstated in an offset position.

Where the excavation or repair hole removes painted traffic markings or raised pavement markers on the road, these must be reinstated with 48 hours of temporary or final surfacing.

Reinstatement shall be carried out by an operator approved by the Engineer.

15.2 Reinstatement of Footpaths

15.2.1 Temporary Resurfacing of Footpaths

Either a layer of asphaltic-bound materials laid to conform to the existing footpath levels and compacted so as to be stable, or a temporary surface of tightly bound basecourse material (conforming to existing footpath levels) may be used. Should the basecourse begin to unravel the Engineer will instruct the Contractor to surface the trench with asphaltic-bound material. These surfaces are to be regarded as a temporary surfaces only and must be removed and resealed with permanent resurfacing within 30 days.

15.2.2 Permanent Resurfacing of Footpaths

The trench is to be resurfaced in concrete, chipseal or asphaltic concrete to match the adjacent surfacing. The minimum area of reinstatement shall be determined

by squaring the edges of the trench and aligning its shape to follow a logical pattern.

Where the trench is closer than 300mm to the boundary, kerb, edge, construction or control joint, the residual area is to be treated and resurfaced as for the trench. Pedestrian access on to the adjacent properties shall be maintained at all times.

All concrete work shall be cast-insitu ordinary grade concrete with a 28 day compressive strength of 17.5 MPa when tested in accordance with NZS 3109, and shall be not less than 100 mm thick in non-trafficked areas and 150mm thick in vehicular trafficked areas.

The concrete finish shall be a U2 finish in accordance with NZS 3114. The line and levels of the new concrete work shall match the adjacent sawcut edges exactly, with a maximum tolerance on the vertical profile of not more than ± 3 mm.

15.3 Kerb and Channel

If the work crosses a concrete kerb and channel or dish channel, this shall be saw cut at the limits of the disturbed pavement or damage and removed to dump. Where the length of kerb and channel affected is less than 500mm the concrete drainage channel may be either temporarily supported or sawcut and carefully removed and then reinstated as a precast unit placed on a poured insitu concrete base.

The kerb and channel or drainage channel shall be completed once all backfilling and compaction work is complete. All concrete work shall be cast-insitu ordinary grade concrete with a 28 day compressive strength of 20MPa when tested in accordance with NZS 3109. The concrete finish shall be a U2 finish in accordance with NZS 3114.

The line and levels of the new concrete work shall match the adjacent edges exactly, with a maximum tolerance on the vertical profile of not more than ± 3 mm, and such that water flows are not impeded by the repair.

15.4 Concrete Vehicle Crossings

The depth of concrete at vehicle crossings is to be 50mm thicker than the depth removed and shall underpin the undisturbed concrete at the joint(s) by a minimum width of 100mm. Where the width of undisturbed concrete crossing on either side is less than 600mm, or within 300mm of a joint, this shall also be removed and the reinstated as part of the trench reinstatement work.

Where reinforcing steel is cut, the structural integrity shall be reinstated using steel reinforcing to a strength not less than the original condition lapped to dowels protruding from the remaining original concrete.

15.5 Paved Roadways and Footpaths

In areas where paving slabs have been laid, the slabs adjacent to the completed trench shall be uplifted and the entire exposed area compacted to ensure no settlement of areas possibly undermined by the trench, occurs.

Footpaths and roadways shall be reinstated so that paving slabs have no more than 1mm variance from each other. Should paving slabs be damaged, they shall be replaced with paving slabs that match the existing as closely as possible. All paving work shall be carried out by a recognised paving contractor.

16 GRASSING

The Contractor shall be responsible for grassing all areas disturbed by excavation between the road reserve boundaries and the road or footpath edge.

Upon completion of backfilling the surface of the trench shall be raked heavily to produce a seed bed to a depth of 25mm, free from all loose stones, rock particles or hard clods that cause disruption or damage during mowing or to passing vehicles.

Where the extent of the trenching is limited, eg. crossing berms, the removal of grassed turf blocks of a minimum thickness of 100mm, prior to excavation and their replacement on the completed trench is the preferred method provided the grass growth re-establishes. The Contractor shall barricade the grassed area to prevent disturbance of the seed bed until an effective grass strike has been achieved.

17 VEGETATION

Any damage to the service as the result of vegetation growth ie tree roots shall be the responsibility of the Service Owner. Where overhead services are affected by trees or tall vegetation within the road reserve, the Service Owner shall be responsible to the degree required by legislation for trimming and maintenance of the vegetation. All vegetation and other debris, generated, shall be removed from the road reserve at no cost to the road controlling authority. Prior consultation with the Road Controlling Authority is required and trimming shall be done aesthetically.

Any trees and vegetation within the road reserve, which at any time may interfere with the service may be removed, except that if any is a specimen tree or other plant which has been planted in the interests of roadway aesthetics or protection, then the Service Owner is obligated to notify the owner and to ascertain if a protection order is in effect.

18 SERVICE BOXES

All frames shall be bedded on permanent materials so as to conform to the plane of the adjoining surface and shall be flush with the adjoining surface on all sides. Such frames shall be able to be adjusted for possible changes in road level (eg, carriageway resurfacing). Structural design of furniture in the pavement; manholes, valves hydrants survey marks etc shall be adequate to withstand the loading applied with a reasonable factor of safety. No rocking of the cover or frame will be permitted.

19 TIDINESS OF SITE

The site shall be kept tidy during the works at all times. On completion of the work the Contractor shall remove from the site all surplus material, vegetation debris, rubbish,

plant and machinery. The site shall be left in a clean and tidy condition to the satisfaction of the Engineer.

20 COMPLIANCE CERTIFICATE

The Service Owner shall issue to the Road Controlling Authority at the time of completion of all major work, a Compliance Certificate identifying the nature and extent of the work, the date that the work was completed, and that all aspects of the work complies with the Specification.

If required in the Special Conditions, full "As-built" plans showing service features, the actual location of the service relative to permanent marks or features and the accurate depth of cover shall be issued with the Compliance Certificate.

21 MAINTENANCE PERIOD

The Service Owner shall maintain the work and surrounding adjacent pavement so that it complies with the long term performance criteria of the specification for the maintenance period. The 12 months maintenance period will commence from the date of receipt of the Compliance Certificate for a Major Work, and from the proposed completion date for Minor or Emergency Work. If maintenance work is required, this shall be completed by the Service Owner as soon as possible after notification by the RCA. A further maintenance period for any substantial rework may be imposed by the Road Controlling Authority, commencing from the date the repair work is completed.

Final inspection of the reinstatement will be carried out by the Engineer at the end of the 12 month maintenance period. The Engineer shall instruct the Service Owner of any defects that require remedial treatment. If the defects are not remedied within twenty working days, the Engineer will arrange to have the work carried out by a nominated Contractor and the cost charged to the Service Owner.

APPENDIX 1

ROAD CONTROLLING AUTHORITY OPERATIONAL AREA

