# Measurement And Payment

DIPL Roadworks Master – October 2019

The following Measurement and Payment clauses refer to the specification sections of the same name, however, the clause numbers do not match the section numbers of the same title.

The selection of specific items or materials for the works being carried out are those items listed in the Schedule of Rates in the Response Schedules for the particular Contract and any items specified in the PROJECT SPECIFIC REQUIREMENTS section of the Request for Tender document. Any additional work or any changes to the reference specification will be specified in the PROJECT SPECIFIC REQUIREMENTS section.

[Delete the matching Measurement and Payment clause where the particular specification section has been deleted in the project specification.]

## Miscellaneous Provisions

### Environmental Management Generally

Not measured separately

Include the cost of environmental management in the rates for the applicable items.

### Environmental Management Plan

Measured as an item.

### Cleaning of Vehicles and Plant

Measured by number cleaned.

Vehicles and plant items are priced separately.

### Establishment

The sum for establishment not to exceed 30 per cent of the Tender Sum.

Mobilisation: Measured as an item. Not to exceed 10 per cent of the Tender Sum.

Payment when the Contractor established on site.

Demobilisation: Measured as an item.

Payment when demobilisation complete.

Ongoing costs: Measured as an item.

Payment progressively during the contract in proportion to the value of complying work.

### Project Notice Boards

[Schedule to show types where applicable]

Measured by number erected.

### As Constructed Information

Provide as constructed information as detailed in MISCELLANEOUS PROVISIONS.

Include the cost for as constructed information in the costs for the related elements of the works.

Provide as constructed information related to variations in the scope of the works, with the costs for the as constructed information included in the negotiated costs for the variations to the works.

### Level Checking

Measured in kilometres for the layer under consideration.

### Control Station Check Survey

Measured as an item.

### Cycle and pedestrian shared paths

Not measured separately.

Include in MISCELLANEOUS CONCRETE.

## Provision For Traffic

### Traffic Management Plan

Include in Provision for Traffic. Include Traffic Guidance Schemes (TGSs) including, but not limited to, plans, drawings, sketches, and/or diagrams.

### Provision for Traffic

Measured as an item.

Includes TMP and TGSs and all activities required to implement them.

Includes detours, temporary connections access to adjacent properties, traffic guidance, traffic control devices, temporary bridging, warning devices, maintenance and restoration.

Includes variable message boards.

Payment will be made progressively in proportion to the value of work carried out.

### Gravelling of Detours

Measured in square metres for the specified gravel thickness and width.

Make allowance for supply, delivery, and compaction of material.

### Sealing of Detours

Measured in square metres for the specified width.

Make allowance for the removal and disposal of seal and restoration work.

## Clearing Grubbing and rehabilitation

Measured as an item.

Includes removing vegetation stripping and stockpiling, top soil respreading, removal of un-recoverable fencing, drainage structures, old road surfaces and other obstacles.

Make allowance for stripping, stockpiling and respreading of the top layer.

Make allowance for replacement of stripped layer.

### Treatment of Existing Sealed Surface

Not measured separately.

### Scarifying of Existing Roads

Measured in linear metres.

### Mulching

Measured as an item.

Make allowance for mulching demolished vegetation, burying stumps, roots and grasses, stockpiling mulched material, spreading mulch and removing excess mulched material.

## Earthworks

Measurements are based on natural surface levels prior to stripping.

### Earthworks in Cut

Measured in in-situ cubic metres.

Volume includes Table Drains.

### Rock in Subgrade

Measured in in-situ cubic metres.

Payment only for works directed by the Superintendent.

Payment for excavation will be at a rate to be agreed. Payment for filling is at the rate for Select Fill (compacted volume).

### Unsuitable Material Below Subgrade Surface Other Than Rock

Measured in in-situ cubic metres.

Payment only for works directed by the Superintendent.

Payment for excavation is at the rate for Earthworks in Cut. Payment for filling is at the rate for Earthworks in Fill (compacted volume).

### Earthworks in Fill

Measured in compacted cubic metres.

Make allowance for volumes affected by Clearing and Grubbing.

Make allowance for preparation prior to filling and benching.

### Unsuitable Material Beneath Fill

Measured in in-situ cubic metres.

Payment only for works directed by the Superintendent.

Payment for excavation is at the rate for Earthworks in Cut and payment for filling is at the rate for Earthworks in Fill.

### Select Fill

Measured in compacted cubic metres.

Payment at a rate to be agreed.

[Delete if item in Schedule of Rates]

### Sand Clay Fill

Measured in compacted cubic metres.

### Preparation and Maintenance of Subgrade Surface

Measured in square metres.

### Stream Diversions

Measured in in-situ cubic metres for cut and compacted cubic metres for fill.

Temporary work is not measured.

### Levees

Measured in compacted cubic metres.

Temporary work is not measured.

### Table Drain Offlets

Measured by number.

### Table Drain Blocks

Measured by number.

### Catch Drains

Measured in linear metres.

### Widening of Existing Formation

Measured in linear metres.

### Trim and Compact Unpaved Areas

Measured in square metres.

### Surface Formation

Measured in linear metres.

Allow for imported material.

### Batter Protection by Grassing

Measured in square metres.

### Bridge Foundation Excavation

Measured in in-situ cubic metres.

The quantity measured shall be determined by multiplying the dimensioned area of the structure footing by the distance from natural surface to foundation level.

Make allowance for coffer‑dams, shoring and sheeting, pumping.

Make allowance for excavation beyond measured limits for formwork, shoring and sheeting, pumping, etc.

### Bridge Foundation Blinding

Measured in square metres.

### Bridge Foundation Backfilling

Measured in compacted cubic metres.

Make allowance for backfill beyond measured limits.

### Fill Adjacent to Bridge Structures

Measured in compacted cubic metres.

## Conformance Testing

### Conformance Testing

The Superintendent will pay for all conformance testing directly to the Panel Period Contractor selected to perform the conformance tests required under this contract and nominated as the Superintendent’s responsibility.

If the tests fail the cost of the failed tests will be a negative variation to the contract.

When testing has been ordered and the site is not ready for testing at the time specified by the Contractor, the Contractor will bear the cost of time and travel incurred by the Panel Period Contractor and the Superintendent, where applicable.

Where bituminous products are Non-Conforming: refer to the Superintendent for requirements if samples are non-conforming.

### Process Testing

The Contractor is responsible for the ordering up and payment for all process tests carried out.

This is not measured separately.

Include the cost of process testing under the relevant items in the Schedule of Rates.

## Pavements and Shoulders

### Construction of Pavement Layers

Measured in square metres for each specified layer, thickness, and material.

Make allowance for pavement or shoulder materials outside the carriageway width not included in measurement.

### Reconstruction and Rehabilitation of Existing Pavements

[Sometimes appropriate to make a provisional item for adding base in accordance with Superintendent's instructions to allow smoothing of existing road surface]

Refer to **Strengthening by Granular Overlay** sub-clauses**.**

Measured in linear metres, includes both sides for widening.

Measured in square metres for overlay and reworking.

Make allowance for variation in pavement thickness and deformation of existing pavement.

### Supply to Stockpile

Measured in cubic metres in the stockpile.

### Pavement Acceptance

Measured as an item for activities undertaken to achieve pavement and shoulder acceptance.

## Stabilisation and Modification

### Supply of Materials to be Stabilised

Measured in square metres, compacted, for each specified thickness, for each layer type (sub-base, base, shoulders).

### Supply and Spread Binder

[Use for in situ methods]

Measured in tonnes for cement and lime. Measured in litres for bitumen.

Determined by multiplying the application rate by the area to be treated.

Make allowance for tolerances.

### Granular Modification

Measured in compacted cubic metres.

[Payment for supply of materials to be stabilised is included in the STABILISATION AND MODIFICATION Section and must not be included in the PAVEMENTS AND SHOULDERS Section. Ensure quantities in the Schedule of Rates are determined accordingly]

### Mixing, Trimming and Curing

Measured in square metres for each specified thickness.

### Plant‑Mix

Measured in cubic metres.

Determined by multiplying the specified area by the specified compacted depth.

Make allowance for all materials to be stabilised.

Make allowance for curing.

## Spray Sealing

### Calculation Accuracy

All calculations regarding payment to be to an accuracy of the nearest whole number.

### Preparation of Pavement

Measured in square metres of the prepared area.

### Prime, Primer Seals, and Enrichment Coats

[Delete those processes not required]

Measured in litres at 15°C. Adjust volumes using the ***Table - Bitumen Equivalent Volumes*** in **Calculation of Equivalent Volumes for Spray Rates** clause in SPRAY SEALING.

Payment calculated for each spray run. Quantity sprayed is determined by dipping the sprayer tank for each spray run.

Allow for the temperature of the mixture in determining the actual application rate.

The designated volume is determined from the area sprayed and the rate of application indicated in the procedure for such area at 15°C. Multipliers for reducing the volume of hot bitumen to the equivalent volume at 15°C are contained in the ***Table - Bitumen Equivalent Volumes*** in **Calculation of Equivalent Volumes for Spray Rates** clause in SPRAY SEALING***.***

For primers, enrichment coats, primer seals, polymer modified binder or emulsion seals the rate of application refers to the whole of the mixture.

Allow for adhesion agent in the rate for polymer modified binder.

Tapers are exempt from adjustment tables.

**Adjustment To Payment For The Sprayed Volume When The Spray Application Rates Equal Or Exceed 1.0 L/m2:**

(i) Application 90% to 95% of the designated volume:

Payment for the sprayed volume less one‑half the difference between the sprayed volume and 95% of the designated volume.

(Example: Application = 92% of designated volume.

Pay for (92% - 0.5 x (95% - 92%)) = 90.5% of designated volume.)

(ii) Application 95% to 105% of the designated volume:

Payment for the sprayed volume.

(iii) Application 105% to 115% of the designated volume:

Payment for 105% of the designated volume.

The Contractor must rectify bleeding or flushing seals during the defined defects period where binder application rates were applied at > than 105% of the designated volume.

(iv) Application less than 90% or more than 115% of the designated volume will be rejected. Rectify by methods approved by the Superintendent, at the Contractor’s expense.

**Adjustment To Payment For The Sprayed Volume When Spray Application Rates Below 1.0L/m2:**

(v) Application plus 0.1L/m2 and minus 0.1L/m2 of the designated spray rate:

Payment for the sprayed volume.

(vi) Application rates varying more than 0.1L/m2 of the designated spray rate will result in work being rejected. Rectification will be at the Contractor’s expense by respraying or by other methods approved by the Superintendent.

Payment will be made for the designated volume upon satisfactory rectification of the rejected area at no extra expense to the Principal.

Adjustment to payment for seal coat items (binder, additive, precoat, aggregate) is in accordance with the ***Table - Payment Adjustments***.

### Table - Payment Adjustments

|  |  |
| --- | --- |
| **Table - Payment Adjustments** | |
| **Viscosity (at 60**°**C Pa.s) of AS 2008 Class 320 Bitumen Component of The Binder** | **Reduction in Payment for Seal Coat Items** |
| Under 260 | 10% reduction for each 10 Pa.s (or part thereof) below 260. |
| 260 – 380 | Nil. |
| Over 380 | 10% reduction for each 10 Pa.s (or part thereof) over 380. |
|  | |
| **Where Samples Not Collected** | 10% reduction to rate per litre |
|  | |
| **Polymer Modified Binders** | **Reduction in Payment for Seal Coat Items** |
| Torsional Recovery 1 – 3% less than specified | 2% reduction to rate per litre |
| Torsional Recovery 4 – 6% less than specified | 10% reduction to rate per litre |
| Torsional Recovery over 6% less than specified | 20% reduction to rate per litre |
| Softening Point 0 – 2 deg. C less than specified | 5% Reduction to rate per litre |
| Softening Point 2.1 – 5 deg. C less than specified | 15% Reduction to rate per litre |
| Softening Point 5.1 – 10 deg. C less than specified | 20% Reduction to rate per litre |
| Softening Point 10.1 or more deg. C less than specified | \*Rejected (see note below) |
| Note: \* Rejected - Reseal with materials and methods approved by the Superintendent. Costs incurred from reseal work will be at the Contractor’s expense.  Note: Adjustments are only applied to materials represented by the test sample. | |

### Payment Adjustment Applied to Sub-Contractors

Where:

1. a payment adjustment is applied against the Contractor under the Contract; and
2. the Contractor then applies that adjustment to the sub-contractor that carried out the Works the subject of the payment adjustment,

the Contractor will provide the sub-contractor with a copy of the document/s from the Principal that evidence the payment adjustment applied to the Contractor.

### Additives

Measured in litres at 15°C.

Polymer additives in polymer modified binders not measured separately.

Make allowance in the rates for seal coats.

### Precoat Applied to Aggregate

Measured in litres.

Make allowance for adhesion agent.

### Stockpile Sites

Make allowance for stockpile sites in the relevant rates for sealing aggregate.

### Sealing Aggregate

Supply and delivery.

Measured in square metres

### Application of Geofabric

Measured in square metres of fabric, installed, with tack coat.

### Application of Aggregate

Measured in square metres of finished aggregate work for each size of aggregate.

## Dense Graded Asphalt

### New Pavements

Measured in square metres for each specified thickness.

Payments will be determined as per ***Rate of Payment Adjustments*** sub-clause and tables.

### Correction Course Layer

Measured in tonnes placed as evidenced by weighbridge dockets.

Correction courses are exempt from adjustments for voids.

### Resurfacing Work

Measured in tonnes placed as evidenced by weigh bridge dockets.

Payments will be determined as per ***Rate of Payment Adjustments*** sub-clause and tables.

### Rate of Payment Adjustments

Rates will be adjusted as follows:

|  |  |
| --- | --- |
| **Table - Rate of Payment Adjustments** | |
| **Reduction Level** | **Payment Reduction** |
| Level 1 | 5% |
| Level 2 | 10% |
| Level 3 | 20% |
| Note: Adjustments are for materials specified at 30mm and greater thickness. | |

|  |  |
| --- | --- |
| **Table - Payment Adjustments - Bitumen Conformance - Class 320 Bitumen** | |
| **Viscosity (At 60oC Pa.s) of AS 2008 Class 320 Bitumen Component Of The Binder** | **Payment Reduction** |
| Under 260 (Pa.s) | 5% reduction for each 10 Pa.s (or part thereof) less than 260 |
| 260 – 380 (Pa.s) | Nil. |
| Over 380 (Pa.s) | 5% reduction for each 10 Pa.s (or part thereof) over 380. |

| **Table - Payment Adjustments - Bitumen Conformance - Polymer Modified Binder A15E** | |
| --- | --- |
| **Polymer Modified Binders A15E** | **Payment Reduction\* to m2 rate ($) of lot** |
| Consistency (60oC Pas) 4500 - 4999 | 5% |
| Consistency (60oC Pas) 4000 - 4449 | 10% |
| Consistency (60oC Pas) 4000 - 3000 | 20% |
| Consistency (60oC Pas) less than - 3000 | Remove and Replace |
| Torsional Recovery (25oC,30s,%)1% – 5% less than specified | 5% |
| Torsional Recovery (25oC,30s,%) 6% – 10% less than specified | 10% |
| Torsional Recovery (25oC,30s,%) over 10% less than specified | 20% |
| Softening Point 0 – 5 oC less than specified | 5% |
| Softening Point 5.1 – 10 oC less than specified | 10% |
| Softening Point 10.1 – 15 oC less than specified | 20% |
| Softening Point more than 15.1 – 20.0 oC less than specified | 30% |
| Softening Point more than 20.1 oC less than specified | Remove and Replace |
| \* Payment reduction shall only apply to the test property providing highest level of non-conformance | |

### Surface Roughness

Adjustments related to Surface Roughness (per lot)

|  |  |
| --- | --- |
| **Table - Payment Adjustments - Related to IRI over specified IRI (per lot)** | |
| **Increase in specified maximum IRI**  **(per lot)** | **%Adjustment to the m2 rate of lot** |
| 0.01 – 0.10 | 2% |
| 0.11 – 0.20 | 4% |
| 0.21 – 0.30 | 6% |
| 0.31 – 0.40 | 8% |
| 0.41 – 0.50 | 10% |
| 0.51 – 0.60 | 12% |
| 0.61 – 0.70 | 14% |
| 0.71 – 0.80 | 16% |
| >0.80 | Remove and Replace / Rectify |
| **Note:** Lots may be subdivided where individual IRI exceeds 2.5. | |

### Progress Claims

Contractor may claim up to three-quarters of the contract rate when works are physically completed on site with balance of payment following conformance test results.

### Payment Adjustment Applied to Sub-Contractors

Where:

1. a payment adjustment is applied against the Contractor under the Contract; and
2. the Contractor then applies that adjustment to the sub-contractor that carried out the Works the subject of the payment adjustment,

the Contractor will provide the sub-contractor with a copy of the document/s from the Principal as evidence that the payment adjustment applied to the Contractor.

## Slurry Surfacing

Payment will be made at the tendered rates for the actual quantity of accepted slurry surfacing mix spread.

Measurement;

* Slurry surfacing laid per m2 at an average 9 mm thickness, including surface preparation and supply and laying of slurry surfacing mix.
* Slurry correction volume per m3.

## Miscellaneous Concrete

Make allowance for excavation, bedding and backfilling in the following items.

[Add extra clauses as required]

### Footpaths

Includes cycle and pedestrian shared paths. (Refer to MISCELLANEOUS PROVISIONS)

Measured in linear metres for each type.

Make allowance for reinforcement.

### Vehicle Crossings and Access Strips

Measured as an item for each type.

[Edit this sentence if there is only one type]

Make allowance for reinforcement.

### Kerbs and Gutters

Measured in linear metres for each type (any drainage structures/crossings excluded from measured lengths.)

### Inverts

Measured in linear metres.

### Wheelchair Crossings

Measured by number.

### Traffic Island and Median Infill

Measured in square metres.

## Drainage Works

### Excavation in Trenching

Measured in in-situ cubic metres for the specified range of depths to invert.

The length of the trench shall be measured between the outside face of headwalls or between the centre of pits.

The width of the trench shall be the outside width of the culvert plus margins on each side as shown on drawing CS-3101.

The depth of the trench is the average of the depths to invert measured at the structure at each end of the section.

The depth to invert is the lesser of the depth below natural surface and the depth below finished surface level. In the case of kerbside structures, the finished surface level is measured at the top of kerb.

Make allowance for shoring, bedding, inlet structures, outlet structures, irregularities in the natural surface, and for the depth of RC floor slabs for precast box culverts, where applicable.

### Supply, Load, Transport, Bed, Lay and Backfill Culverts

Measured in linear metres along the invert of the culvert as the distance between the outside face of headwalls or other structures for the type and size scheduled.

Multiple barrel culverts are measured as the single distance between the outside face of headwalls or other structures.

Make allowance for RC floor slabs for precast box culverts.

Excavation is measured separately.

### Concrete Headwalls, Pits and Other Structures

Measured by number.

Other structures include, but are not limited to:

* Gully / Side Entry / Letter Box inlet pits,
* Alterations to existing structures and/or devices,
* Connections to existing structures and/or devices,
* Inspection pits,
* Junction pits,

### Collar Joints, Bandage Joints, Anchor Blocks and End Caps

Measured by number.

Make allowance for splay ends.

### Inlet and Outlet Channels

Measured in in-situ cubic metres.

Not measured separately for culvert waterways less than 2 square metres in cross‑sectional area and channels less than 50 metres long.

### Open Unlined Drains

Measured in in situ cubic metres.

### Subsoil Drains

Measured in linear metres.

Make allowance for blocks, headwalls, filter material, geotextiles, and connection to existing drainage system.

### Demolish and Remove Existing Drainage Structures

Measured as an item.

Make allowance for backfilling.

## Protection Works

### Geotextile Fabric

Measured in square metres of completed area.

Make allowance for supply and placement.

Make allowance for laps and folds.

### Stone Pitching

Measured in square metres of the face area.

### Grouted Stone Pitching

Measured in square metres of the face area.

Make allowance for weep holes.

### Dumped Rock Protection

Measured in cubic metres.

### Rubble

Measured in cubic metres.

### Gabions

Measured in cubic metres.

Includes the excavation, steel wire mesh box and the stone filling.

### Reno Mattresses

Measured in square metres.

Includes the excavation, steel wire mesh box and the stone filling.

### Revetment Mattresses

Measured in square metres.

### Embankment Protection - Concrete

Measured in square metres of the face area.

Make allowance for weep holes.

Make allowance for toes (nib walls) and reinforcement.

### Margins

Measured in linear metres.

Make allowance for reinforcement.

## Road Furniture And Traffic Control Devices

### Tactile Ground Surface Indicators

Measured in square metres installed.

Make allowance for all required preparatory work for installation, and for all fixings, fasteners, adhesives, and other necessary items.

### Fencing

[Show type or types of fencing in schedule]

Measured in linear metres by type.

Make allowance for gates which are not measured separately.

Make allowance for clearing of fence lines which is not measured separately.

Bollards measured by number. Make allowance for installation including footings.

Vehicle movement barriers measured by number for each type (stock length, half stock length, “banana bars” restriction/terminal devices).

### Cyclist Holding Rails

Measured by number.

Make allowance for installation including footings.

### Recycled Plastic Bollards

Measured by number.

Make allowance for installation including footings.

### Culvert Crossing Guardrails

Measured by number by type.

Make allowance for installation including footings.

### Guide Posts

Measured by number.

Make allowance for delineators.

### Road Signs, Supply and Install

Measured by number of each sign type or classification.

[Ensure each sign is scheduled separately]

Make allowance for anti-spear fixings where these are required.

### Reinstate/Relocate Existing Road Signs

Measured by number.

### Flood Gauge Posts

Measured by number.

Make allowance for gauge.

### Cattle Grids

Measured by number per type. (10 m or 12.4 m and with or without concrete approach)

Make allowance for gate in adjacent fence.

[Ensure that the grid size is shown on the drawings]

### Road Safety Barriers - Steel Rail

Measured from centre to centre of end posts in linear metres, for type as specified

Make allowance for posts, footings, spacers, fasteners, delineators and all necessary fittings.

### Road Safety Barriers - Steel Rail Terminals

Measured by number for type installed.

### Road Safety Barriers - Wire Rope

Measured from centre to centre of end posts in linear metres, for type as specified

Make allowance for posts, footings, tensioning devices and equipment, spacers, fasteners, delineators and all necessary fittings.

### Road Safety Barriers - Wire Rope Terminals

Measured by number for type installed.

Make allowance for footings.

## Pavement Marking

### Establishment – Period Contracts for Maintenance

**Urban Areas**

Mobilisation - not measured separately

Demobilisation - not measured separately

Include the cost in the rates for the applicable items

**Rural Areas**

Mobilisation - The Contractor will be paid for all vehicles, plant, men, materials, and equipment, inclusive of all traffic control requirements, as a single item for each work request, one way for each kilometre travelled beyond the Stuart Highway (PRP20/0.00km) and the Arnhem Highway (PRP1/ 0.00km) Intersection

Demobilisation - not measured separately

**Aerodromes**

Not measured separately for access by road, apply rural mobilisation

Measured by negotiated rates for access by sea.

Make allowance for mobilisation, demobilisation and all associated ongoing cost

Provide details substantiating the amounts shown in the negotiated rate.

### Co-ordination and Setting Out

Payment for the co-ordination and setting out for new works only will be at an additional 15% of the scheduled rates for the items ordered total amount for the work site.

This is inclusive of the attendance, and recording of the extent of the works, and submission of a report detailing these to the Superintendent.

This is inclusive of the removal of all temporary markers and the removal and delivery of temporary traffic control signage, including temporary signage left on site by resealing Contractors or others to the designated delivery point..

**Co-ordination of Pavement Marking Work for Resurfacing Works**

Measured as an Item for each site of works

Make allowance for attendance and recording of the extent of works and submission of a report detailing these to the Superintendent.

**Removal of resealing works temporary signage at completion of linemarking.**

Included in other items.

### Pavement Marking

Refer to the T***able – Application Rates – All Longitudinal and Transverse Pavement Markings*** in the **Pavement Marking Conformance Tolerances** clause in PAVEMENT MARKING.

Lengths of line being painted are based on the total length for the work item. For example, 2,500m of broken line will paid as a single rate item within the ordered lengths ‘Broken Line’.

**Glass Beads**

Make allowance for the supply and application of specified glass beads with all markings.

Payment for Type B-HR beads for initial new works application shall be made at the tendered Schedule of Rates for all pavement marking.

Payment for Type B-HR beads for subsequent remark and all remarking works shall be made at the tendered Schedule of Rates for all rural pavement marking.

Payment for Type D-HR beads for subsequent remark and all remarking works shall be made at the tendered Schedule of Rates for all urban pavement markings.

**Line markings**

The following are measured in linear metres for type of painted line, inclusive of unpainted gaps:

* + - * + Continuity line - (single broken).
        + Continuity line special (single broken).
        + Unbroken lane line - (single continuous).
        + Broken lane line or separation line - (single).
        + Barrier lines both directions - (double continuous longitudinal lines).
        + Barrier lines one direction - (double longitudinal lines broken on one side, continuous on the other).
        + Edge line - (single continuous).
        + Single Yellow Line - (yellow single continuous).
        + Outline (around medians)
        + Stop Lines (single continuous)
        + Hold Lines (single continuous)
        + Turn Lines (single broken)
        + Special Purpose Broken Lane Line (Alberta Line)
        + Signalized Pedestrian Crossings (single broken)
        + Car / Bus / Truck Parking Bays

The following are measured by number:

* + - * + Arrow Heads (single, double, triple, merge)
        + Numbers and Letters
        + Disabled Symbols

Chevrons and Speed Humps are measured by square meter (painted area only).

Pavement markings at intersections are measured as an item and include chevrons, outlines, turn lines, hold, stop and pedestrian lines, and unbroken lane lines.

Removal of existing pavement markings and disposal of the waste is measured as an item.

Provision of audio tactile line marking is measured in lineal metres including unpainted gaps.

Other lines are measured in lineal metres.

Other large areas are measured in square metres of painted areas only.

The following are measured as nominated for Aerodrome Marking:

1. Runway centreline measured in linear metres inclusive of unpainted gaps (white 0.300m wide) (MoS 8.3.3)
2. Runway designation markings. measured by number of digits (white 9.0 m length) (MoS 8.3.4)
3. Runway end markings measured in linear metres of painted line (white 1.2 m wide) (MoS 8.3.5)
4. Runway Threshold Markings measured by number (white 30 m x 1.5 m wide) (MoS8.3.8)
5. Taxi Guideline Markings. measured in linear metres of painted line (yellow 0.150m wide) (MoS 8.4.2)
6. Runway holding positions Pattern “A” measured in linear metres include all painted lines required to meet detail in MoS 8.4.3 (yellow 0.150m wide).
7. Taxiway edge markings and Apron markings (measured in linear metres of double painted line (yellow 0.150m wide spaced 0.150m apart) (MoS 8.4.5 and 8.5.3)
8. Lead Out Line measured in linear metres of painted line (yellow 0.150m wide) (MoS 8.5.22)
9. Alignment Line measured by number for a 17.0 m length of painted line (yellow 0.150m wide) (MoS 8.15.18)
10. Parking Clearance Line measured in linear metres of painted line to detail in MoS 8.4.5 (yellow and red lines)

### Raised Reflective Pavement Markers.

Supply and install, and/or removal and disposal. Includes preparation of pavement.

Measured by number of each type as nominated in the schedule of rates.

### Compliance with the requirements for Project Control and Procedures, Calls and Payments

Not measured separately.

Include all costs associated with the Project Control, and Procedures Calls and Payments clauses, in the rates for the applicable items.

### Distance Measuring Equipment and Communication Equipment

Not measured separately.

Include the cost of Distance measuring Equipment and Communication Equipment in the rates for applicable items

### Payment Generally.

Payment for Scheduled Work shall be made at the tendered Schedule of Rates.

Payment for Priority Work shall be made at the tendered Schedule of Rates and an additional payment for Priority attendance.

Payment for Urgent Works shall be made at the tendered Schedule of Rates, and an additional payment for urgent attendance.

### Pavement Marking - Resealing Contracts

The Superintendent will pay for all pavement marking work directly to the Panel Contractor selected to perform the pavement marking work under this contract.

Measurement of completed pavement marking will be done jointly with the reseal contractor, the panel contract linemarker and the Superintendent.

Recording of localities and extent of pavement marking work, including set out prior to line marking activities are measured as an item. Include recording existing pavement marking in works area.

Include all activities required to co-ordinate the pavement marking work.

## Landscape

### Site Preparation

Measured as an item.

Make allowance for any filling and levelling required.

### Topsoil

Measured in square metres.

Make allowance for any supply required, and spreading.

### Trees, Shrubs and Ground Covers

Measured by number of each type of genus and species.

Make allowance for supply of plants, mulch, fertilisers, excavation of planting holes, and planting.

### Irrigation

Measured as an item.

Make allowance for any design requirements, cost of approvals and connection to the water supply, cost of testing, and provision of as constructed drawings.

### Grassing

Measured in square metres.

Make allowance for reseeding.

### Watering

Measured as an item.

Note that cost of water will be borne by the Superintendent.

## Ducting And Conduits

### Electrical Ducting

Measured in linear metres.

Make allowance for excavation and backfilling trenches, marker tapes, draw wires and kerb markers.

### Water Ducting

Measured in linear metres.

Make allowance for excavation and backfilling trenches, marker tapes, draw wires and kerb markers.

### Conduit Markers

Measured by number.

## Traffic Control Signals and Intelligent Transport Systems

### Supply and Install Pedestals and Footings

Measured by number.

### Supply and Install High Mast Pedestals and Footings

Measured by number.

### Supply and Install Non‑standard Pedestals and Footings

Measured by number.

### Supply and Install Vehicle and Pedestrian Signal Lanterns

Measured by number.

Make allowance for terminal assembly, target boards, cowls and louvres, and all ancillary items.

### Install and Commission Controller

Measured as an item.

Make allowance for all ancillary items such as surge reduction filter and earth stake.

### Supply, Install and Test Multicore Connecting Cable

Measured in linear metres.

### Supply, Install and Test Detector Feeder Cables

Measured in linear metres.

### Supply and Install Detector Loops

Measured by number.

### Provision of Power Connection

Measured as an item.

### Supply and Install Conduits

Measured in linear metres.

Make allowance for draw wires, end caps, and ancillary items.

### Supply and Install Conduit Junction Pits

Measured by number.

### Supply and Install Detector Pits

Measured by number.

### Supply and Install Pedestrian Push Button and Audio‑tactile Assemblies

Measured by number.

### Supply and Install Communications Isolation Pillar

Measured as an item.

### Documents and Plans

Measured as an item.

### Provision Of Communication Line

Measured as an item.

## Traffic Counting Stations

### Install Cabinet

Measured as an item.

Make allowance for supply and installation of terminal blocks and switchboard.

Make allowance for drawing of labelled loop layout and terminal blocks.

### Construction of Pole Foundation

Measured as an item.

Make allowance for excavation, reinforcement and rag bolts.

### Supply and Install Vehicle Loop Detectors

Measured by number.

Make allowance for cutting, install cable, junction boxes and detector feeder cables.

### Install Piezo Axle Sensors

Measured by number.

Make allowance for supply and installation of feeder cables.

### Install Pole Assembly

Measured as an item.

Make allowance for installation of solar power supply.

### Supply and Install Conduits

Measured by length in lineal metres.

Make allowance for excavation, ducting, reinstatement and connections.

## Street Lighting

### Supply and Install Light Columns

Measured by number.

Make allowance for supply and installation of street lighting columns including the following:

* Determining the locations of other services, above, on, and below ground;
* trenching and supply and installation of cables including marker tape and backfilling;
* supply and installation of footings and hold down bolts;
* supply and installation of distribution pillars and control equipment;
* luminaires and lamps;
* connections; and
* testing and commissioning.

### Supply and Install Conduits

Measured in metres.

Make allowance for draw wires, end caps and ancillary items.

Cable installation is paid for in the “Install Light Columns” item.

### Removal of Existing Street Lighting

Measured by number.

Make allowance for removal of existing footings and the delivery of the salvaged materials to the specified location.

### Provision of Temporary Lighting

Measured as an item.

Make allowance for temporary lighting and additional work required by PowerWater.

### Connection of Power

Measured as an item.

Make allowance for fees and charges and additional work required by PowerWater.

## Directional Boring

### Directional Boring With Pipe Casing

Measured in linear metres.

Includes supply of pipe casing and filling of cavities.

### Directional Boring Without Pipe Casing

Measured in linear metres.

Includes filling of cavities.

## Protective Coatings

Measured as an item for each coating system required.