## Appendix M: Routine Maintenance Specification

# Road Asset Management Contract (RAMC) – Gen 2

**January 2020**

Queensland Government

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## Contents

## Note for Users:

Descriptions of items in this Appendix M may be different to the standard *Routine Maintenance Performance Contract* (RMPC) items, even though a similar numbering system is used.

Please read the description of each item carefully.

## 100 – Sealed Surfaces

### *105 Pothole Patching*

**Description**

Pothole Patching is the repair with asphalt or premix of an isolated hole or series of holes in the sealed roadway or deck wearing surface.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS12 | *Sprayed Bitumen Emulsion Surfacing* |
| MRTS21 | *Bituminous Emulsion* |
| MRTS22 | *Supply of Cover Aggregate* |
| MRTS30 | *Asphalt Pavements* |

The aggregate shall be an approved mix of 5 mm, 7 mm and/or 10 mm crushed rock or crushed gravel conforming to MRTS22. It shall be uniformly coated with bitumen emulsion. The quantity of bitumen emulsion incorporated in the aggregate shall be sufficient to prevent aggregate stripping from the patch but not so much as to cause a fatty surface.

If required to prevent pick-up by traffic, a single layer of dry stone or sand shall be spread over the coated aggregate.

Loose stone shall be swept from the patched area and the adjoining pavement.

**Restoration Standards**

The finished surface shall be within ±5 mm of the height of and conform to the shape of the surrounding road surface.

The standard of compaction shall be such that the final passes of the compaction equipment leave no impressions on the restored surface.

The patch shall not exhibit stripping of aggregate or bleeding of bitumen.

No loose material shall be left on sealed carriageway.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 105 | Pothole Patching | lump sum |

**Testing Requirements**

Refer to MRTS30 Testing requirements.

The testing requirements listed for all the materials shall apply to the cumulative quantities used throughout the Contract and not to specific Work Order quantities. Where the Work Order quantity does not reach the required testing frequency, the quantity shall be aggregated with other Work Order quantities from that specific supply source until such time as a test is required. Work Order quantities may be recorded on a materials testing register and testing initiated once the cumulative total for a specific supply source reaches the specified figure.

### *108 Edge Repair*

**Description**

The repair of sealed pavement edges to restore line and level.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic.* |
| MRTS12 | *Sprayed Bitumen Emulsion Surfacing* |
| MRTS21 | *Bituminous Emulsion* |
| MRTS22 | *Supply of Cover Aggregate* |
| MRTS30 | *Asphalt Pavements* |

All cracked or loose material shall be removed from the area to be repaired. A vertical face at least 20 mm high shall be formed along the edge of the existing sealed pavement.

The horizontal and vertical faces of the area to be repaired shall be sprayed with a tack coat of bitumen emulsion and the tack coat shall overlap slightly the existing seal.

Where aggregate / emulsion is used, it shall be an approved mix of 5 mm, 7 mm and/or 10 mm crushed rock or crushed gravel conforming to MRTS22. It shall be uniformly coated with bitumen emulsion. The quantity of bitumen emulsion incorporated in the aggregate shall be sufficient to prevent aggregate stripping from the patch but not so much as to cause a fatty surface.

If required to prevent pick-up by traffic, a single layer of dry stone shall be spread over the coated aggregate.

Loose stone shall be swept from the patched area and the adjoining pavement.

**Restoration Standards**

The seal width shall be restored to within 30 mm of the original line of the seal edge.

The finished surface shall be within +5 mm of the height of and conform to the shape of the surrounding road surface.

The standard of compaction shall be such that the final passes of the compaction equipment leave no impressions on the restored surface.

Reinstatement of all affected traffic delineation and Linemarking.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 108 | Edge Repair | lm |

**Testing Requirements**

| Minimum test frequency | |
|---|---|
| **Asphalt/Premix** | |
| Materials/Mix Design | 1/source/year |
| Maximum Density of Asphalt Q307 | <200t/source/year-2/source/year<br>>200t/source/year-4/source/year |
| Bitumen Content and Aggregate Grading of Asphalt Q308A or Q308C | <200t/source/year-2/source/year<br>>200t/source/year-4/source/year |
| **Aggregate** | |
| 10% Fines Q205B | 1/source/year |
| Wet/Dry Strength Q205c | 1/source/year |
| Crushed Particles Q215 | 1/source/year |
| Weak Faces Q217 | 1/source/year |
| Grading Q103D | 1 per 400t |
| Flakiness Index Q201B | 1 per 400t |
| Horizontal Straightedge Transverse | 2/lot min |
| Longitudinal Alignment | 1/lot min |
| Max lot size | One day |

The testing requirements listed for all the materials above shall apply to the cumulative quantities used throughout the Contract and not to specific Work Order quantities. Where the Work Order quantity does not reach the required testing frequency, the quantity shall be aggregated with other Work Order quantities from that specific supply source until such time as a test is required. Work Order quantities may be recorded on a materials testing register and testing initiated once the cumulative total for a specific supply source reaches the specified figure.

### *120 Fill Cracks*

**Description**

Crack filling is the cleaning and filling of cracks typically not wider than 20 mm in bituminous pavements with polymer-modified bitumen products.

**Work Operations**

The following operations shall be included as part of this Activity:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- determination of the work area
- removal of all loose material from the cracked area and the crack

- filling cracks with dry material to 25 mm below the road surface, if required
- the supply and application of crack sealant in accordance with manufacturer's instructions
- If the sealant is not to be immediately overlaid with asphalt or a sprayed seal, sand will be spread over the cooled sealant. The sand used for this purpose will be a course screened sand similar to that used for in-situ density sand replacement testing (refer Test Method Q111B). The grading of the sand is 90% passing 1.18 mm sieve, and 90% retained 0.600 mm sieve, it should also be used in a dry state.
- the supply and application of dry cover material
- certification that the product meets the requirements of the Restoration Standards, including all necessary visual inspections, compliance and audit testing
- the clean up of the site including the disposal of any waste material in accordance with any State Government legislation or Local Government By-laws that are applicable.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |

All loose material shall be removed from the crack.

The crack sealant shall be a Polymer-modified bituminous sealant approved by the Principal.

The sealant shall be applied with an approved applicator which places a band of sealant over the crack and fills the crack.

**Restoration Standards**

The crack shall be filled along its full length.

The finished surface shall be not lower than the surrounding road surface and not more than 5 mm above it. All surplus surface texture gritting materials to be removed on completion of works.

Reinstatement of all affected traffic delineation and Linemarking.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 120 | Fill Cracks | Litres |

**Testing Requirements**

| Minimum test frequency | |
|---|---|
| Horizontal straightedge | 1 per 10 metres |

### *127 Concrete Pothole Patching*

**Description**

Concrete pothole patching is the repair with asphalt of an isolated hole or series of holes in the concrete roadway surface.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS12 | *Sprayed Bitumen Emulsion Surfacing* |
| MRTS21 | *Bituminous Emulsion* |
| MRTS30 | *Asphalt Pavements* |

**Restoration Standards**

The finished surface shall be within ±5 mm of the height of and conform to the shape of the surrounding road surface.

The standard of compaction shall be such that the final passes of the compaction equipment leave no impressions on the restored surface.

No loose material shall be left on sealed carriageway.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 127 | Concrete Pothole Patching | lump sum |

**Testing Requirements**

| Minimum test frequency | |
|---|---|
| **Asphalt/Premix** | |
| Materials/Mix Design | 1/source/year |
| Maximum Density of Asphalt Q307 | <200t/source/year-2/source/year<br>>200t/source/year-4/source/year |
| Bitumen Content and Aggregate Grading of Asphalt Q308A or Q308C | <200t/source/year-2/source/year<br>>200t/source/year-4/source/year |
| Horizontal Straightedge | 2 per lot min |
| Max lot size | One day |

The testing requirements listed for all the materials above shall apply to the cumulative quantities used throughout the Contract and not to specific Work Order quantities. Where the Work Order quantity does not reach the required testing frequency, the quantity shall be aggregated with other Work Order quantities from that specific supply source until such time as a test is required. Work Order quantities may be recorded on a materials testing register and testing initiated once the cumulative total for a specific supply source reaches the specified figure.

### *139 Other Bituminous Surface Work*

**Description**

Work carried out on the bituminous roadway surface not covered by other existing 100 Sealed Surface Series Activity Standards within the Contract as directed by the Principal only.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 139 | Other Bituminous Surface Work | Prime Cost |

No other details are included in the Standard for this Activity.

### *158 Excavate and Replace Asphalt*

**Description**

Asphalt replacement is the excavation of deteriorated asphalt surfacing and the restoration to profile with new asphalt in one operation. The depth of replaced asphalt shall not exceed 60 mm and no more than 150 lineal metres of new asphalt shall be placed per km.

Child Activities are to be used for areas of treatment as follows:

- 158 21 – 1 to < 10 m²
- 158 31 – 10 to 50 m²
- 158 41 – > 50 m²

**Work Operations**

The following operations shall be included as part of this Activity:

- site establishment and disestablishment of all plant, labour and materials
- establishment and disestablishment of traffic control
- excavation of the failed area to a nominal depth including the removal of any loose material from the area to be repaired. Where a road profiler is used only areas inaccessible by the profiler drum (i.e. generally at corners of the repair) will be accepted at a lesser depth than that approved. In these areas a minimum depth shall be specified
- where applicable, compaction of the excavated surface (where the surface has been loosened)
- preparation of the existing surface including brooming
- the formation of a vertical face to a nominated depth of (measured from the top of the excavation) for the full length of the excavated edges. Where a road profiler is used a nominated reduced depth of vertical face will be accepted in areas where the shape of the profilers drum does not allow the design depth to be achieved. The repairs shall be rectangular in shape
- the supply and application of a bitumen emulsion tack as per Applicable Specifications
- the supply, placement and compaction of the asphalt
- the supply and installation of TRPM's or line spotting as required if immediate installation of permanent line marking not completed

- For all Activities where there is a joint between the existing pavement and the repair works, the Contractor is required to provide the following:
  - A seal around the edges of the newly completed patches with a strip of an approved bitumen emulsion, covering approx 30-50 mm either side of the joint between the existing and the new asphalt. The proposed bitumen emulsion product specification is to be approved by the Principal's Representative and/or delegates prior to its use.
  - This bitumen emulsion strip shall be gritted with an approved coarse sand or fine aggregate to provide adequate skid resistance. Gritting is to be carried out before the site is open again to traffic.
  - The sand used for this purpose will be a course screened sand similar to that used for insutu density sand replacement testing (refer QDMR test Method Q111B). The grading of the sand is 90% passing 1.18 mm sieve, and 90% retained 0.600mm sieve, it should also be used in a dry state.
- Reinstate traffic delineation and linemarking
- all other operations included in the Applicable Specifications
- certification that the product meets the requirements of the Restoration Standards, including all necessary visual inspections, compliance and audit testing
- the clean up of the site including the disposal of any waste / excavated material in accordance with any State Government legislation or Local Government By-laws that are applicable.

Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS12 | *Sprayed Bitumen Emulsion Surfacing* |
| MRTS30 | *Asphalt Pavements* |

**Restoration Standard**

As per Applicable Specifications above.

The Contractor shall demonstrate compliance with the requirements of the Applicable Specifications above with respect to rolling pattern requirements and asphalt temperature at time of rolling commencement. The standard of compaction shall be such that the final passes of the compaction equipment leave no impressions on the restored surface.

Reinstatement of traffic delineation and linemarking.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 158 | Excavated and Replace Asphalt | m² |

**Testing Requirements**

Refer to MRTS30 Testing requirements.

The testing requirements listed for all the materials shall apply to the cumulative quantities used throughout the Contract and not to specific Work Order quantities. Where the Work Order quantity does not reach the required testing frequency, the quantity shall be aggregated with other Work Order quantities from that specific supply source until such time as a test is required. Work Order quantities may be recorded on a materials testing register and testing initiated once the cumulative total for a specific supply source reaches the specified figure.

### *170 Pavement Repairs*

**Description**

The repair of pavement or asphalt surfacing of size less than 500 m² by removal of the deteriorated pavement and/or asphalt surface and replacement with new pavement material and asphalt or bitumen seal treatment, to profile. This may include treatment of subgrade materials and reworking, as appropriate.

Child Activities are to be used for areas of treatment as follows:

- Pavement Repairs (Minor) - treatment depths up to 200 mm
  - 170 21 – Minor 1 to < 10 m²
  - 170 31 – Minor 10 to 50 m²
  - 170 41 – Minor > 50 m²
- Pavement Repairs (Major) - treatment depths over 200 mm
  - 170 51 – Major 1 to < 10 m²
  - 170 61 – Major 10 to 50 m²
  - 170 71 – Major > 50 m²

**Work Operations**

The following operations shall be included as part of this Activity:

- Site establishment and disestablishment of all plant, labour and materials.
- Establishment and disestablishment of traffic control.
- Determination of the work area and confirmation of the pavement design.
- Excavation of the failed area to the approved pavement design depth including the removal of any loose material from the area to be repaired. Where a road profiler is used only areas inaccessible by the profiler drum (i.e. generally at corners of the repair) will be accepted at a lesser depth than that approved. In these areas a minimum depth shall be specified by the pavement designer.

- Reinstatement of any drainage assets, as necessary.
- Where applicable, compaction of the excavated surface (where the surface has been loosened).
- Preparation of the existing surface including brooming.
- The formation of a vertical face to a minimum depth equal to the pavement design (measured from the top of the excavation) for the full length of the excavated edges. Where a road profiler is used a nominated reduced depth of vertical face will be accepted in areas where the shape of the profilers drum does not allow the design depth to be achieved. The repairs shall be rectangular in shape.
- The supply, placement and compaction of crushed granular pavement material, cement treated if appropriate.
- The supply and application of a bitumen emulsion tack coat if applicable as per Applicable Specifications.
- The supply, placement and compaction of the asphalt or the supply and application of a bitumen seal treatment to profile, as appropriate.
- The supply and installation of TRPM's or line spotting as required if immediate installation of permanent line marking not completed.
- For all Activities where there is a joint between the existing pavement and the repair works, the Contractor is required to provide the following:
  - A seal around the edges of the newly completed patches with a strip of an approved bitumen emulsion, covering approx 30-50 mm either side of the joint between the existing and the new asphalt. The proposed bitumen emulsion product specification is to be approved by the Principal’s Representative and/or delegates prior to its use.
  - This bitumen emulsion strip shall be gritted with an approved coarse sand or fine aggregate to provide adequate skid resistance. Gritting is to be carried out before the site is open again to traffic.
  - The sand used for this purpose will be a course screened sand similar to that used for insitu density sand replacement testing (refer QDMR test Method Q111B). The grading of the sand is 90% passing 1.18 mm sieve, and 90% retained 0.600 mm sieve, it should also be used in a dry state.
- Reinstatement of all affected traffic delineation and Linemarking to replace reinstatement of traffic delineation.
- All other operations included in the Applicable Specifications.
- Certification that the product meets the requirements of the Restoration Standards, including all necessary visual inspections, compliance and audit testing.
- The clean up of the site including the disposal of any waste / excavated material in accordance with any State Government legislation or Local Government By-laws that are applicable.

  Where clarification of details in relation to these Work Operations is required, the following Applicable Specifications provide additional requirements for compliance.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS03 | *Drainage, Retaining Structures and Protective Treatments* |
| MRTS04 | *General Earthworks* |
| MRTS05 | *Unbound Pavements* |
| MRTS08 | *Plant-Mixed Heavily Bound (Cemented) Pavements* |
| MRTS11 | *Sprayed Bituminous Treatments (Excluding Emulsion)* |
| MRTS12 | *Sprayed Bituminous Emulsion Surfacing* |
| MRTS17 | *Bitumen and Multigrade Bitumen* |
| MRTS21 | *Bituminous Emulsion* |
| MRTS22 | *Supply of Cover Aggregate* |
| MRST30 | *Asphalt Pavements* |

The design of the repaired pavement shall conform to the pavement design standards of Department of Transport and Main Roads.

Geotextiles on/under subgrade shall comply with the requirements specified for geotextiles under/within embankments in MRTS03 *Drainage, Retaining Structures and Protective Treatments*. The unbound pavement material shall be of a quality at least equal to that used in sound sections of the road adjacent to the repairs.

Plant-mix stabilised pavement shall be Unbound Pavement as specified above stabilised with not less than 2% by mass of cement.

The Principal may direct that a paver be employed to place plant-mix stabilised and/or dense graded asphalt pavement material or may approve the use of other equipment for this purpose. Such other equipment shall not cause the mix to segregate.

All excavated material shall be disposed of or stored in a neat and tidy manner away from the road formation and drainage lines. Material suitable for reuse shall be stored at nominated stockpile sites unless otherwise agreed.

**Restoration Standards**

The finished work shall meet the requirements of the relevant specifications except as provided hereunder.

The finished surface shall conform to the shape of the surrounding road surface. Reinstatement of traffic delineation. The deviation from a 3 m straightedge placed along the wheel paths shall be no more than + 8 mm, - 5 mm, due allowance being made for design shape, where relevant.

The Contractor shall demonstrate compliance with the requirements of MRTS30 *Asphalt Pavements* with respect to rolling pattern requirements and asphalt temperature at time of rolling commencement. The standard of compaction shall be such that the final passes of the compaction equipment leave no impressions on the restored surface.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 170 | Pavement Repairs | $m^3$ |

**Testing Requirements**

Refer to MRTS30 *Asphalt Pavements* testing requirements.

The testing requirements listed for all the materials shall apply to the cumulative quantities used throughout the Contract and not to specific Work Order quantities. Where the Work Order quantity does not reach the required testing frequency, the quantity shall be aggregated with other Work Order quantities from that specific supply source until such time as a test is required. Work Order quantities may be recorded on a materials testing register and testing initiated once the cumulative total for a specific supply source reaches the specified figure.

## 200 Unsealed Surfaces

### *215 Light Shoulder Grading*

**Description**

The grading and filling of unsealed shoulders to remove vegetation. This item includes the removal of any windrows of vegetation and other debris that may otherwise impede drainage or encourage scour.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |

**Restoration Standard**

At the sealed/unsealed interface, the finished unsealed surface shall be even and within + 0, - 10 mm of the height of the adjacent seal. Shoulder crossfall measured using the grader blade or other means shall be within + 0, - 2% (absolute) when compared to the crossfall of the adjacent sealed pavement.

Note:

Where the cross fall of adjacent sealed pavement is so irregular that the + 0, - 2% (absolute) standard cannot be achieved, the cross fall on the finished unsealed surface shall be consistent with allowing the free drainage of water off the sealed pavement.

The graded surface shall be watered and rolled to provide a sound tight surface. No loose material shall be left on the sealed carriageway, in drains or around roadside furniture.

The surface of the sealed carriageway shall not be damaged during the work operations.

Reinstatement of guide posts, signage and raised pavement markers.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 215 | Light Shoulder Grading | Shoulder km / Side |

**Testing Requirements**

| | |
|---|---|
| Crossfall | 1 per 500 m max. on straights<br>Guide Post frequency max. around curves |

### *216 Heavy Shoulder Grading*

**Description**

The grading and filling of unsealed shoulders to reinstate the correct profile. This item includes the supply on site of imported gravel that may be required to reinstate the correct profile and/or level.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS05 | *Unbound Pavements* |

**Restoration Standard**

At the sealed/unsealed interface, the finished unsealed surface shall be even and within + 0, - 10 mm of the height of the adjacent seal. Shoulder crossfall measured using the grader blade or other means shall be within + 0, - 2% (absolute) when compared to the crossfall of the adjacent sealed pavement.

Note:

Where the crossfall of adjacent sealed pavement is so irregular that the + 0, - 2% (absolute) standard cannot be achieved, the cross fall on the finished unsealed surface shall be consistent with allowing the free drainage of water off the sealed pavement.

In general, the width of the finished shoulder shall not exceed:

- 3 m where seal width is less than 4.5 m
- 2 m where seal width is between 4.5 and 5.6 m
- 1.5 m where seal width is greater than 5.6 m.

See 'Notes on Finished Cross Sections' below.

The graded surface shall be watered and rolled to provide a sound tight surface. No loose material shall be left on the sealed carriageway, in drains or around roadside furniture.

See 'Notes on Materials' below.

**Notes on Materials**

Material for unsealed pavements and shoulders should be a well graded gravel-sand mixture with a small proportion of clayey fines. The material should be easy to grade and compact, durable and of consistent quality to ensure it wears away evenly. Material with silty fines are porous, unstable and ravel under traffic causing dust, and are not acceptable for use as material for unsealed pavements or shoulders.

Profiling's shall also not be used unless by agreement with the Principal, and shall comply with the requirements of MRTS05 *Unbound Pavements* Type 2.4 as modified below. The material shall conform to MRTS05 Type 2.4 material with a minimum Plasticity Index of 8. The remainder of the material requirements in MRTS05 shall apply.

The material shall be placed and compacted without allowing segregation to occur, and with suitable moisture content to allow construction equipment to achieve acceptable compaction.

**Notes on Finished Cross Section**

Prior to commencement of work, the Contractor's maintenance supervisor shall nominate the finished width (or widths) of shoulder for each sub-section to be graded.

Where the width of the existing shoulder is greater than the widths specified previously under this Section, the following shall apply:

- the specified crossfall for the finished shoulders shall be provided only for the width specified previously under this Section
- suitable material which may exist outside the required shoulder width, and which is winnable, should be considered for use for shoulder resheeting before additional material is brought to the site.

Bus pull off areas or widened shoulders at intersections and turnouts are not to be reduced in width.

Where the width of the existing shoulder being graded is less than the width specified previously under this Section, the width of the existing shoulder need not be increased to the width given, except where this will be done at no additional cost to the Principal.

Overall, finished shoulder width shall be constant and within + 300 mm / - 100 mm of the width nominated by the supervisor on the Works Order.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 216 | Heavy Shoulder Grading | Shoulder km / side Rural |

**Testing Requirements**

| | |
|---|---|
| Crossfall | 1 per 50 m max on straights<br>Guide post frequency max. around curves |
| Grading Q103A | 1/250 m³ |
| Linear Shrinkage Q106 | 1/250 m³ |
| CBR Q113A | 1/source/year |
| Plastic Limit and plasticity index Q105 | 1/250 m³ |
| Proof rolling RMS T198 | 1/500 m² or where ordered by the Principal |

### *220 Shoulder Pothole Patching*

**Description**

The placement and compaction of gravel into isolated potholes in a gravel shoulder.

This Activity would normally be undertaken as a temporary measure to make a road shoulder safe until Activity 215 or 216 (Heavy Shoulder Grading) can be scheduled. It may also be used to prolong the life of a gravel shoulder, delaying the need for more expensive and extensive treatment.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |

**Restoration Standard**

The finished surface of the gravel placed in the pothole shall be within ± 20 mm of the surrounding gravel.

The gravel patch shall be compacted to provide a sound, tight patch.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 220 | Shoulder Pothole Patching | lump sum |

**Testing Requirements**

The minimum testing requirements shall be as follows:

| | |
|---|---|
| Grading Q103A | 1/250m³ |
| Linear Shrinkage Q106 | 1/250m³ |
| CBR Q113A | 1/source/year |

The testing requirements listed for all the materials above shall apply to the cumulative quantities used throughout the Contract and not to specific Work Order quantities. Where the Work Order quantity does not reach the required testing frequency, the quantity shall be aggregated with other Work Order quantities from that specific supply source until such time as a test is required. Work Order quantities may be recorded on a materials testing register and testing initiated once the cumulative total for a specific supply source reaches the specified figure.

## 300 Drainage

### *305 Clean Earth and Concrete Surface Drains*

**Description**

The restoration of existing earth and concrete drains that are ineffective due to insufficient depth or insufficient grade.

This Activity includes where necessary, removal and reinstatement of guide posts and signs.

This Activity excludes non-rippable material. Non-rippable material shall be material which cannot be ripped at a production rate exceeding the rate in the following Table listed against the particular class of excavator.

| Class of Excavator | Linear metres per hour |
|---|---|
| > 20 – 25 tonne | 50 |
| > 16 – 20 tonne | 30 |
| > 2 – 4.5 tonne | 10 |

Proving material to be non-rippable shall be the Contractor's responsibility. The excavator employed shall be equipped with a bucket to manufacturer's specified standard capacity and fitted with rock teeth.

**Work Operations**

The following operations shall be included as part of the above Activity:

- site establishment and disestablishment of all plant labour and materials
- establishment and disestablishment of traffic control
- determination of the work area
- the removal and reinstatement of roadside furniture (eg. guide posts, signs, etc.) as required
- the restoration of the drain to the specified standard, including the excavation and removal of all necessary material
- all other operations included in the Applicable Specifications
- certification that the product meets the requirements of the Restoration Standards, including all necessary visual inspections, compliance and audit testing. This is to be attached to each Works Order
- the clean up of the site including the disposal of any waste/removed material in accordance with any State Government legislation or Local Government By-laws that are applicable

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirement for compliance in these areas.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS04 | *General Earthworks* |

The drain shall be constructed to one of the typical types in Figures 6 and 7 of NAASRA Guide to Design of Road Surface Drainage.

It is recognised in some cases where a shoulder has insufficient width (which cannot be corrected because of physical constraints), it is desirable to lessen the restoration depth and/or batter slope to ensure the drain itself remains trafficable (i.e. 600 m wide, 150 mm deep, batter slope 1 on 4).

In this instance, the installation of the drains should be undertaken to a standard that does not lessen the trafficable surface which is currently available to the road users (i.e. the existing shoulder and/or trafficable drain batter should remain trafficable). The motorists should not perceive that the trafficable width has altered.

**Restoration Standard**

The drain shall be free of all material that could block the flow of water into the drain and along it.

The base shall be evenly sloped to allow water to flow to the outlet.

The base of the drain shall be at least 450 mm below the edge of the road shoulder (for earth table drains).

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 305 | Clean Earth and Concrete Surface Drains | lm |

### *319 Other Surface Drain Work (including Kerb and Channel)*

**Description**

Any work carried out to earth and concrete surface drains (incl. K & C) not covered by other existing 300 Drainage Series Activity Standards within the Contract and as directed by the Principal only. This work includes removal of sediment and grass build up along the edge of the sealed pavement and under the safety barriers to prevent ponding on the pavement

**Activity Item and Unit of Measure**

| Item | Description | Unit of Measurement |
|---|---|---|
| 319 | Other Surface Drain Work | Prime Cost |

No other details are listed in the Standard for this Activity.

### *322 Clean Culverts, Pipes and Pits - Major*

**Description**

The cleaning of debris and silt impeding the free flow of water through culverts, pipes and pits and their inlets and outlets.

Applies to waterway installations greater than 0.3 m² (equates to 600 mm pipe) and a maximum RCP diameter of 1800 mm (1200 mm diameter for steel pipes) or a maximum waterway area of 3.0 m².

**Work Operations**

The following operations shall be included as part of the above Activity:

- site establishment and disestablishment of all plant labour and materials
- establishment and disestablishment of traffic control
- determination of the work area
- the restoration of the drainage structure including the inlets and outlets to the specified standard, including the excavation and removal of all necessary material
- all other operations included in the Applicable Specifications
- certification that the product meets the requirements of the Restoration Standards, including all necessary visual inspections, compliance and audit testing. This is to be attached to each Works Order
- the clean up of the site including the disposal of any waste/removed material in accordance with any State Government legislation or Local Government By-laws that are applicable

Where clarification of details in relation to the above Work Operations is required, the following Applicable Specifications provide additional requirements for compliance in these areas.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS04 | *General Earthworks* |

**Restoration Standard**

- The culverts, pipes and pits and their barrels, inlets and outlets shall be free from all material that could restrict the flow of water.
- The inlets and outlets shall include the area between the culvert, pipe or pit (or similar) to the outlet point of the upstream drainage system and the inlet point to the downstream drainage system. Some examples follow:
  - Where the outlet continues through a property boundary after leaving the structure, then the outlet will generally include the area between the structure and the property boundary. A similar area of Maintenance would apply to the inlet.
  - Where the outlet flows into a table drain or similar after leaving the structure, then the outlet will generally include the area between the structure and the table drain. A similar area of Maintenance would apply to the inlet.
  - For underground drainage systems, the inlet and outlet Maintenance usually relates to the gully pits immediately upstream and downstream of the structure.
  - Further clarification may be found in the District's "Department of Transport and Main Roads and Local Government Maintenance Responsibilities Guidelines".

- The site is to be left clean and tidy.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 322 | Clean Culverts, Pipes and Pits (Major) - General | Prime Cost |

**Testing Requirements**

Nil.

### *329 Other Minor Culverts, Pipe and Pit Work*

**Description**

Any work carried out to minor culverts, pipes and pits not covered by other existing 300 Drainage Series Activity Standards within the Contract and as directed by the Principal only.

**Activity Item and Unit of Measure**

| Item | Description | Unit of Measurement |
|---|---|---|
| 329 | Other Minor culverts, pipe and pit work | Prime Cost |

No other details are listed in the Standard for this Activity.

### *334 Clean Culverts, Pipes and Pits - Minor*

**Description**

The cleaning by hand tools of debris and silt impeding the free flow of water through culverts, pipes and pits and their inlets and outlets.

Applies to waterway installations up to and including 0.3 m² waterway opening (equates to 600 mm diameter size RCP).

**Work Operations**

The following operations shall be included as part of the above Activity:

- Establish traffic control - See Roadworks Signing Guide
  - vehicle warning lights
  - traffic control devices
  - safety clothing
  - vehicle position
- Determine culverts, pipes or pits to be cleaned from supervisor's instructions
- Clean culvert, pipe or pit
  - remove debris and silt
  - to site specified by your supervisor
- Check the work against the restoration standard

- Leave work site safe and tidy
  - remove all loose materials
  - no material to block drains
- Remove traffic control
  - clean and repair as necessary.

**Applicable Specifications**

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS04 | *General Earthworks* |

**Restoration Standard**

The culverts, pipes and pits and their inlets and outlets shall be free from all material that could block the free flow of water.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 334 | Clean Culverts, Pipes and Pits – Minor | lm |

**Testing Requirements**

None listed.

## 700 Traffic Delineation

Activities under 700 Traffic Delineation are included as a guide and any payment is to be incorporated into other activities necessitating the line marking replacement, except for Activity 740 Raised Pavement Markers.

### *740 Raised Pavement Markers*

#### Description

The replacement of missing raised pavement markers. Includes the supply of markers.

#### Applicable Specifications

| Reference | Title |
|---|---|
| MRTS02 | *Provision for Traffic* |
| MRTS14 | *Road Furniture* |
| MRTS45 | *Road Surface Delineation* |

Queensland *Manual of Uniform Traffic Control Devices (MUTCD)*.

#### Restoration Standard

The raised pavement markers shall be installed replaced to the requirements of Technical Specification MRTS14 *Road Furniture* and the Queensland *Manual of Uniform Traffic Control Devices*.

#### Activity Item and Unit of Measurement

| Item | Description | Unit of Measurement |
|---|---|---|
| 740 | Raised Pavement Markers | each |

#### Testing Requirements

None listed.

## 900 Other

### *902 RAMC Establishment and Disestablishment Fee*

**Description**

All activities undertaken by the Contractor in regards to the establishment and disestablishment of the Contract.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 902 | RAMC Establishment Disestablishment Fee | lump sum |

Payment for RAMC Establishment shall be paid at commencement of the contract. Payment for RAMC Disestablishment shall be paid at the end of the contract.

No other details are listed in the Standard for this Activity.

### *904 Asset Management Services Fee*

**Description**

All activities undertaken by the Contractor for carrying out Asset Management Services under the Contract.

**Work operations**

Asset Management Services means all services required to undertake all monitoring, reporting, planning and analysis required under the Contract in relation to the programming, sequencing and prioritisation of Programmed Maintenance Work and Rehabilitation Maintenance Work, including all activities required to:

a) submit Asset Management Plans in accordance with Clause 15 of the General Conditions of the RAMC

b) submit Project Proposals in accordance with Clause 17 of the General Conditions of the RAMC, and

c) Submit Planned Routine Maintenance Recommendations in accordance with Clause 18.2 of the General Conditions of the RAMC.

**Activity Item and Unit of Measurement**

| Item | Description | Unit of Measurement |
|---|---|---|
| 904 | RAMC Asset Management Services Fee | lump sum |

No other details are listed in the Standard for this Activity.

### *905 Community Engagement (including Projects)*

**Description**

All activities undertaken by the Contractor in the preparation and approval of Project Specific Communications Control Plans for programmed maintenance and rehabilitation projects under the Contract (Direct Costs only). The implementation of the approved Project Specific Communications Plan will be a direct cost to the project.

**Activity Item and Unit of Measure**

| Item | Description | Unit of Measurement |
|---|---|---|
| 905 | Community Engagement (including Projects) | Prime Cost |

No other details are listed in the Standard of this Activity.

### *915 Management and Corporate Overhead for Operational and Planned Routine Maintenance*

**Description**

Management includes the costs of Key Personnel and associated costs relating to Operational and Planned Routine Maintenance Work (Schedules M1A, M1B, M2A, M2B, M3A, M3B).

All Corporate Overhead activities undertaken by the Contractor relating to Operational and Planned Routine Maintenance Work (Schedules M1A, M1B, M2A, M2B, M3A, M3B).

**Activity Item and Unit of Measure**

| Item | Description | Unit of Measurement |
|---|---|---|
| 915 | Management and Corporate Overhead for Operational and Planned Routine Maintenance | lump sum |

No other details are listed in the Standard of this Activity.