



**Contract C01/10  
Tararua District Road  
Maintenance**

**2010**

**Maintenance Specification**

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## **1. Contract Works**

### **1.1 Specifications for Routine General Maintenance**

#### **(a) Use of 'C' and 'HM' Series Maintenance Specifications**

Maintenance operations are to be carried out in accordance with TNZ C Series and HM Series specifications, modified as necessary to suit this specification. Where 'Transit New Zealand' is referred to, substitute with 'Taranua District Council', and where 'State Highway' is referred to, substitute with 'Secondary Arterial', 'Collector' or 'Local Road' as the case may be.

#### **(b) The Location and Extent of Contract Works**

Is included in Operational Requirements.

## **2. Contract Quality Plan**

Refer to Section 2 of Operational Requirements.

## **3. General Requirements/Environmental**

Refer to Section 3 of Operational Requirements.

## **4. Contractor's Programme**

Refer to Section 4 of the Operational Requirements.

## **5. Contractor's Claims**

Refer to Section 5 of the Operational Requirements.

## **6. Traffic Management**

Refer to Section 6 of the Operational Requirements.

## **7. RAMM Contractor**

### **7.1 RAMM Contractor**

The Principal operates the RAMM software as its road asset management tool and all asset data is stored in the RAMM Database.

The Contractor is required to use RAMM Contractor software and Pocket RAMM together with GPS positioning for contract management tasks such as entering jobs, creating work programmes, prioritising work, entering claims, producing reports, monitoring job progress and recording maintenance costs.

This system comprises a database that can record and track all programmed, instructed and customer services identified works. This programme package meets the following objectives:

- improved customer service, resulting in fewer customer complaints through appropriate and timely response to network deficiencies which can be readily tracked and reported.

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- consistent and accurate monitoring of Contractor performance in achieving the response times set out within the contract, including the identification of outstanding tasks and forward workload. To effect this, both the Principal and Engineer to the Contract will have unrestricted access to the Contractor's data input through the RAMM Contractor (not: this is via the internet, so the cost of access must be allowed for by the Contractor).
  - improved tracking of network maintenance costs in terms of location, type of work and true costs for maintaining an asset.
  - continuous updating of key asset inventory data
  - the efficient, accurate and timely verification and processing of the Contractor's monthly claims

Full details of the RAMM system, Pocket RAMM, hosting service, training, charges, equipment requirements and similar are available from CJN Technologies (attn: David Newman, Business Development Manager), phone 09 415 3749 or [www.cjntech.co.nz](http://www.cjntech.co.nz).

The Principal will provide a login to the RAMM database via the internet and the CJN RAMM Hosting Service. The fees to access the Principal's database will be the Contractor's responsibility, along with provision of computer equipment, all internet connection and usage charges.

This system allows for the remote updating and maintenance of asset data in RAMM, whilst the work is being performed in the field. The Contractor using Pocket RAMM in the field will upgrade, update and maintain the existing RAMM data using both activity and claim items. The verification and modification of existing inaccurate or missing inventory data is required on the visit to each site.

The Engineer using RAMM will interrogate the claim and will audit the quality of data entered into RAMM by the Contractor. If the data is found to be incomplete or erroneous, the Contractor will correct the data at his expense.

The system will allow all parties to monitor the progress of jobs, the creation and approval of programmes, ensure contractual compliance by linking claimed work to its location and asset, with the added benefits of providing spatial information for referencing, GPS locations, a reduction in paper management and administrative support, consolidation of reporting and auditing of works and inputs performed.

## **7.2 System Requirements**

Pocket RAMM is an add-on to desktop RAMM Contractor, and is rented yearly; the Contractor is required to pay in advance to CJN Technologies the fees for any additional licenses purchased by the Contractor.

License Requirements: Pocket RAMM is based on a "once license per device" basis. This means that there needs to be a license for each device the Contractor intends to use Pocket RAMM on, as it is not a concurrent user license. Each device can have multiple logons enabling devices to be shared.

The Contractor is required to complete the Pocket RAMM training and all the requirements to access the live system. As part of the Pocket RAMM License, CJN provide an annual two-day training session. All users of Pocket RAMM must complete the training. Reasonable travel and accommodation costs incurred by CJN Technologies to perform the training are additional.

The Contractor is required to contact CJN Technologies to book training dates.

The Contractor is required to obtain and activate all hardware requirements.

The Pocket RAMM software is pre-loaded onto a real-time wireless device owned by the Contractor. The Contractor will need to negotiate with telecommunication providers regarding the purchase of devices and data plans. The devices are configured and tested by CJN Technologies at the offices of the Contractor.

At present, CJN Technologies can only recommend what has been tested. CJN have tested devices

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capable of connecting to either the Vodafone or Telecom NZ networks. For more information, check the CJN website. Each PDA smart phone requires a CJN-approved Bluetooth GPS receiver and hardware car kit. Your authorised Telecom/Vodafone dealer can provide all hardware requirements as described.

The RAMM Contractor software is to be implemented, schedule items loaded, and Contract set up.

### **7.3 Access to the Database**

At the commencement of the Contract, the Contractor will use their existing paper-based systems alongside Pocket RAMM for one month. During this period:

- The Contractor will complete their current daily work sheets, and while still at the asset, enter the same data into Pocket RAMM training database (dual system)
- The Engineer and Contractor will for one month, check and initial each paper form against what has been entered into RAMM Contractor. Any discrepancies shall be rectified by the Contractor within 7 days.

After one month, the Engineer will assess the level of compliance. If compliance is achieved, the Contractor will be notified that they have completed the implementation programme, and access to the live database will be arranged. If compliance has not been achieved, the Contractor will be required to continue the dual system until compliance approval is given.

### **7.4 Fees and Requirements**

The purchase and maintenance of licenses, associated hardware, communication charges and similar are the Contractor's responsibility, and must be covered in the respective rates.

The CJN Hosting fees to access the Principal's database will be the Contractor's responsibility, along with all internet connections and user charges.

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## **8. *Unscheduled Works***

### **8.1 Plant**

Refer to Section 8 of the Operational Requirements.

### **8.2 Materials**

Refer to Section 8 of the Operational Requirements.

### **8.3 Miscellaneous Materials**

Refer to Section 8 of the Operational Requirements.

### **8.4 Labour**

Refer to Section 8 of the Operational Requirements.

### **8.5 Culverts - Repairs and Extensions**

#### **8.5.1 Scope**

This section sets out the requirements for repairs and extensions to existing culverts on both sealed and unsealed roads.

All work should meet the requirements of TNZ F/3:2000, Specification for Pipe Culvert Construction

#### **8.5.2 Culvert Headwalls - Bagged Concrete**

Concrete for bagged headwalls is to be wet mixed using more water than normal to ensure the bags, when placed, become cemented together. Concrete must have a minimum compressive strength of 10MPa at 28 days. The face slope will nominally be 1 horizontal to 4 vertical.

Where requested, reinforcing steel (D12) will also be installed in the headwall.

The Engineer's approval is required for use of any pre-cast concrete headwalls.

### **8.6 Timber Cribwalls**

This section sets out the requirements for repairs and additions to existing cribwalls. See details in Appendix 18.

In addition to Section 8 of the Operational Requirements, the following section sets out the requirements for the construction of a standard timber cribwall. See details in Appendix 8.

The work shall include excavation, construction and backfill, inclusive of filter drains at the rear of the cribwall, and reinstatement to join with the existing road.

Timber shall be 150mm diameter Tanalised H4 half round posts, or similar material approved by the Engineer. Fixing of horizontal timber shall use hot dipped galvanised nails, size 150mm.

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Granular backfill of cribwalls shall be clean, free-draining material. All backfill shall be compacted.

**8.7 Cost Fluctuations**

Refer to Section 14 of the Conditions of Contract.

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## **9. Emergency Works**

### **9.1 Plant**

Refer to Section 9 of the Operational Requirements.

### **9.2 Materials**

Refer to Section 9 of the Operational Requirements.

### **9.3 Labour**

Refer to Section 9 of the Operational Requirements.

### **9.4 Rural Fire and Civil Defence**

Refer to Item 29.

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## 10. Pavement Gritting (Winter Maintenance)

### 10.1 Weather Observation

The Contractor shall be responsible to maintain a schedule of roads liable to bleeding or frost and monitor weather conditions, which may lead to icy conditions or bleeding of bitumen.

When such conditions are known to be likely the contractor shall ensure the particular sections of road are checked and shall take appropriate action under this section.

### 10.2 Response Times

The Contractor shall identify the need for and establish resources on Site within the response times stated in Table 10.1.

<b>Class</b>	<b>Response Time</b>
All	Mobilise within 1/2 hour, establish and start work on Site within 2 hours.

### 10.3 Level of Service

Work required by this Section shall be completed according to Table 10.1: Pavement Levels of Service in TNZ HM10:2006 and the following requirements.

### 10.4 Damage Repair

All damage to the seal surface shall be repaired within 24 hours of the time the damage occurred to the same condition that existed before the damage occurred.

### 10.5 Gritting

Gritting shall be used as the initial treatment of pavement surface bleeding or frosting/icing.

The sealing chip may be hand spread, but care shall be taken to avoid over chipping. The Contractor shall ensure there is sufficient rolling to bed the chip.

All surplus chip shall be removed from the traffic lanes at the end of each day and completely removed from the site once the bleeding or frosting/icing is controlled.

### 10.6 Material

All grit shall comply with the grading detailed in TNZ HM10, Section 10.5.2.2, unless otherwise agreed with the Engineer. Grit used in Conservation Areas shall be free of seeds.

### 10.7 Spreading

Spread rates shall be between 1m<sup>3</sup> and 5m<sup>3</sup> per lane kilometre. The actual rate will depend on such factors as the type of frost/ice, camber, gradient, traffic volumes, and grit already on the road surface.

The Contractor shall ensure the grit is applied evenly and that the evenness of the spread is maintained. Temporary traffic control shall be in place before grit is spread, and until it is removed.

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## 10.8 Removal

All loose grit shall be completely removed from the Site:

- once the Contractor and Engineer agree that the risk of further frost or ice has passed, unless the grit obstructs water draining from the road surface. In this case the grit shall be removed on a daily basis
- every 2 days or as agreed with the Engineer.

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## 11. Surfacing

### 11.1 Scope

This section sets out the requirements for:

- surfacings of repairs and pre-reseal repairs, including first coat seals, premix surfacings, and where required, second coat sealing.
- repairing surface defects, including but not limited to crack sealing and filling, scabbing, stripping, flushing and bleeding.

Work required by this Section shall be completed according to TNZ HM11:2006 and the following requirements

### 11.2 Response Times

The Contractor must complete all work required by this section by the dates shown on the agreed programme. In addition:

- Table 11.1 states the reinstatement time for all pavement markings, raised pavement markers, and removal of all loose chip from site
- Incidents requiring urgent attention will be managed using Section 9 Incidence Response (e.g. bleeding)
- The Contractor shall monitor the weather throughout the contract period in accordance with the requirements of this contract, and when bleeding is anticipated, respond in sufficient time.

<b>Table 11.1: Reinstatement of Roadmarkings, Raised Pavement Markers and Removal of Loose Chip</b>			
<b>Class</b>	<b>Response Time</b>		
	<b>Pavement Markings</b>	<b>Raised Pavement Markers</b>	<b>Removal of Loose Chip</b>
All Roads	Within 48 hours of completing first coat and, where required, second coat seals.	Within 72 hours of completing the second coat seal, or as specified for pre-reseal repairs.	Within 48 hours.

All loose chip must be removed prior to reinstatement of pavement markings. All pavement markings must be reinstated and loose chip completely removed from site prior to the removal of temporary traffic control.

Where the repair is a pre-reseal repair, a second coat seal is not required.

#### 11.2.1 Weather Observation (Monitoring)

The Contractor must determine when and where pavement gritting may be required, and place the appropriate resources on standby. This will be achieved through:

- monitoring the weather throughout the contract period
- communicating regularly with the Engineer during periods when there is a risk of bleeding, to ensure as far as possible that hazards are anticipated

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### **11.3 Specific Requirements**

All pavement repairs must have a sealed surface:

- at the end of each day's work, unless circumstances, e.g. weather, are not suitable for surfacing
- which is maintained for the duration of all public holidays and any other specified periods.

#### **11.3.1 Surface Defect Repairs**

All surface defect repairs must be repaired according to the Operational Requirements, the Maintenance Intervention Strategy and the following requirements, unless otherwise agreed.

The PSV of all sealing chip and other surfacing aggregates must comply with TNZ T/10 or as stated in the Operational Requirements, unless otherwise agreed, except for:

- first coat seals, which are programmed for a second coat seal within three months, and;
- pre-reseal repairs.

Surface defect repairs, and in particular, texturing, must not be used for pre-reseal repairs. In general, this work will be carried out by the resealing contractor.

Much of the repair work associated with routine maintenance involves chipsealing the surface of repairs.

#### **11.3.2 Construction of Surface Sealing**

The final surfacing shall be of the same type as the surrounding pavement, except for pre-reseal repairs, where the texture and hardness of the first coat seal must be consistent with the reseal design at the intended time of reseal.

If for any reason the seal coat is not achieved on the same day, the Contractor shall take positive steps to ensure that the repair surface does not unravel allowing loose material on the road surface. Should unravelling occur, the Contractor shall immediately remove all loose material from the road surface and stabilise the surface of the repair. The Contractor may maintain the integrity of the repair by application of a temporary holding coat providing this is not detrimental to the final seal coat and if a first coat seal cannot be achieved within two days.

All pavement repairs must have a sealed carriageway surface which is maintained for the duration of all public holidays and long weekends.

Once all surfacing work is complete, the repair must comply with the tolerances in Appendix 2.3 of TNZ HM11:2006, so there is a smooth transition from the adjoining pavement on to and off the repair, and no ponding of water.

### **11.4 Treatments**

#### **11.4.1 First Coat Sealing**

The first coat seal must overlap the area of the repair by 100 to 150mm, and when complete present a tidy appearance of rectangular shape. Ragged edges will not be accepted.

If agreed, the Contractor may use alternatives such as two-coat sealing, slurry seal or thin asphaltic concrete overlay.

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### **11.4.2 Second Coat Sealing**

Unless otherwise agreed or specified in the Contract Documents, all repairs except pre-reseal repairs must be second coat sealed.

The second coat seal must overlap the first coat seal by 100mm - 150mm, and when complete present a tidy appearance of rectangular shape. Ragged edges will not be accepted.

The second coat seal must be constructed such that six months after completion, the texture of the repair shall be consistent with the surrounding pavement surfacing.

The seal must not show any evidence of blackening of the surface of the pavement immediately beyond the repair caused directly by excess binder tracked from the repair.

### **11.4.3 Premix Surfacing**

All premix surfacing must be designed and constructed to comply with the requirements of the Definitions section of TNZ HM11:2006 and, six months after completion, the texture of the repair shall be consistent with the surrounding pavement surfacing, or in the case of pre-reseal repairs, the texture and hardness of the premix must be consistent with the reseal design, at the intended time of reseal.

### **11.4.4 Crack Sealing and Filling**

The Contractor shall ensure that cracks are effectively sealed and shall be responsible for the chip size, binder type and quantity proposed for use in the particular repair.

Crack filling shall be completed to a sufficient width to ensure that the crack is fully covered with sealing product.

The Contractor shall ensure that the final surface texture matches the existing, and that no bleeding or flushing occurs within the contract period.

Cracks requiring filling are covered below.

#### **11.4.4.1 Crack Filling**

When crack filling, either prior to sealing or as a single treatment, is specified, it is the Contractor's responsibility to ensure that areas to be treated are free from excess moisture and prepared by removing any grit, dirt, detritus or other deleterious matter prior to the filling of the cracks with one of the following materials, or an approved alternative material.

#### **11.4.4.2 Slippage Cracks**

If removal and replacement of the in situ material is required in order to repair a slippage crack, the repair must be completed as a digout repair.

### **11.4.5 Scabbing and Stripping**

#### **11.4.5.1 Extent of Area to be Treated**

Only the area of scabbing or stripping shall be treated, and this shall be marked on the road surface.

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#### **11.4.5.2 Surface Preparation**

Areas to be treated shall be free from excess moisture and prepared by removing any grit, dirt, detritus or other deleterious matter prior to the application of binder.

#### **11.4.5.3 Alternative Treatment for Stripping**

Where the Contractor considers there to be adequate bitumen present, a proposal to liven the binder using diluent may be submitted to the Engineer for approval.

#### **11.4.5.4 Application of Binder**

Binder shall be applied in a fine mist spray.

1. Scabbing: Binder shall be applied only to the area of scabbing. Care must be taken to avoid spraying binder on to the surrounding pavement.
2. Stripping: Binder shall be applied to the width specified by the Engineer.

#### **11.4.6 Flushing and Bleeding**

The Contractor must nominate the method to repair bleeding and flushed areas.

##### **11.4.6.1 High Pressure Water Treatment**

If high pressure water treatment (e.g. waterblasting) is proposed, then it must be performed in accordance with Transit Specification TNZ P/26.

##### **11.4.6.2 Diluent and Chip**

Precoated chip or heated chip shall be produced by a method approved by the Engineer.

Sufficient diluent shall be sprayed on the road surface under suitable weather conditions to liven the binder to ensure a satisfactory chip take.

The Contractor shall select appropriate chip size, diluent and adhesion agent following the principles in 'Chip Sealing in New Zealand', Chapters 8 and 12.

Chip spreading must follow immediately on spraying of the diluent. The Contractor must ensure there is sufficient rolling to bed the chip.

##### **11.4.6.3 Pavement Gritting**

Pavement gritting is used for the treatment of bleeding. Gritting must be completed with sealing chips that are no larger than the surrounding surface, but sufficiently large to prevent subsequent flushing through binder rise.

The sealing chip may be hand spread, but care must be taken to avoid over-chipping.

All surplus chip must be removed from the traffic lanes at the end of each day, and completely removed from the site once the bleeding is controlled.

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## **11.4.7 Cold Milling**

### **11.4.7.1 Extent of Area to be Treated**

Only the area marked or defined by the Engineer on the road surface shall be cold milled.

### **11.4.7.2 Cold Milling**

Where the cold milled area is to be backfilled, all edges shall be finished vertical. No longitudinal or transverse vertical edges shall be left unprotected and exposed to traffic overnight.

All cold milling machines with a drum width of more than 750mm shall be equipped with a self loading conveyor.

All contaminants and milled material shall be intercepted and disposed of at an approved disposal site or stockpiled for future recycling or other reuse.

All stormwater outlets, sumps, service boxes and manholes shall be protected against damage. All spoil shall be removed from the site.

### **11.4.7.3 Finished Surface**

The depth cold milled, after removal of all loose material, shall be -0mm - +5mm of the specified depth. The finished surface shall vary by no more than 5mm from a 3m straightedge laid longitudinally or a 1m straightedge laid transversely, including between adjacent runs.

## **11.4.8 Other Treatments**

The Operational Requirements details the technical requirements and applications of the other treatments.

## **11.5 Performance Criteria**

The performance of the Contractor during the contract period will be measured by the following criteria:

- that all repairs are carried out in accordance with this Specification by the date shown on the agreed programme, and within the response times stated.
- inspections are completed on time and inspection records are available when requested by the Engineer
- the chip sealing, including first coat seals, second coat seals and repairs of all surface defects:
  - does not flush, bleed or strip before the end of the defects liability period
  - there are no loose chips on the road surface on completion of the repair
  - the surfacing aggregate remains proud of the binder
  - the binder is not picked up by tyres
  - the skid resistance shall not deteriorate such that it is significantly lower than that apparent in the same cross section location on the pavement immediately before and after the work
- that the sealed carriageway surface of second coat seals and repairs of all surfaces have a consistent texture 6 months after the construction of the second coat seal, except for pre-reseal repairs, where the texture and hardness of the first coat seal must be consistent with the reseal design at the

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intended time of reseal

- that material used for crack filling and sealing shall remain in place, waterproofing the crack, for the length of the defects liability period
- that treatment of flushing, scabbing or bleeding leads to an improvement in road condition
- repairs are constructed to specified tolerances.

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## 12 Digouts

### 12.1 Digout Repairs

This section sets out the requirements for digout repairs on sealed roads, where a structural pavement repair is needed.

All work required by this section shall be completed according to the requirements of TNZ HM12:2006 as modified by the following.

#### (i) Response Times

The Contractor shall complete all work (including all surfacing and pavement marking reinstatement) by the date shown on the agreed Programme. In addition, first coat sealing shall be completed within the response time of the completion of backfill repair as detailed in Table 12.11

Table 12.1 First Coat Sealing		
Class	Temporary Seal Coat	First Coat (Grade 3 & 5 Chip)
All Roads	Same Day	1 Week

#### (ii) Surface Water Channels

If required, existing surface water channels shall be either regraded and trimmed or new surface water channels constructed. The batter slopes shall be according to TNZ C1.

The channels shall be graded and shaped so the tie-in with the existing drainage facilities is smooth and continuous. This will ensure that water does not pond.

#### Extra Over Item 12.1

### 12.2 Depth Greater Than 300mm

Digouts up to 300mm in depth are to be covered by the unit rate per square metre. Where the design of the digout indicates that a depth greater than 300mm is required, the additional volume of granular material is to be recorded and claimed at a cubic metre rate.

### 12.3 Drainage

The Contractor shall pay specific attention to any necessary drainage works to ensure the service life is provided.

If installed, subsoil drainage shall be Heavy Duty Nova Flo with a minimum diameter of 100mm.

### 12.4 Geotextile

In cases where, at a depth exceeding 400mm, the soil at the base of the excavation is found to have bearing strength of less than 50kPa as measured by Scala penetrometer or plate bearing test, a geotextile is to be used.

The geotextile shall have a filtration Class 1 requirement, and strength Class A requirement (TNZ F7/2000).

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## 13 Depressions

### (i) Scope

This section sets out the requirements for depression repairs. These include, but are not limited to depressions, wheel track rutting and settlement due to openings in surfaced pavements.

All work required by this section shall be completed according to the requirements of TNZ HM13:2006 and the specific requirements below.

### (ii) Definitions

A depression is a road defect in which the road surface has sunk. Depressions will vary in shape, and can develop either without loss of waterproofing (e.g. wheelpath rutting), or due to the loss of waterproofing (e.g. areas where water can pond and may be associated with pavement settlement). Depressions may be isolated or not, roughly circular in shape, or of considerable length along the wheelpaths.

### (iii) Response Times

The Contractor shall complete all work (including the completion of all surfacing and reinstatement of pavement markings) by the date shown on the agreed programme. The programme shall be drawn to meet the following guidelines:

Class	Engineer Review	Repairs Completed
All Roads	1 Week	1 Month

### (iv) Drainage

The Contractor shall pay specific attention to any necessary drainage works to ensure the service life is provided.

### (v) Surface Water Channels

If required, existing surface water channels shall be either regraded and trimmed or new surface water channels constructed. The batter slopes shall be according to TNZ C1.

The channels shall be graded and shaped so the tie-in with the existing drainage facilities is smooth and continuous. This will ensure that water does not pond.

## 13.1 Rip and Remake

The rip and remake method of repair shall be used for all depressions of depth greater than 25mm as follows:

- the ripping of the existing pavement, followed by:
- the supply and complete reconstruction of up to 75mm depth of unbound basecourse so the reshaped surface conforms to the shape and nature of the surrounding pavement, and:
- surfacing in accordance with the maintenance specifications

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## 13.2 Premix Reshaping

OGEM premix *shall not* be used for depression repairs, unless approved by the Engineer. In this case, the Contractor shall demonstrate the premix will not deform or result in subsequent flushing of the pavement surfacing.

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## 14. Edgebreaks

### (i) Scope

This Section sets out the requirements for edgebreak repairs.

All work required by this Section shall be completed according to TNZ HM14:2006 and the following requirements.

### (ii) Definitions

Edgebreaks are defined as the fretting or breaking of the edge of a bituminous surface, such that the loss of surfacing encroaches into the carriageway by more than 100mm from the nominal seal edge, or onto the white edgeline.

### (iii) Response Times

The Contractor shall complete all work (including the completion of all surfacing and reinstatement of pavement markings) by the date shown on the agreed programme, which should accord with the following guidelines:

Table 14.1 Response Times		
Class	Engineer Review	Repairs Completed
All Roads	1 Week	1 Month

### (iv) Repair Methods

All edgebreak repairs shall be:

- completed according to TNZ HM14:2006, except firm support and tapers shall be provided on each side of the repair area. A firm foundation and a vertical face of at least 25mm shall be provided where the edgebreak fill material abuts the existing seal.
- constructed so the edge of the repair is in line with the existing edge of seal

Edgebreak repairs do not require sealing.

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## 15 **Service Covers**

### **(i) Scope**

This Section sets out the requirements for adjusting of service covers.

All work required by this Section shall be completed according to TNZ HM15:2006 and the following requirements.

### **(ii) Definition**

A 'service hole' or 'service cover' is a shaft with a removable cover that leads down to a sewer, drain or other underground service. Also called a manhole.

### **(iii) Response Times**

The Contractor shall complete all work (including surfacing and pavement marking reinstatement) by the date shown on the agreed programme.

All works are to be programmed to ensure completion within one month.

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## 16 *Unsealed Shoulders and Major Cleaning of Surface Water Channels*

### (i) **Scope**

This Section sets out the requirements for maintaining unsealed shoulders on sealed roads. This includes but is not limited to feather edges, tapers, surface water channels and the removal of high lip.

The work required by this Section does not include:

- removal of detritus from surface water channels
- removal of slips
- vegetation control of grassed shoulders

The routine maintenance of unsealed shoulders is to be completed according to TNZ HM 16:2006 and the following requirements.

### (ii) **Response Times**

The Contractor shall complete all work by the dates shown on the agreed programme.

All works are to be programmed to ensure completion within one month on all roads.

### (iii) **Extent of Work**

Unsealed shoulders shall be maintained from the existing seal edge to a line parallel to the seal edge and 500mm behind the invert of the surface water channels.

Where there are no surface water channels, the Contractor shall be responsible for maintaining the unsealed shoulder from the existing seal edge to a line parallel to, and 3 metres offset from, the existing seal edge.

To reduce the long-term costs of unsealed shoulder maintenance, the Contractor shall encourage grass to grow on existing shoulders. Existing grassed shoulders shall not be removed except to prevent ponding of water on the sealed surface immediately adjacent to the seal edge (removal of high lip).

## 16.1 **Shoulder Maintenance**

All shoulders shall be maintained:

- in an even and compacted condition
- so a high lip does not form

Shoulder material shall not encroach on sealed surfaces except during maintenance activities. Prior to completing maintenance activities, all loose material shall be removed from sealed surfaces.

All maintenance aggregate shall be evenly graded aggregate with a maximum size of 20mm.

## 16.2 **Removal of High Lip**

All shoulders shall be maintained so that no water ponds on the carriageway, shoulder or taper edge. Where the high berm (shoulder) is wider than 1 metre, cutouts shall be formed at regular intervals to ensure the water on the carriageway drains freely into the surface water channel and/or roadside drains.

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## 16.3 Major Cleaning of Surface Water Channels

### (i) Definition

'Surface water channels' shall mean the existing surface water channels and/or the roadside drains between the road shoulder and the boundary fence or property on sealed or unsealed roads.

Major cleaning shall apply for a roadside water channel where more than 30% of a length of that water channel (between road crossings and/or access way culverts) is full of debris.

### (ii) Extent of Work

The Contractor shall clean and maintain roadside water channels and drainage structures and undertake drainage clearing as approved by the Engineer.

The work shall include:

- The identification and scheduling of water channels requiring major cleaning
- The major clearing of debris and vegetation from the water channel, including the removal of high shoulder adjoining the channel and clearing of culvert entrances and drainage structures (such as sumps, manholes and similar)

### (iii) Standards

On completion:

- The cross section of the surface water channels shall be restored.
- Surface water channels, culvert entrances and drainage structures shall be clear of all vegetation and debris, and there shall be clear discharge points from water channels into existing structures or via 'cutouts' onto natural ground.
- High shoulders from edge of seal or unsealed pavement to the water channel shall be removed to ensure the water on the carriageway drains freely into the surface water channel.
- All debris and materials removed from the surface water channels, shoulder and culvert entrances shall either be removed from the site, or shall be disposed of on-site. Where disposed of on-site, the material shall be spread to marry into the existing ground profile.
- All cleaning of channels on sealed roads shall be carried out with rubber-tyred plant. No tracked plant shall be permissible on sealed surfaces.
- Where the high berm (shoulder) is wider than 1 metre, cutouts shall be formed at regular intervals to ensure the water on the carriageway drains freely into the surface water channel and/or roadside drains.

#### 16.3.1 Clean and Dump On Site

Major cleaning of surface water channels shall include:

- All spoil/debris shall be placed on site but shall be placed as follows:
  - All debris to be landscaped to tie into existing ground conditions with no raised piles of debris.
  - All waterways/fencelines or existing structures to be kept clear of any debris from surface water channel cleaning.

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### **16.3.2 Clean and Dump Off Site**

Major cleaning of surface water channels shall include:

- All spoil/debris shall be dumped off site from the area of major cleaning of surface water channels.
- All dump sites shall be approved by the Engineer, and shall not encroach on private land or obstruct existing waterways or culverts.
- All dump sites shall be landscaped upon completion to tie in with existing surface conditions, with no raised mounds of spoil/debris.

### **16.4 Clean and Dispose Off Site Debris In Concrete Dish Channels**

Major cleaning of surface water channels shall include:

- Cleaning of concrete dish channels inclusive of sumps, culverts, inverts and exits.
- Cleaning shall include removal of all debris including but not limited to leaves, grass, silt and minor rock debris.
- All debris shall be removed and dumped off site.

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## **17. New Culvert Installation**

### **17.1 Scope**

This section sets out the requirements for the excavation, supply and placement of new culverts in both sealed and unsealed roads.

All work in this section shall be completed according to Sections 1-7 of TNZ F/3:2000, Specification for Pipe Culvert Construction

The pipe type and size shall be as requested by the Engineer.

### **17.2 Culvert Headwalls - Bagged Concrete**

Concrete for bagged headwalls is to be wet mixed using more water than normal to ensure the bags, when placed, become cemented together. Concrete must have a minimum compressive strength of 10MPa at 28 days. The face slope will nominally be 1 horizontal to 4 vertical.

Where requested, reinforcing steel (D12) will also be installed in the headwall.

The Engineer's approval is required for use of any pre-cast concrete headwalls.

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## **18. New Timber Cribwalls**

### **18.1 Scope**

In addition to Section 8 of the Operational Requirements, the following section sets out the requirements for the construction of a standard timber cribwall. See details in Appendix 18.

The work shall include excavation, construction and backfill, inclusive of filter drains at the rear of the cribwall, and reinstatement to join with the existing road.

Timber shall be 150mm diameter Tanalised H4 half round posts, or similar material approved by the Engineer. Fixing of horizontal timber shall use hot dipped galvanised nails, size 150mm.

Granular backfill of cribwalls shall be clean free-draining material. All backfill shall be compacted.

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## 19. **Potholes - Sealed Roads**

### **(i) Scope**

This Section sets out the requirements for inspection, repairing and reporting of potholes in bituminous surfaced pavements.

All work required by this Section shall be completed according to the general specifications of TNZ HM19:2006 and the following requirements.

### **(ii) Definition**

Potholes are defined as:

- Any surface defect where the basecourse is exposed, or;
- Any surface defect that can retain water, or;
- Where the defect exceeds 50mm depth in asphaltic concrete, including porous asphalt and/or surfacing layers.

There is no minimum size.

Large potholes are defined as:

- Potholes with an area exceeding 1 square metre.

### **(iii) Routine Inspection and Repair**

Inspections of the network shall be carried out monthly over the entire road network. The period between inspections shall not exceed 5 weeks, or be less than 3 weeks.

### **(iv) Response Times**

The Contractor shall complete all work required by this Section within 5 working days from the time the pothol first appears, or from when first notified of the pothole.

### **(v) Large Potholes**

For any pothole over 1 square metre in area, the Contractor shall:

- provide the most appropriate temporary repair that is reasonably possible given the conditions of the surrounding pavement, to ensure that the site remains safe to road users (This may also require the erection of temporary traffic control signs).
- notify the Engineer in writing, within 24 hours of first observing and repairing the pothole, of the location of the area of pavement which is considered to have failed or is unsound, and the proposed method of repair.
- programme and complete the repair as Urgent Work.

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**(vi) Materials**

All materials shall comply with Sections 11 and 12 of the Maintenance Specifications as appropriate.

**(vii) Reporting**

Details of all roads inspected, date inspected and repairs completed (if any) shall be included in the Monthly Report (in the same format as the detailed claim).

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## **20. Surface Detritus**

### **(i) Definition**

Any collection of fragments or material on the sealed carriageway surface or in drainage features.

Detritus includes loose sealing chip, pavement aggregate, dead animals, slips, deposits of windblown sand or grit, deposits of loose aggregates, fallen leaves and the buildup of minor droppings or spillages created from passing traffic or climactic conditions.

Detritus in the context of drainage features may include wood debris, litter and vegetation.

### **20.1 Minor Cleaning of Surface Water Channels**

#### **(i) Scope**

This Section sets out the requirements for minor cleaning of surface water channels, including the removal of small slips from the water channels.

All work required by this Section shall be completed according TNZ HM20:2006 and the following requirements.

#### **(ii) Response Times**

The Contractor shall complete all work by the date shown on the agreed programme.

#### **(iii) Other Definitions**

Minor cleaning shall apply for a roadside water channel where less than 30% of a length of that water channel (between road crossings and/or accessway culverts) is full of debris.

Small slips are those which accumulate in the surface water channel and road shoulder, but do not encroach into the traffic lane (i.e. cut the edgeline, or the sealed surface where no edgeline is marked).

#### **(iv) Extent of Work**

The Contractor shall clean and maintain roadside water channels and drainage structures and undertake drainage clearing as approved by the Engineer.

The work shall include:

- The identification and scheduling of water channel requiring minor cleaning
- The cleaning of debris, including removal of small slips covering the surface water channel and shoulder, and cleaning of culvert entrances and drainage structures (such as sumps, manholes and similar).

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**(v) Standards**

On completion:

- The cross section of surface water channels shall be restored
- Culverts, drainage structures and unlined surface water channels shall be clear of all vegetation and debris, and there shall be clear discharge points from water channels into existing structures
- Lined drains shall have all debris removed from the channel such that the maximum depth of ponded water does not exceed 20mm in depth.
- All small slips, frettings from cuttings, deposits of windblown sand or grit, deposits of loose aggregates and fallen leaves shall have been removed from the surface water channel
- Water on the carriageway shall drain freely to water channels

All debris and material cleared from the stormwater channels and culvert entrances shall be removed from the site. The cost of disposal of all material shall be included in the scheduled rates.

All minor cleaning of channels on sealed roads shall be carried out with rubber tyred plant. No tracked plant shall be permissible on sealed surfaces.

Cutouts shall be formed in the high berm at regular intervals to ensure the carriageway drains freely into the surface water channel.

**(vi) Clean and Dump Off Site**

Minor cleaning of surface water channels shall include:

- All spoil/debris shall be dumped off site from the area of minor cleaning of surface water channels.
- All dump sites shall be approved by the Engineer and shall not encroach on private land or obstruct existing waterways or culverts.
- All dump sites shall be landscaped upon completion to tie in with existing surface conditions, with no raised mounds of spoil/debris.

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## **21. Stormwater Structures**

### **21.1 Scope**

This Section sets out the requirements for stormwater structure maintenance.

The work required by this Section does not include sump cleaning within urban areas.

All work required by this Section shall be completed according to TNZ HM21:2006 and the following requirements.

### **21.2 Response Times**

#### **(a) Inspection Reports**

The Contractor shall submit the Stormwater Inspection Report within 2 months of the Date of Occupancy of Site, and after that at monthly intervals

#### **(b) Maintenance Work**

The Contractor shall complete all stormwater structure maintenance on all roads as programmed.

### **21.3 Definitions**

- **Stormwater Structures:** A stormwater structure is defined as any structure with a waterway area of less than 3.4m<sup>2</sup>. It includes, but is not limited to, culverts, manholes, sumps, slot drains, catch pits, soak holes, flumes, outlets to subsoil drains, outlets to bored horizontal drains, and accessway culverts.
- **Faults:** For sumps, manholes, catchpits and similar, a fault exists if more than 30% of the volume of the structure is filled with debris, or the debris is within 200mm of the outlet pipe invert, and/or more than 10% of the outlet pipe entry is covered with detritus. For culverts, a fault exists when more than 10% of the depth of the culvert inlet, outlet or barrel (along its entire length) is filled with detritus.

### **21.4 Fault Inspection and Reporting**

#### **(a) Inspection Reports**

The Contractor shall review, update and submit (in both hard copy and electronic formats), the Stormwater Inspection Report within the response times already stated.

The report shall be submitted in a format agreed with the Engineer, but will include at least the following information:

- Date of inspection
- Road ID
- Road name
- Route Position
- Culvert type

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- Diameter or size of culvert
  - Clear or blocked
  - Repairs completed or work required
  - Priority of repairs or other work

**(b) Inspection and Cleaning Programme**

The Contractor shall develop an inspection and cleaning programme that enables:

- at least 15% of all stormwater structures to be inspected and cleaned each month
- all structures to be inspected and cleaned at least once every six months

After each month's inspection is complete, the Contractor shall update the Stormwater Inspection Report

**21.5 Cleaning**

All stormwater structures shall be cleaned according to Clause 21.6 of TNZ HM21:2006.

**22. Not Used**

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## **23. Unsealed Pavements**

### **(i) Scope**

This Section sets out the requirements for the maintenance of unsealed pavements, including running course, shoulders, feathered edges, and surface water channels. It also includes supply, cartage and laying of maintenance aggregate for unsealed roads, including preparation of the surface prior to laying.

All work required by this Section shall be completed according to TNZ HM23:2006 and the following requirements.

If any variations occur between the following requirements and TNZ HM23:2006, then the requirements of this document take precedence.

### **(ii) Routine Inspection and Repair**

Inspections of the Network shall be carried monthly on all roads. Where pavement conditions require more frequent inspections, then the Contractor shall do so.

### **(iii) Response Time**

The Contractor shall complete the repair of all potholes within 5 working days of being identified or from receiving notification from the Engineer.

## **23.1 Potholes**

### **(i) Definition**

Potholes in unsealed roads are defined as holes in the surface of the pavement greater than 20mm in depth, and with a diameter over 50mm. They may occur singly or spread over a wide area.

### **(ii) Repair**

All potholes shall be repaired according to TNZ HM23:2006. Material used is to have similar characteristics and properties as the surrounding pavement, and sufficient fines to ensure the repair remains in place.

### **(iii) Reporting**

Details of all roads inspected, date inspected and repairs completed (if any) shall be included in the Monthly Report.

## **23.2 Surface and Shape Restoration**

The pavement surface shall be maintained according to TNZ HM23:2006. The number of passes shall not be restricted to 3 or 5 passes, but shall be sufficient to achieve the required standard as detailed in that Specification.

The pavement is to be maintained such that the following shape characteristics are met:

- Transverse shape - the maximum deviation from a 2 metre straight edge laid on the pavement at right angles to the centreline shall not be greater than 30mm. On sections of road constructed with

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camber, the shape will be checked each side of the centreline.

- Longitudinal shape - the maximum deviation from a 3 metre straight edge laid on the pavement parallel to the centreline shall not be greater than 30mm, after making due allowance for any vertical curvature of the road.
- Corrugations must not develop to the extent where the depth of corrugations over a 2 metre length is greater than 20mm. Regardless of the amplitude, they must not extend over a length greater than 30 metres on flat or uphill lanes, or 10 metres in areas where traffic is generally braking.
- Wheel track rutting must not develop to the extent where water flow is channelled in the ruts.
- Potholes must not develop to a depth greater than 20mm or exceed 50mm in diameter. Potholes within any 10 square metres shall not exceed 5 in number.

The Contractor shall ensure that roads are not graded unnecessarily. The programme of grading shall be discussed and agreed with the Engineer, and generally only those roads, or specific sections that are failing to meet the surface criteria shall be maintained.

Appendix 23 gives a schedule of those roads to be graded regularly. They are to be graded monthly, with a minimum of 25 and a maximum of 35 days between gradings.

Note particularly that roads which have received heavy metalling to restore shape and strength are expected to maintain their shape with only infrequent grading.

Note the requirement to give a running surface, feather edges, tapers and water channels which can be cleaned with a grader.

Note also the requirements under Maintenance Aggregate and Heavy Metalling for grader operators to report locations requiring these functions. These reports will also include locations where roads are so out of shape or short of metal that the specification for shape correction cannot be met.

### **23.3 Pavement Repairs - Treatment**

For the purposes of this clause, a digout means the repair of the existing pavement where the repair is undertaken by either of the following methods:

#### **23.4 Stabilisation Repair**

A stabilisation repair includes the stabilising of in-situ material.

#### **23.5 Digout Repairs**

##### **(i) Design of Repair**

The Contractor shall design all digout repairs so a service life similar to that provided by the surrounding pavement can be expected.

The Contractor shall:

- inspect
- investigate (including laboratory and field testing)
- where appropriate, determine the type and quantity of stabilisation agent
- mark on the pavement surface the location and extent of all proposed digout repairs.

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Where the replacement of in-situ material is the preferred repair method, the Contractor shall demonstrate that other lower-priced methods are inappropriate.

A digout repair comprises the excavation and replacement of the in-situ material with

- an approved basecourse and sub-base, and or;
- any other method and/or materials agreed with the Engineer.

## **(ii) Construction of Repair**

All repairs shall be constructed according to TNZ HM23:2006, except that the top 50mm of the repair shall be aggregate complying with TNZ M/4 Specification.

All basecourse aggregate shall comply with TNZ M/4 in all respects.

Unless otherwise agreed with the Engineer, all sub-base material shall have:

- a minimum soaked CBR value of 40
- a maximum aggregate size no greater than 0.4 times the compacted layer thickness
- a sand equivalent of greater than 35, or shall have a sand equivalent of greater than 35 and will be well graded, with no more than 10% by mass passing the 0.425mm sieve.

### **Extra Over Item 23.5**

#### **23.6 Depth Greater Than 300mm**

Digouts up to 300mm depth are to be covered by the unit rate per square metre. Where the design of the digout indicates that a depth greater than 300mm is required, the additional volume of granular material is to be recorded and claimed at the cubic metre rate.

#### **23.7 Positive Drainage**

Further to Clause 9 of C4, the Contractor shall pay specific attention to any drainage works that may be necessary to ensure the service life is provided. Subsoil drainage shall be Heavy Duty Nova Flo with a minimum diameter of 100mm.

#### **23.8 Geotextile**

In cases where at a depth exceeding 400mm, the soil at the base of the excavation is found to have bearing strength of less than 50kPa as measured by Scala penetrometer or plate bearing test, a geotextile is to be used.

The geotextile shall have a filtration Class 1 requirement and strength Class A requirement (TNZ F7/2000).

#### **23.9 Maintenance Aggregate**

Supply and placement of maintenance aggregate is a measure and value operation.

Maintenance aggregate shall be applied in accordance with TNZ HM23, Table 23.3.

The Principal expects a total of 64,800 cubic metres of maintenance metal to be applied during the 3-

year term of the contract. The Contractor shall develop and agree with the Engineer a 3-year metalling programme based on this quantity of aggregate. Every unsealed road is to be considered, with the expectation that at least 20 cubic metres per kilometre will be applied each year. The programme shall be reviewed monthly, and is expected to be varied due to traffic changes, seasonal conditions and other factor.

The scheduling of the work to be undertaken is a crucial element of this operation. It is important that areas which require more than 70mm of metal be identified and scheduled for early attention.

Grader operators are required to note and report locations (by RP) of roads which in their opinion require maintenance metal or heavy metalling. The Contractor shall check these reports and include these locations in their programme as appropriate.

The Contractor shall each month put forward the proposed programme for the following month for approval by the Engineer. The programme is to include the sections of road, identified by RPs, to be maintenance metalling.

The Contractor shall also provide a schedule with the monthly report, detailing the volumes of metal delivered to each section of road, by RP.

The aggregate shall be AP20, and shall be from a source approved by the Engineer. For a source to be approved, a grading and/or other criteria shall be established and agreed with the Engineer for that source. The cost of testing to establish these standards shall be met by the Contractor.

**(i) Preparation of Surface**

The surface shall be prepared according to Clause 5 of C12.

**(ii) Placement of Aggregate, Maintenance Run**

All maintenance aggregate shall be AP20, and will be constructed according to HM23:2006.

The finished surface shall be dense and traffickable, and the loose surface layer of the maintenance aggregate shall not exceed 20mm after a period of 48 hours.

**(iii) Aggregate**

All maintenance aggregate shall comply with the grading for Type 1 or Type 2 Aggregate specified in Table 23.2. Aggregate meeting this specification will be crushed. 50% by weight of the aggregate greater than 4.75mm shall have at least 2 crushed faces.

<b>Seive Size (mm)</b>	<b>Aggregate % Passing</b>	
	<b>Type 1</b>	<b>Type 2</b>
37.5	-	100
19	100	70 - 80
9.5	45 - 75	50 - 60
4.75	25 - 55	35 - 50
2.36	15 - 35	25 - 40
1.18	2 - 35	30 - 35
0.75	8 max	8 max

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**(iv) Clay Additive**

To reduce the loss of fines from the Type 1 aggregate, it shall (with the approval of the Engineer) be blended with a cohesive clay fraction to provide an aggregate meeting the Type 2 grading. The actual quantity of clay blended with the aggregate shall be varied so the desired result is achieved.

The clay fraction shall:

- be free of all organic, vegetable or other deleterious material
- pass the 4.75mm sieve
- be blended with the Type 1 aggregate so the blended material has a uniform texture with no segregation of fine and coarse material.

The blended aggregate shall:

- have a plasticity index of less than or equal to 6 (the testing frequency shall be 1 test per 2,000 square metres of maintenance aggregate constructed), and have a laboratory soaked CBR of greater than 60 (the testing frequency shall be 1 test per 5,000 square metres of maintenance aggregate constructed).

**23.10 Heavy Metalling**

Heavy metalling is a measure and value operation.

The Principal expects a total of 16,000 cubic metres of aggregate will be required for this purpose during the 3-year term of the contract. The Engineer and the Contractor shall develop a programme which shall be reviewed monthly, and is expected to be varied due to traffic conditions, seasonal changes and similar.

It is important that areas which require more than 70mm of metal be identified and scheduled for early attention. Grader operators are required to note and report locations (by RP) of roads which in their opinion require maintenance metal or heavy metalling. The Contractor shall check these reports and include these locations in their programme as appropriate.

The Contractor shall each month put forward the proposed programme for the following month for approval by the Engineer. This programme is to include the sections of road, identified by RPs, requiring heavy metalling.

The Contractor shall also provide a schedule with his monthly report detailing the volumes of metal delivered to each section of road, by RP.

The surface shall be prepared according to Clause 5 of C12.

The basic depth of metal to be applied shall be 100mm to 150mm uncompacted depth as proposed by the Contractor and agreed with the Engineer. The metal depth with crossfalls will be marked by lift pegs to ensure that the correct thickness is applied, that the camber and superelevations are correct, and as a means of verifying the volume of aggregate used.

The aggregate for the base depth shall be approved granular material from sources approved by the Engineer.

The metal shall be graded to shape and compacted using smooth-wheeled vibrating rollers or other approved compaction equipment.

A wearing course of 75mm uncompacted depth of maintenance aggregate shall be applied, and shall be compacted.

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## 24. Signs

### (i) Scope

This Section sets out the requirements for maintaining signs on the Tararua District Council roading network. This includes, but is not limited to:

- regulatory signs, including Stop, Give Way and advance warning signs on roads intersecting the highway, and No Stopping signs within the urban areas
- permanent warning signs
- chevrons, boards, sight rails, bridge end markers and obstruction markers
- bridge name signs, seasonal signs, guide signs, street and road name signs, motorist service signs and tourist and information signs
- reference station and ERP markers, route position markers and bridge position markers

The work required by this Section does not include:

- constructing gantries and overhead signs, maintaining privately-owned signs (e.g. heritage trails), and signs owned and maintained by the NZTA.

All work required by this Section shall be completed according to TNZ C20:2003 and the following requirements:

### (ii) Response Times

#### (a) Maintenance Work

The Contractor shall identify, repair, replace and refurbish all non-regulatory signs within one month from the time the defect occurs. This applies to all such signs on all network roads.

#### (b) Regulatory Signs

All damaged regulatory signs shall be reinstated at the time they are observed to be missing, or within 72 hours of receiving notification of such.

The term 'receiving notification' means the time the Contractor is notified of the damage by the Engineer, the Contractor's personnel, or a third party (e.g. Police, Principal or member of the public).

#### (c) Planned Relacement

The Contractor shall complete all planned replacement by the date agreed with the Engineer.

### (iii) Materials

#### (a) Supply

All hardware shall comply and be installed according to TNZ C20:2003, and TNZ's Manual of Traffic Signs and Markings, Part I Traffic Signs, Part II Markings, and TNZ P/24. In particular, all hardware shall:

- 
- be obtained from a manufacturer with a certified quality system (see Clause 1(a) of TNZ C20:2003)
  - comply with the Road Safety Manufacturer's Association (RSMA) compliance standard for traffic signs
  - All reflective signs shall meet the requirements of Class 1 High Intensity reflectivity

**(b) Selection**

Aluminium sheeting used for signs with multiple supports shall be at least 2.5mm thick.

Posts for urban street name signs shall be formed with the standard finish (bevelled top and scarf).

**(c) Principal's Logo**

Not required.

**(d) Standard Signs**

All signs supplied shall meet required standards according to the TNZ Manual of Traffic Signs and Markings.

New hardware shall be installed in the way the Engineer approves.

The Contractor shall photograph all damaged hardware programmed for replacement. The photographs shall clearly show:

- the location and side of road
- the extent of the damage

**(e) Posts**

All posts supplied shall meet required standards according to the TNZ Manual of Traffic Signs and Markings.

**(iv) Defective Signs**

A sign is defective when it is:

- missing
- out of tolerance
- ineffective. A sign is ineffective if it is:
  - not clearly identifiable at night from a distance of 160m with headlights on full beam
  - damaged
  - not free of dirt and grime from a distance of 50m during daylight
- not clearly visible and/or readable from a distance of 50m.

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**(v) Installation of Hardware**

**(a) General**

All hardware shall be located according to the Manual, or as otherwise instructed by the Engineer.

Replacement hardware shall be located in the same position or height as the previous item, or remounted according to the Manual. Where applicable, the alignment and level of replacement items shall tie in with existing items, and shall appear by eye to be a straight or a true curve, as appropriate.

All areas surrounding new or replacement posts shall be reinstated to a condition no worse than that which existed prior to beginning the work.

**(b) Fixing**

All new or replacement hardware shall be:

- firmly installed in a vertical position
- securely fixed to posts with appropriate fixing brackets. The Contractor shall not fix signs to posts by bolting through the sign unless approved by the Engineer.

**24.1 Routine Maintenance**

The Contractor shall maintain all existing hardware in its existing position, free of defect, to comply with the requirements of the Manual.

Maintenance includes, but is not limited to:

- straightening and realigning, and minor repairs to the hardware and posts such as replacing and tightening hardware fixings, spot painting and similar
- cleaning the hardware and/or posts (including the removal of graffiti and advertising signs)
- checking all slip base posts (including lighting columns) at least quarterly. This work includes:
  - checking that all bolts, washers and shims are in place
  - replacing missing items
  - checking all bolts are tightened to the appropriate torque

Graffiti-damaged hardware shall be cleaned with a non-abrasive cleaning agent or solvent. The cleaning agent or solvent shall be a product that will not affect the reflectivity of the retro-reflective sheeting. The cost of replacing hardware which has been damaged due to the use of an inappropriate solvent (making the manufacturer's warranty void), shall be borne by the Contractor.

High pressure cleaning systems which may damage the hardware shall not be used.

All signs shall be cleaned in accordance with the TNZ Manual of Traffic Signs and Markings.

**24.2 Painting of Hardware**

**24.2.1 Sign Posts**

Existing posts shall be maintained so all posts are free of dirt, grime, graffiti and flaking or heavily oxidised paint at all times.

Where required, the posts shall be repainted. Painting shall include, but is not limited to, cleaning, surface preparation, bare timber priming and total repainting with one coat of white high gloss paint

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recommended for exterior use. All preparation, priming and painting shall be according to the paint manufacturer's recommendations.

#### **24.2.2 Sight Rails**

The Contractor shall maintain all sight rails so they are free of visible dirt, grime, graffiti and flaking or heavily oxidised paint at all times.

Where required, the sight rails shall be repainted. Painting shall include, but is not limited to, cleaning, surface preparation, bare timber priming and total repainting with one coat of white high gloss paint recommended for exterior use. All preparation, priming and painting shall be according to the paint manufacturer's recommendations.

#### **24.3 Retrieval, Refurbishment and Reinstallation of Hardware**

If existing hardware is missing, the Contractor shall inspect the area immediately surrounding the missing hardware's location. If the missing item is found in an accessible location, the Contractor shall retrieve, clean or refurbish (as appropriate), and reinstall it in its correct location.

The hardware shall be refurbished so that from a distance of 20 metres, it shall appear the same in all respects as a new item of hardware.

#### **24.4 Relocation of Existing Hardware**

Existing hardware shall be taken away, cleaned, refurbished (if required) and relocated where proposed by the Contractor, and/or as agreed with the Engineer.

#### **24.5 Sight Rails**

Sight rails shall be constructed at the locations agreed with the Engineer. Appendix 24 details the required standards.

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## **25. Vegetation Control**

### **25.1 Scope**

This Section sets out the requirements and standards for the control of roadside vegetation on the roading network.

The work required by this Section shall be completed according to the Operational Requirements Sections 1-7 (inclusive), TNZ C21:July 1997, and the following requirements.

It is essential that this work is carried out in the period between October 1 - December 31, and that Secondary Arterial routes are mown twice during this period.

### **25.2 Mowing**

The extent of mowing is as follows:

#### **(a) Mowing Width**

See Appendix 25(a).

This is generally to be a 1.5m wide strip from the edge of vegetation growth on both sealed and unsealed roads.

If mowing is adjacent to the kerb and channel or a dish channel, mowing is to be a 1.5m wide strip from the edge of the kerbing or dish channel.

#### **(b) Schedules of Verges**

The schedule of Secondary Arterial road verges to be mown is shown in Appendix 25(b). The Secondary Arterial routes are to be mown twice during the period, at an interval of between 5 and 7 weeks.

Appendix 25(c) schedules all other roads to be mown. These roads will be mown at least once per year and as directed by the Engineer; some or all of these roads may be mown a second time.

#### **(c) Sight Visibility**

Sight visibility at all intersections and blind bends shall be maintained at all times, and may be undertaken in conjunction with verge mowing.

#### **(d) Grass Height**

Immediately after mowing ,the grass height shall not exceed 200mm.

#### **(e) Capacity**

The Contractor must have available sufficient resources to enable a mowing capacity of 100km centreline measure per day (i.e. 100km of road, mown on both sides).

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### **25.3 Employment of Other Contractors**

If the Contractor is unable to meet the above mowing requirements, the Principal reserves the right to employ other contractors to ensure the network vegetation control is performed to the required standards.

### **25.4 Mobile Operation**

All vegetation control work completed according to this Section will be considered a mobile operation. See Section 6 of the Operational Requirements.

### **25.5 Care of Existing Roadside Furniture**

The Contractor shall take all reasonable measures to avoid removal of or damage to roadside furniture as a consequence of the vegetation control operations. The Contractor shall be responsible for the cost of replacement or reinstatement of all such furniture removed, disturbed or damaged during these operations to the appropriate TNZ standards, and to the satisfaction of the Engineer.

### **25.6 Areas and Extent of Control**

The areas of the Network and the extent and type of control are specified in Appendix 25.

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## 26. Footpath Maintenance

### (i) Scope

This Section sets out the requirements for the maintenance of footpaths.

All work required by this Section shall be completed according to the Operational Requirements Sections 1 to 7 inclusive, Maintenance Specification Sections 11, 12, 13 and 15, and the following requirements.

### (ii) Response Times

The Contractor shall complete all work by the date shown on the approved programme.

### (iii) Maintenance

All maintenance repairs shall be completed so the transition of the existing footpath on to and off of the repair is smooth and continuous.

Where sections of footpath are replaced, the replacement sections shall be constructed to the same depth as the existing sections.

## 26.1 Concrete Footpaths

The construction of concrete footpaths shall be as follows:

- Concrete shall conform to NZS 3104:1983, and attain a strength of 17.5MPa at 28 days
- Concrete construction shall conform to NZS 3109:1997 in all respects, and in particular to Clause 7, in placing, finishing and curing of concrete. Concrete shall be cured for a minimum of three days
- The minimum depth of concrete shall be 75mm
- Basecourse shall be a minimum of 50mm of compacted granular fill
- All adjoining surfaces shall be reinstated to similar condition

## 26.2 Service Covers

The relocation or raising of service covers shall include all costs associated to ensure service covers on footpaths, whether concrete or asphaltic concrete, shall be flush with the finished surface level of the adjoining footpath.

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## **27. Edge Marker Posts**

### **27.1 Maintenance**

This Section sets out the requirements for maintaining edge marker posts.

The work required by this Section shall be completed according to Sections 1 to 7 (inclusive) of TNZ C1, TNZ C18:1995, TNZ P/16 Sections 5, 6 and 7, and the following requirements.

All replacement edge marker posts shall be maintained in accordance with the TNZ Manual of Traffic Signs and Markings and P/16.

As edge marker posts are replaced, they shall be stamped 'TDC' with a date (e.g. 06/10), with letters and figures 10mm high.

The Engineer may approve other types of edge marker post in locations where environmental or geometrical requirements make other types of posts more economical or practical.

### **27.2 Inspections**

Inspections shall be completed to identify and repair defective edge marker posts.

An edge marker post is defective when it is:

- missing
- ineffective. An edge marker post is ineffective if it:
  - is not clearly visible at night from a distance of at least 160m with headlights on full beam
  - has incomplete or damaged reflectors and/or red band
  - is not free of dirt and grime when observed from a distance of 50m during daylight
- out of tolerance (see P/16)

#### **27.2.1 Night Inspection Reports**

Night inspection reports for all delineators are required every 6 months.

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## **28. Minor Bridge Maintenance**

### **28.1 Scope**

This Section sets out the requirement for minor bridge maintenance. It includes:

- removal of detritus from the bridge deck, kerbs and handrails
- removal of all material blocking deck drainage channels
- reporting to the Engineer any blockages in the channel, particularly if any material is accumulated on piers and abutments. Any clearances of blockages will be requested by the Engineer.

The work required by this Section does not include:

- routine bridge repairs
- major bridge repairs
- structural painting
- superstructure cleaning/washing and painting

### **28.2 Definitions**

'Detritus' is defined as any material on the carriageway, kerbs, or handrails, or in any of the drainage features.

Detritus includes, but is not limited to, loose sealing chip, pavement aggregate, dead animals, slips, vegetation, wood debris, litter and windblown sand, grit or leaves.

### **28.3 Response Time**

The Contractor shall complete all work required by this Section within one month of such work being programmed or instructed by the Engineer.

### **28.4 Cleaning Programme**

It is the Principal's intention that all bridges are to be inspected and cleaned at least once every 6 months.

### **28.5 Standards**

On completion of cleaning:

- the bridge deck, kerbs and handrails shall be free of detritus
- the deck drainage channels shall be unblocked and free of any obstruction

## 29. Rural Fire and Civil Defence

### 29.1 Scope

This section sets out the requirements for rural fire fighting as part of the Contract.

Palmerston North City Council is the current Tararua District Council after-hours telephone and security service provider. The Engineer will advise of any change in service provider.

### 29.2 Definitions

- Rural Fire Officer : A Rural Fire Officer is any person warranted as a Rural Fire Officer by the Principal Rural Fire Officer of the Tararua District Council. The Engineer will provide the Contractor with a current list of persons warranted as Rural Fire Officers. The list will be updated on July 1<sup>st</sup> each year.
- Water Tanker: A water tanker is a vehicle equipped with a water tank of a capacity of, at least, 3000 litres and a high volume pump and suction hose for filling purposes. The outlet of the tank shall be fitted with a 100 mm valved outlet fitted with a 100 mm Camloc coupling.
- Smoke Chaser Unit: A smoke chaser unit is a free- standing 200/500 litre water tank/pressure hose unit which can be transported on a utility or light truck.
- Trained Fire Fighters: Trained fire fighters are persons who have attended, at least, a basic rural fire- fighting course recognised by the Rural Fire Authority.
- Fire Season: This is a declaration of hazard risk and restrictions that is notified by the Principal Rural Fire Officer of the Tararua District Council.

### 29.3 Response Times/Assembly Points

- The Contractor shall mobilise to assembly points the resources required by the Rural Fire Officer.
- The assembly point shall be directed by the Rural Fire Officer at the time of call out but, unless notified otherwise, will be the Dannevirke Rural Fire depot.
- The response times for mobilisation to the Dannevirke Rural Fire depot are set out in the table below:

Fire Season	Response Time		
	Water Tanker Plus Crew	4 Trained Fire Fighters	4 Additional Trained Fire Fighters/Other Plant
Open	2 hours	2 hours	4 hours
Restricted	30 minutes	1 hour	2 hours
Prohibited	30 minutes	30 minutes	2 hours

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Expected response times to other Assembly Points will be based on the distance of the designated assembly point from Dannevirke

#### **29.4 Work Criteria**

##### **29.4.1 General : Fire**

###### **29.4.1.1 Fire Suppression Crews**

The Contractor shall provide a minimum of 8 staff members to act as fire suppression crews.

The Contractor shall nominate 2 staff members to act as crew bosses. Crew bosses will be warranted fire officers with the delegated powers of a deputy of a Principal Fire Officer as provided by Section 36 of the Forest and Rural Fires Act 1997.

###### **29.4.1.2 Communications**

The Contractor shall operate a cell phone system linking field staff to Council's rural fire officers. Communications at a fire scene will be via field communication radio telephones using the Contractor's and Council's transmission frequency

###### **29.4.1.3 Resources**

The Contractor shall make available at the fire site, upon request by a Rural Fire Officer, any or all of the Contractor's plant nominated in the Resource Schedule as being assigned to this contract and the Contractor's trained personnel.

###### **29.4.1.4 Training**

The Contractor shall be responsible for training the Rural Fire staff provided for the contract.

##### **29.4.2 Routine Work**

Annually, the Contractor shall provide the Engineer with a schedule of plant used under this contract and will be made available for emergency work, which will be forwarded to the Council's Principal Rural Fire Officer.

The Contractor and his staff shall be familiar with the Tararua District Council Fire Plan. The Contractor shall have a copy of the Fire Plan available for use as necessary.

On notification of the fact that a fire has been discovered, the Contractor's staff must know the sequence of actions to be taken and who is to be in control of the situation.

The cost of training and keeping staff trained shall be classed as Routine Works.

The Contractor shall provide and/or train a minimum of 8 staff members to act as fire suppression crews. A minimum of 2 crew members shall receive additional training to enable them to act as crew bosses. The initial fire suppression crew and fire boss training shall be completed within 2 months of the contract commencement date.

The Contractor shall arrange a one-day training session to be held once a year to refresh the training of staff and to assist with any new staff. All training sessions require the prior approval of the Tararua District Council Principal Rural Fire Officer and must be conducted by experts in the field of rural fire fighting.

The Contractor shall maintain a register of those personnel who have attended and passed Fire Fighting Training Courses.

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Provision of staff on 24 hour standby to receive notification and to respond to rural fire works is the responsibility of the Contractor.

### **29.4.3 Ordered Work**

The responding to and suppression of rural fires will be undertaken as Ordered Work.

### **29.4.4 General : Civil Defence**

#### **29.4.4.1 Performance Criteria**

The performance of the Contractor during the contract period will be measured by:

- a) That all the requirements of this specification are met.
- b) That the resources requested by the Rural Fire Officer are assembled at the nominated Assembly point within the response time applicable.
- c) That the Contractor's personnel attend rural fire fighting courses in sufficient numbers to satisfy the callout requirements.

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