



mainroads
WESTERN AUSTRALIA

Main Roads Standard Method of Measurement for Construction Works

January 2020

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1 PREFACE

Standard Method of Measurement (SMM) has been developed to assist in the consistency and standardisation of schedules of rates and bills of quantities that in turn will provide:

- A standardised layout and content of schedules of rates and bills of quantities;
- A systematic structure of schedules of rates and bills of quantities items so uniform itemisation and description is achieved;
- The subdivision of work into items providing a sensitive and balanced description of the work required;
- A standardised method of the measurement and pricing of items; and
- A basis of data collection and a cost database that can be used for estimating purposes.

Program Management Office under whose guidance the SMM has been prepared will keep the document under review and consider any suggestions for amendment, which should be addressed to Manager Contracts, Program Management Office, Main Roads Western Australia, P.O Box 6202, East Perth WA 6892. Revision of the document will be made when such action is warranted.

Main Roads' Standard Method of Measurement for Construction Works comprises the following Sections:

Standard Method of Measurement (SMM)
Principles for preparing Schedules of Rates and Bills of Quantities
Preambles to the Schedules of Rates and Bills of Quantities
Units of Measurement
Series 100 – General Requirements
Series 200 – Management Requirements
Series 300 – Earthworks
Series 400 – Drainage
Series 500 – Pavement and Surfacing
Series 600 – Traffic Facilities
Series 700 – Electrical and Lighting
Series 800 – Bridges and Major Structures
Series 900 - Miscellaneous

2 PRINCIPLES FOR PREPARING SCHEDULES OF RATES AND BILLS OF QUANTITIES

2.1 Definitions

For the purpose of Main Roads' Standard Method of Measurement for Construction Works and the Schedules of Rates or Bills of Quantities prepared in accordance with Main Roads' Standard Method of Measurement for Construction Works, the following definitions apply:

- Bills of Quantities: The basis of a lump sum contract where the tendered sum takes precedence over the individual rates and prices.
- Daywork: The method of valuing work on the basis of the time spent by labour, the materials used and the plant employed.
- Schedules of Rates: The basis of a contract whereby rates are fixed to estimated quantities to produce a tender amount and during the contract the quantities of the actual work performed are remeasured to produce the final contract amount.

Words and expressions to which meanings are assigned in the Specifications and Drawings have the same meaning in Main Roads' Standard Method of Measurement for Construction Works.

2.2 Difference between Schedules of Rates and Bills of Quantities

Schedules of Rates and Bills of Quantities are prepared in the same manner and format, that is, they both result in a schedule of quantities of the work required. On completion of the schedule of quantities, if it is deemed the quantities of a significant number of items of work:

- May vary, it should be termed a Schedule of Rates.
- Will not vary, it should be termed a Bill of Quantities.

Generally, bridges and other major structures should each be grouped separately into Bills of Quantities. All other components of the Works should be grouped into Schedules of Rates. Thus, specific project requirements may require the combination of schedules of rates and bills of quantities. Typically, this is a combined road works and bridgeworks project, where the road works are grouped into schedules of rates and the bridgeworks and other major structures are grouped into bills of quantities.

(Note that Schedules of Rates give rise to different contract administration requirements for the Superintendent compared to the contract administration requirements arising from Bills of Quantities.)

2.3 Scope

Recommendations are made herein covering methods of preparing Schedules of Rates and Bills of Quantities and units of measurements for road works and bridgeworks projects. While specific recommendations have been made, it is necessary to consider each project on its merits. The great diversity of roadwork and bridgework projects makes it impracticable to produce a standard method of measurement for selecting or dividing items applicable in its entirety to each project.

2.4 Objectives of Schedules of Rates and Bills of Quantities

The objectives of Schedules of Rates and Bills of Quantities are as follows:

- To provide such information of the quantities of work so as to enable estimates and tenders to be prepared efficiently, accurately and consistently.
- Where a contract has been entered into, to provide for use of, the priced Schedules of Rates and/or Bills of Quantities in:
 - the valuation of work executed; and
 - the valuation of variations in accordance with the contract provisions.
- To form the basis for accurate project planning.
- To provide uniform data for inclusion in cost databases.

2.5 Method of Measurement

The items contained in the Schedules of Rates or Bills of Quantities shall be measured in accordance with Main Roads' Standard Method of Measurement for Construction Works, unless expressly stated otherwise. All work that is expressly required should be included in the Schedules of Rates or Bills of Quantities.

Any methods of measurement that are adopted in the preparation of the Schedules of Rates or Bills of Quantities and that are not in accordance with Main Roads' Standard Method of Measurement for Construction Works shall be stated in Contract Specific Preambles.

2.6 Grouping

Separate schedules or bills should be prepared for works of different nature, location, date of commencement, time for completion or any other circumstance which may give rise to different considerations of cost.

The items in the schedules or bills shall be arranged in the general order of the Specification and subdivided in the following order:

- Specification series,
- Specification main part,
- Location, element, component, nature of work, etc.,
- Grade, class, category, size, length, width, thickness, diameter, etc.

Each series shall be totalled and carried forward to a summary. The summary should be structured so as to contain the totals of each series for the individual schedules or bills.

2.7 Classification of Items

In the Units and Method of Measurement section of Main Roads' Standard Method of Measurement for Construction Works under the subheading "Classification of Items," recommendations are made with regards to the provision of separate items. Depending upon the particular project being measured, any of these may be required or alternatively, not required. Also, where the particular project so requires, further separate items may be required.

2.8 Mode of Item Descriptions

Item descriptions should identify the components only, and not the tasks, to be carried out by the contractor. Where the work identified by an item is specifically limited, the limitation shall be stated in the item description.

2.9 Reference to Specification and Drawings

The schedules and bills only identify or locate the various components of work and should not specify or direct the work to be undertaken. Lengthy descriptions and specifications need not be repeated in the schedules or bills. Item descriptions included in the schedules or bills may refer to the relevant sections of the Specifications and to the Drawings for detailed requirements.

2.10 Rates and Prices to be Inclusive

In the Units and Method of Measurement sections of Main Roads' Standard Method of Measurement for Construction Works under the subheading "Rates and Prices to be Inclusive," the items that are deemed as being included in the rates and prices are stated. Any of these, however, may be measured separately. Also, where the nature of the work so requires, further incorporated items shall be stated in the schedules or bills.

2.11 Coding and Numbering Of Items

For convenience of reference, Specification series descriptions and main part headings shall be prefixed with the corresponding Specification number.

Each item and any Particular Preamble included in the schedules or bills shall be numbered commencing with the Specification main part number followed by consecutive numbers to (a minimum of) two places of decimals, e.g. 402.01 being the first item in part 402.

2.12 Materials Supplied by the Principal

Where the Principal is to supply materials to the Contractor on Site or where the Contractor is to collect materials supplied by the Principal from a designated source, it shall be stated in the schedules or bills.

2.13 Provisional Sums

Provisional sums may be entered into schedules or bills to allow for project scope that has not been finalised or for costs unknown at the time the bills and schedule are prepared.

2.14 Provisional Quantities

Provisional Quantities shall not be used in Schedules of Rates but may be entered into Bills of Quantities to allow for contingencies and additional work that may be required. These items shall be described as provisional. Provisional Quantities as applied to these Bills of Quantities means that such quantities have not been estimated from dimensions on the Drawings and whilst it is probable that some part will be required and possible that the whole or part might be required, no guarantee can be given that any or all will in fact be required. The rates affixed to such items shall include the direct costs together with their associated on-costs. Limits of accuracy applying to quantities stated in the Annexure to the General Conditions of Contract Appendix 1 Part A shall not apply to Provisional Quantities. Furthermore, no consideration will be given to claims against the Principal, including claims for loss of profit, should the actual quantities prove to be more or less than those stated in these Bills of Quantities.

2.15 Preambles

The Preambles to the Schedules of Rates and Bills of Quantities is included as part of the Standard Method of Measurement and must not be altered in its entirety. The Preambles will be deemed to have been issued and constitute part of the Tender Documents.

2.16 Contract Specific Preambles

Where used, Contract Specific Preambles shall be included after the Preambles and before the beginning of the Schedules of Rates and Bills of Quantities for each and every project.

2.17 Extra over Rates

Extra over rates shall consider the original task being performed and shall determine if the application of an Extra over rate shall be suitable. The Extra over rate shall be the difference in cost between the original task and the Extra over task.

2.18 Rate only Items

Rate only Items shall not be used. In Bills of Quantities, the quantity of an item should be estimated and dealt with as a variation should the quantities be outside the contract limits of accuracy. In Schedule of Rates, the quantity of an item should be estimated and re-measured on site.

3 PREAMBLES

3.1 General Preambles

- 3.1.1 These Schedules of Rates or Bills of Quantities, as the case may be, shall be read in conjunction with the Specifications, Drawings, General Conditions of Contract, Special Conditions of Contract, Conditions of Tendering and Special Conditions of Tendering.
- 3.1.2 The items contained in these Schedules of Rates or Bills of Quantities have been measured in accordance with the Main Roads' Standard Method of Measurement for Construction Works, unless expressly stated otherwise.
- 3.1.3 Where there is discrepancy in an item description and or unit and or rate and or amount tendered in a Schedule of Rates/Bill of Quantities, the discrepancy shall be adjusted in accordance with Clause 9.12 of the Conditions of Tendering for Major Works Contracts.
- 3.1.4 Unless stated otherwise the cost of complying with the General Conditions of Contract, the Special Conditions of Contract, Conditions of Tendering and Special Conditions of Tendering shall be covered by the rates and amounts inserted against the items in these Schedules of Rates or Bills of Quantities.

3.2 General Directions

- 3.2.1 In these Schedules of Rates or Bills of Quantities, the subheadings and item descriptions identify the work covered by the respective items, but the exact nature and extent of the work to be performed is ascertained by reference to the Specifications, Drawings, General Conditions of Contract and Special Conditions of Contract. The rates and prices entered in these Schedules of Rates or Bills of Quantities shall be deemed to be the full inclusive value of the work described in the Specification and/or shown on the Drawings and covered by the respective items, in conjunction with the relevant items listed under the heading "Rates and Prices To Be Inclusive" in the Units And Method Of Measurement sections of the Main Roads' Standard Method Of Measurement For Construction Works and including but not limited to the following, unless expressly stated otherwise:
 - 3.2.1.1 Labour and costs associated therewith including all site allowances, shift loadings and additional resources for carrying out works on nightshift;
 - 3.2.1.2 Plant and costs associated therewith including mobilisation and demobilisation to and from site;
 - 3.2.1.3 The supply, loading, transporting and delivery to site, unloading, handling and storage of materials and goods;
 - 3.2.1.4 Taking delivery of materials and goods supplied by others, loading, transporting and delivery to site, unloading, handling, storage and returning any surplus;
 - 3.2.1.5 Setting out, assembling, mixing, curing, lapping, cutting, fixing, erecting, lifting, hoisting, handling, laying, spreading, grading, measuring, watering, compacting, trimming, planting, installing and placing of materials and goods in position;
 - 3.2.1.6 Use of hand held plant where required;
 - 3.2.1.7 Waste, bulking, compaction and shrinkage of materials and materials placed outside the final design lines;
 - 3.2.1.8 Removal and disposal off site of surplus or spoil materials and costs in connection therewith including tip fees;
 - 3.2.1.9 Temporary works;

- 3.2.1.10 Provision of working space and upholding sides of excavations;
- 3.2.1.11 Notifying, making arrangements and liaising with all relevant statutory bodies, authorities and councils to obtain all licences and permits necessary for the execution of the Works, and costs in connection therewith;
- 3.2.1.12 Taking precautions and measures as far as is reasonable and practical to prevent interference with or damage to existing structures, services, utilities, roads, footpaths, paved areas, watercourses, drainage systems, public and private vehicular and pedestrian accesses, trees, graves, burial urns, including the provision of alternative access, if necessary;
- 3.2.1.13 The effect of phasing of the works or of alteration or additions to existing services and supplies to the extent that such work is set forth or reasonably implied in the Contract;
- 3.2.1.14 Keeping the Works where necessary, and as near as may be practical, free from water and protected from damage due to water and from weather conditions which may adversely affect the Works including dewatering of excavations, allowing for seasonal variation of ground water, disposal of ground water in an approved manner and taking measures to prevent flotation of new or existing structures;
- 3.2.1.15 Submitting to the Superintendent all drawings, details of procedures and methods of construction to be used, calculations, technical literature, test certificates and any other documents or information required to be submitted in accordance with the Specifications;
- 3.2.1.16 All costs for quality assurance systems including carrying out all tests, audits and the like and for providing certificates of conformity;
- 3.2.1.17 Making good after sampling and testing;
- 3.2.1.18 Attendance and transport for sampling and testing carried out by the Superintendent, and supplying results of tests carried out by the Contractor;
- 3.2.1.19 Complying with traffic requirements;
- 3.2.1.20 Complying with the occupational safety and health requirements;
- 3.2.1.21 Complying with environmental requirements;
- 3.2.1.22 Establishment, mobilisation and demobilisation costs;
- 3.2.1.23 Overhead costs and profit;
- 3.2.1.24 General obligations, liabilities and risks involved in the execution of the works set forth or reasonably implied in the Contract; and
- 3.2.1.25 Rise and fall in costs, unless expressly stated otherwise.

3.3 Measurement

- 3.3.1 Measurements, for calculations, have been measured net from the dimensions shown on the Drawings and no allowance has been made for laps, cutting, waste, bulking, compaction or shrinkage, unless expressly stated otherwise.
- 3.3.2 The quantity given against items in these Schedules of Rates or Bills of Quantities has been rounded up to the nearest whole number except the following:
- 3.3.2.1 The quantity of items measured in hectares has been rounded up to two decimal places; and
- 3.3.2.2 The quantity of items measured in tonnes has been rounded up to the nearest two places of decimals.
- 3.3.3 The following abbreviations have been used for units of measurement:

Unit	Abbreviation
Millimetre	mm
Metre	m
Square Metre	m ²
Hectare	ha
Cubic Metre	m ³
Kilogram	Kg
Tonne	t
Number of	No.
Item	Item
Millilitre	ml
Litre	L
Hour	Hr.
Day	Day
Man Day	M/day
Week	Wk
Provisional Sum	P.S.

- 3.3.4 Schedules of Rates shall be re-measured. Re-measurement of quantities shall be re-measured from the dimensions shown on the Drawings, unless directed otherwise by the Superintendent. Items within Bills of Quantities with the exception of those for Provisional Quantities shall not be re-measured.
- 3.3.5 Extra Over rates shall be the difference in cost between constructing the original task and the Extra Over task to which the Extra Over rate applies.

3.4 Provisional Sums and Quantities

- 3.4.1 All work included as Provisional Sums in these Schedules of Rates or Bills of Quantities and Provisional Quantities included in Bills of Quantities shall be completed within the contract period, unless expressly stated otherwise.

3.5 Daywork

3.5.1 General;

3.5.1.1 No work may be claimed as Daywork by the Contractor unless the Superintendent has issued prior written instruction.

3.5.2 Labour;

3.5.2.1 The cost of the Contractor's labour shall be charged at the approved actual hours worked at the direction of the Superintendent at the basic award rates of pay for the particular labour classification carrying out the work together with all allowances as included in the appropriate awards. The Contractor shall provide wage sheets or other evidence of payments made to each person employed on Daywork.

3.5.2.2 On-costs for labour shall include for all establishment charges, overheads, profit, executive supervision, staff employed on supervision work only, workers compensation insurance, normal contract works third party insurance and employer liability insurances, payroll tax, public and annual leave with pay including leave loading, sick pay, superannuation, portable long service leave, all allowances in the industrial awards, accommodation, meals, transport (to, from and on the Works), all protective clothing, safety equipment, use and maintenance of small hand tools and appliances, non-mechanical plant and equipment not provided under "Plant" such as ladders, trestles, stages, bankers, scaffolding, temporary track wagons, skips and similar items unless they are used exclusively for Daywork and for all other costs incurred in the employment of labour on Daywork.

3.5.2.3 Labour hire agency personnel shall not be included in the "Labour" category, but shall be included in the "Subcontractors" category.

3.5.3 Materials;

3.5.3.1 The cost of materials used by the Contractor shall be charged at the net price paid by the Contractor for the materials delivered to site as substantiated by suppliers' invoices. Payment shall only be made for the quantity required for the Daywork including any surplus material accepted by the Superintendent.

3.5.3.2 On-costs for materials shall include for the cost of purchasing materials, taking delivery, unloading, unpacking, protecting, storing as required and all establishment charges, overheads, profit, insurances, executive supervision, staff employed on supervision work only and for all other costs incurred in the use of materials on Daywork.

3.5.4 Plant;

3.5.4.1 Payment for working plant shall be for approved actual hours only. Standing time for plant on site and used on Daywork shall not be allowed (except as stated below).

3.5.4.2 The rates and prices of plant shall be based on the net cost including operators, attendants, accommodation, meals, transport, fuel, consumables, insurances, depreciation, maintenance, wear and tear, spare parts, tyres, all costs of repair, all lifting chains, chutes, hoppers, tackle, equipment, fittings, mobilisation and demobilisation (except as stated below) and the like required for the efficient operation of the plant. Agreed rates and prices of plant shall be charged at the approved actual hours worked at the direction of the Superintendent. The

Contractor shall provide hire dockets or other evidence of payment of plant hire charges for work carried out on Daywork.

3.5.4.3 On-costs for plant shall include for all costs connected with the use of plant including all establishment charges, on-site and off-site overheads, profit, insurances, , staff employed on supervision work only and for all other costs incurred in the use of plant on Daywork.

3.5.4.4 In the event of plant brought to site on the written instructions of the Superintendent and used only for Daywork, the cost of transporting to and from site shall be paid to the Contractor as the actual cost exclusive of overheads and profit. In the event that this plant remains on site and is used on work other than Daywork by the Contractor, then only an agreed proportion of the transport costs shall be paid for Daywork. Payment for standing time will be allowed for plant brought to site on the written instructions of the Superintendent and used only for Daywork.

3.5.5 Subcontractors;

3.5.5.1 The cost of Subcontractors and labour hire agency personnel shall be based on the approved actual costs of labour, materials or plant charged at the actual hours worked at the direction of the Superintendent together with accepted overheads and profit of the Subcontractor or labour hire agency. The Contractor shall provide signed timesheets, invoices or other evidence to the satisfaction of the Superintendent of payment for work carried out on Daywork by Subcontractors and labour hire agency personnel.

3.5.5.2 On-costs for Subcontractors and labour hire agency personnel shall include for all establishment costs, mobilisation and demobilisation costs, on-site and off-site overhead costs, profit, insurances, staff employed on supervision work only, accommodation, meals, transport and for all other costs incurred in the employment of Subcontractors and labour hire agency personnel on Daywork.

SERIES 100 - GENERAL REQUIREMENTS

101 Description of works

101.1 Classification of Items

Separate items shall be provided for the following:

- Provision of access for others to undertake works.
- Contractors programs.
- Project works sign.

101.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Provision of access for others to undertake works	Item
Contractors programs	Item
Project works sign	No.

101.3 Method of Measurement

101.3.1 Site access shall not be measured separately.

101.4 Rates and Prices to be Inclusive

101.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **provision of access for others to undertake works** shall be inclusive of:

- (a) Uninterrupted, safe and clear access and egress to specified work sites; and
- (b) Liaison and programming of works with others.

101.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for project works sign shall be inclusive of:

- (a) Provision, erection and maintenance of projects works signs; and
- (b) Removal of all project works signs from site and reinstatement of ground to match surrounding.

102 Survey Information

102.1 Classification of Items

Separate items shall be provided for the following:

- Survey information, control and setting out of the works.

102.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Survey information, control and setting out of the works	Item

102.3 Rates and Prices to be Inclusive

102.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **survey information, control and setting out of the works** shall be inclusive of:

- (a) Provision, maintenance and removal of offset pegging for the use by the Superintendent

103 Site Facilities

103.1 Classification of Items

Separate items shall be provided for the following:

- Provision of Contractor's site facilities.
- Maintenance of Contractor's site facilities.
- Removal of Contractor's site facilities.
- Provision of Superintendent's site facilities.
- Maintenance of Superintendent's site facilities.
- Removal of Superintendent's site facilities.
- Provision of Superintendent's living facilities.
- Maintenance of Superintendent's living facilities.
- Removal of Superintendent's living facilities.
- Superintendent's meals.

103.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Provision of Contractor's site facilities	Item
Maintenance of Contractor's site facilities	Item
Removal of Contractor's site facilities	Item
Provision of Superintendent's site facilities	Item
Maintenance of Superintendent's site facilities	Item
Removal of Superintendent's site facilities	Item
Provision of Superintendent's living facilities	Item
Maintenance of Superintendent's living facilities	Item
Removal of Superintendent's living facilities	Item
Superintendent's meals	M/day

103.3 Method of Measurement

- 103.3.1 Superintendent's meals shall be measured as three meals per day per person. Days on which only one meal is taken shall be measured at the rate of 50% per M/day. Days on which two meals are taken shall be measured at the rate of 75% per M/day.

103.4 Rates and Prices to be Inclusive

- 103.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **provision of Contractor's site facilities, maintenance of Contractor's site facilities** and **removal of Contractor's site facilities** shall be inclusive of:

- (a) Provision of site access, offices, sheds, stores, crib huts, ablution facilities, laboratories, NDM storage sheds, mess facilities, accommodation and living facilities, recreation facilities, laundry facilities, services, waste disposal facilities, other site facilities and the like;
- (b) Maintenance of site access, offices, sheds, stores, crib huts, ablution facilities, laboratories, NDM storage sheds, mess facilities, accommodation and living facilities, recreation facilities, laundry facilities, services, waste disposal facilities, other site facilities and the like;
- (c) Removal of site access, offices, sheds, stores, crib huts, ablution facilities, laboratories, NDM storage sheds, mess facilities, accommodation and living facilities, recreation facilities, laundry facilities, services, waste disposal facilities, other site facilities and the like; and
- (d) Ripping, rehabilitation and reinstatement of the sites occupied by the site facilities.

- 103.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **provision of Superintendent's site facilities, maintenance of Superintendent's site facilities** and **removal of Superintendent's site facilities** shall be inclusive of:

- (a) Provision of site facilities, offices, buildings and the like;
- (b) Clearing and site preparation including excavation, filling and levelling;
- (c) Foundations, bases and hardstandings;
- (d) Water, sanitation, ablution facilities, heating, air conditioning, continuous 240V electric power 24 hours per day, lighting, telephone installation with extensions, switchboard and switching systems separately connected to the telephone system including provision and connection of an answer phone system, data service and communications services;
- (e) Fences, notice boards and direction boards;
- (f) Vehicle access, hardstandings, parking areas and footpaths;
- (g) Equipment, photocopier, furnishings, fittings and supplies;
- (h) Maintenance of offices, buildings, services, fences, notice boards, direction boards, vehicle access, hardstandings, parking areas, footpaths, equipment, photocopier, furnishings, fittings and the like;
- (i) Replenishment of consumables;
- (j) Cleaning and disposal of waste off-site;
- (k) Receiving back the site facilities, offices, buildings, vehicle access, hardstandings, parking areas, footpaths, fences and the like from the Superintendent;
- (l) Disconnecting, removing and sealing off disused services;

- (m) Demolishing, dismantling and removing all site facilities, offices, buildings, vehicle access, hardstandings, parking areas, footpaths, fences, notice boards, direction boards, equipment, photocopier, furnishings, fittings and the like;
- (n) Moving and re-establishing site facilities; and
- (o) Ripping, rehabilitation and reinstatement of the sites occupied by the site facilities, offices, buildings, vehicle access, hardstandings, parking areas, footpaths, fences and the like.

103.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **provision of Superintendent's living facilities, maintenance of Superintendent's living facilities and removal of Superintendent's living facilities** shall be inclusive of:

- (a) Provision of accommodation and living facilities;
- (b) Clearing and site preparation including excavation, filling and levelling;
- (c) Foundations, bases and hardstandings;
- (d) Water, sanitation, ablution facilities, heating, air conditioning, power, lighting and laundry services;
- (e) Vehicle access, hardstandings, parking areas and footpaths;
- (f) Equipment, furnishings, fittings, pillows, linen, blankets, towels and the like;
- (g) Maintenance of accommodation and living facilities, vehicle access, hardstandings, parking areas, footpaths, equipment, furnishings, fittings and the like;
- (h) Replenishment of consumables;
- (i) Cleaning, vacuuming and disposal of waste off-site;
- (j) Changing of linen, towels and the like;
- (k) Receiving back the accommodation and living facilities, vehicle access, hardstandings, parking areas, footpaths and the like from the Superintendent;
- (l) Disconnecting, removing and sealing off disused services;
- (m) Demolishing, dismantling and removing all accommodation and living facilities, vehicle access, hardstandings, parking areas, footpaths, equipment, furnishings, fittings and the like; and
- (n) Ripping, rehabilitation and reinstatement of the sites occupied by the accommodation and living facilities, vehicle access, hardstandings, parking areas and footpaths and the like.

104 Entry to Land

104.1 Classification of Items

Separate items shall be provided for the following:

- Entry to land.

104.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Entry to land	Item

104.3 Rates and Prices to be Inclusive

104.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **entry to land** shall be inclusive of:

- (a) Construction of access tracks, fences, gates and the like;
- (b) Maintenance of access tracks, fences, gates and the like; and
- (c) Removal of access tracks, fences, gates and the like including ripping, rehabilitation and reinstatement of the access tracks.

105 NOT USED

106 Utilities and Services

106.1 Classification of Items

Separate items shall be provided for the following:

- Liaison, programming, location and protection of utilities and services.
- Relocation of utilities and services.

106.2 References

106.2.1 Relocation of existing street lighting noted in Specification 106 are to be measured under Standard Method of Measurement Clause 701 Roadway Lighting.

106.2.2 Relocation of existing traffic signals noted in Specification 106 are to be measured under Standard Method of Measurement Clause 712 Traffic Signals.

106.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Liaison, programming, location and protection of utilities and services	Item
Relocation of utilities and services	Item

106.4 Rates and Prices to be Inclusive

106.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of utilities and services** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Safely remove existing pipes and conduits;
- (c) Place select bedding;
- (d) Backfilling with embankment quality material and compaction;
- (e) Disposal of surplus excavated material;
- (f) Pipes, conduits including all purpose made screwed and threaded connections, bends, tees, draw wire, fittings and the like;
- (g) All associated cabling;
- (h) Cable pits;
- (i) Reinstatement of pavements and surrounding surfaces; and
- (j) Liaison with the relevant authorities.

SERIES 200 - MANAGEMENT REQUIREMENTS

201 Quality Systems

The requirements for quality systems are not individually or separately measured and are deemed included within the rates for other items in accordance with Section 3, Preambles, 3.2.1.16.

202 Traffic

202.1 Classification of Items

Separate items shall be provided for the following:

- Traffic management.
- Traffic control devices.
- Traffic controllers.
- Construction, maintenance and removal of sidetracks, temporary driving surfaces and temporary pedestrian accesses.
- Maintenance of existing roads.

202.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Traffic management	Item
Traffic control devices	Item
Traffic controllers	Item
Construction, maintenance and removal of sidetracks, temporary driving surfaces and temporary pedestrian accesses	Item
Maintenance of existing roads	Item

202.3 Rates and Prices to be Inclusive

202.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **traffic management** shall be inclusive of:

- (a) Development and approval of Traffic Management Plan;
- (b) Development and approval of Traffic Control Diagrams;
- (c) Traffic Risk Assessments and Treatment Registers;
- (d) Preparation and implementation of all traffic management measures, including certificates of compliance;
- (e) Measurement, monitoring and evaluation;
- (f) Audit Schedule and report for each audit carried out; and
- (g) Compliance with the Traffic Management Plan conditions not allowed for elsewhere.

202.3.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **traffic control devices** shall be inclusive of:

- (a) Signs, devices, variable message boards, signals, lighting, pavement markings, fences, railings, barriers, cones, bollards and the like;
- (b) Removal or pruning of vegetation including disposal off-site;
- (c) Relocating signs, devices, variable message boards, signals, lighting, pavement markings, fences, railings, barriers, cones, bollards and the like;
- (d) Cleaning signs, devices, variable message boards, signals, lighting, pavement markings, fences, railings, barriers, cones, bollards and the like;
- (e) Inspecting signs, devices, variable message boards, signals, lighting, pavement markings, fences, railings, barriers, cones, bollards and the like;
- (f) Ensuring night visibility of signs, devices, variable message boards, signals, lighting, pavement markings, fences, railings, barriers, cones, bollards and the like; and
- (g) Rectification of damaged, overturned or missing signs, devices, variable message boards, signals, lighting, pavement markings, fences, railings, barriers, cones, bollards and the like.

202.3.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **traffic controllers** shall be inclusive of:

- (a) Traffic control personnel and vehicles where required;
- (b) Provision and maintenance of communication systems between traffic control personnel; and
- (c) Hand held traffic control devices.

202.3.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **construction, maintenance and removal of sidetracks, temporary driving surfaces and temporary pedestrian accesses** shall be inclusive of:

- (a) Construction of sidetracks, temporary driving surfaces and temporary pedestrian access including clearing, topsoil removal, windrow and/or stockpiling of topsoil, embankment construction, drainage, pavements, sealing, kerbs, signs, pavement markings, fences, railings, barriers, pedestrian facilities, lighting, traffic signals and the like;
- (b) Certificates of compliance;
- (c) Maintenance of sidetracks, temporary driving surfaces and temporary pedestrian access;
- (d) Removal of sidetracks, temporary driving surfaces and temporary pedestrian access including embankments, drainage, pavements, kerbs, signs, pavement markings, fences, railings, barriers, pedestrian facilities, lighting, traffic signals and the like;
- (e) Ripping, rehabilitating and reinstatement of the site occupied by the sidetracks, temporary driving surfaces, temporary pedestrian access, windrows and stockpiles; and
- (f) Respreading topsoil.

203 Occupational Safety and Health

203.1 Classification of Items

Separate items shall be provided for the following:

- Occupational safety and health including safety and health plans and safety and health audits.

203.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Occupational safety and health including safety and health plans and safety and health audits	Item

203.3 Rates and Prices to be Inclusive

203.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **occupation safety and health including safety and health plans and safety and health audits** shall be inclusive of:

- (a) Development and approval of Occupational Safety and Health Management Plan;
- (b) Occupational Safety and Health Risk Assessments and Treatment Registers;
- (c) Preparation and implementation of all Occupational Safety and Health management measures;
- (d) Measurement, monitoring and evaluation;
- (e) Audit Schedule and report for each audit carried out; and
- (f) Compliance with the Occupational Safety and Health Management Plan conditions not allowed for elsewhere.

204 Environmental Management

204.1 Classification of Items

Separate items shall be provided for the following:

- Construction Environmental Management Plan.

204.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Construction Environmental Management Plan	Item

Rates and Prices to be Inclusive

204.2.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **Construction Environmental Management Plan** shall be inclusive of:

- (a) Development and approval of Construction Environmental Management Plan;
- (b) Implementation of all operational controls; and
- (c) Compliance with the Construction Environmental Management Plan conditions not allowed for elsewhere.

205 NOT USED
206 NOT USED
207 NOT USED
208 NOT USED
209 NOT USED
210 NOT USED

SERIES 300 - EARTHWORKS

301 Vegetation Clearing and Demolition

301.1 Classification of Items

Separate items shall be provided for the following:

- Vegetation clearing.
- Topsoil removal

301.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Vegetation clearing	m ² or ha
Topsoil removal	m ² or ha

301.3 Method of Measurement

301.3.1 Vegetation clearing and topsoil removal shall be measured as the plan area. The area of non-designated areas, existing roadways, sidetracks, borrow pits, access tracks, surface drains, levees and guidebanks shall be excluded. Where the quantity of any item is equal to or greater than 1,000 m², the unit of measurement for that item shall be hectares (ha). Where the quantity of any item is less than 1,000 m², the unit of measurement for that item shall be square metres (m²).

301.4 Rates and Prices to be Inclusive

301.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **vegetation clearing** shall be inclusive of:

- (a) Demolition and breaking up;
- (b) Tree felling, uprooting of bushes, trees, hedges and other vegetation, grubbing out remnant stumps and roots and filling and compacting holes left after grubbing out;
- (c) Chipping, splitting, cutting, mowing, slashing, grinding, mulching or pulverising vegetation;
- (d) Stockpiling of cleared vegetation, mulched vegetation, suitable topsoil, partially degraded topsoil, degraded topsoil and surplus materials;
- (e) Treatment, processing and management of disease-free and weed-free vegetation for incorporation into topsoil;
- (f) Cutting and stacking of fauna logs, chip-logs and saw logs;
- (g) Branch lopping and treatment of cut surfaces;
- (h) Disposal of debris, rubbish and the like off-site;
- (i) Disposal of excess green waste, weed infected or dieback infected green waste off-site;
- (j) Preservation of individual trees, groups of trees and other vegetation to be retained as designated on the Drawings or by the Superintendent;
- (k) Disposal of salvaged materials into stockpiles at nominated storage areas;

- (l) Making good severed ends of existing fences, walls, services, and other items including fixing posts at ends of strained fences and restraining fences;
- (m) Disconnecting, removing and sealing services and recording the position of sealed services; and
- (n) Making good damage to buildings, other structures and surfaces caused by demolition and removal.

301.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **topsoil removal** shall be inclusive of:

- (a) Excavation in all material;
- (b) Topsoil mapping;
- (c) Stockpiling or windrowing on site for re-use; and
- (d) Disposal of surplus material, debris, rubbish and the like off-site.

302 Earthworks

302.1 Classification of Items

Separate items shall be provided for the following

- Removal of redundant pavement.
- Removal of redundant seal.
- Ripping and rehabilitating redundant pavement.
- Preparation of retained pavement to receive overlay.
- Removal of redundant kerbs.
- Marking out and cutting edge of existing pavement.
- Removal of unsuitable material.
- Removal of contaminated material.
- Backfilling unsuitable material excavations.
- Backfilling contaminated material excavations.
- Excavation in rock.
- Embankment foundation compaction.
- Embankment construction.
- Subgrade improvement.
- Subgrade preparation.
- Batter protection.

302.2 References

302.2.1 The units of measurement, the method of measurement and the rates and prices for batter protection shall be in accordance with Series 300 - Earthworks, Part 304.

302.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Removal of redundant pavement	m ²
Removal of redundant seal	m ²
Ripping and rehabilitating redundant pavement	m ²
Preparation of retained pavement to receive overlay	m ²
Removal of redundant kerbs	m
Marking out and cutting edge of existing pavement	m
Removal of unsuitable material	m ³
Removal of contaminated material	m ³
Backfilling unsuitable material excavations	m ³
Backfilling contaminated material excavations	m ³
Excavation in rock	m ³
Embankment foundation compaction	m ²
Embankment construction	m ³
Subgrade improvement	m ²
Subgrade preparation	m ²

302.4 Method of Measurement

- 302.4.1 Removal of redundant pavements, removal of redundant seal, the preparation of retained pavement to receive overlay, embankment foundation compaction, subgrade improvement and subgrade preparation shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.
- 302.4.2 Removal, storage and relaying of existing segmental pavements shall be measured in Series 500 – Pavement and Surfacing, Part 505.
- 302.4.3 Removal of unsuitable material, contaminated material and excavation in rock shall be measured as the bank volume before excavation in accordance with Main Roads Western Australia Standard No. 67/08/90 Earthwork Volume Calculations. No allowance shall be made for excavation beyond the design shapes of the voids or for overbreak.
- 302.4.4 Backfilling unsuitable and contaminated material excavations and embankment construction shall be measured compacted in place. Volumes shall be calculated by prismatic formulae method in accordance with Main Roads Western Australia Standard No. 67/08/90 Earthwork Volume Calculations. No allowance shall be included for material placed outside final design shapes of embankments.
- 302.4.5 Excavation of suitable fill material where placed directly into embankments or excavation from stockpile for placement into embankments shall not be measured separately.

302.5 Rates and Prices to be Inclusive

- 302.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant pavement**, **removal of redundant kerb** and **marking out and cutting edge of existing pavement** shall be inclusive of:
- Excavation in all material;
 - Trimming, grading, levelling and compacting base of excavations;

- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus material, debris, rubbish and the like off-site;
- (e) Finishing up to abutting surfaces;
- (f) Protection and maintenance of surfaces; and
- (g) Protection of adjacent structures, drains, services, kerbs and the like.

302.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant seal** shall be inclusive of:

- (a) Removal of all materials;
- (b) Shaping, grading, levelling and trimming;
- (c) Disposal of surplus material, debris, rubbish and the like off-site;
- (d) Finishing up to abutting surfaces;
- (e) Protection and maintenance of surfaces; and
- (f) Protection of adjacent structures, drains, services, kerbs and the like.

302.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **ripping and rehabilitating redundant pavement** shall be inclusive of:

- (a) Ripping in all materials;
- (b) Shaping, grading, levelling and trimming;
- (c) Disposal of surplus material, debris, rubbish and the like off-site;
- (d) Finishing up to abutting surfaces;
- (e) Protection and maintenance of surfaces; and
- (f) Protection of adjacent structures, drains, services, kerbs and the like.

302.5.6 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices or **preparation of retained pavement to receive overlay** shall be inclusive of:

- (a) Removal and disposal of loose material off-site;
- (b) Scarifying, grading, watering, levelling, compacting, trimming and final preparation to line and level;
- (c) Shaping to cambers, falls and crowns;
- (d) Finishing up to abutting surfaces;
- (e) Protection and maintenance of surfaces; and
- (f) Protection of adjacent structures, drains, services, kerbs and the like.

302.5.7 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of unsuitable and/or contaminated material** shall be inclusive of:

- (a) Excavation in all materials;
- (b) Shaping, grading, levelling and trimming bottoms of excavations;
- (c) Disposal of all materials off-site;
- (d) Finishing up to abutting surfaces;
- (e) Protection and maintenance of surfaces; and
- (f) Protection of adjacent structures, drains, services, kerbs and the like.

- 302.5.8 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **excavation in rock** shall be inclusive of:
- (a) Preliminary site trials of plant;
 - (b) Where blasting is permitted, preliminary site trials of blasting, measurement and recording of vibrations, checking and adjusting accuracy of seismographs, preparatory work for blasting, notifying the Superintendent when explosives are to be brought onto site, screens and other protective covers, drilling shot holes, charging, stemming, blasting and pre-splitting;
 - (c) Excavation including loosening and breaking up of rock;
 - (d) Trimming of surfaces and removal of loose rock;
 - (e) Removal and disposal of rock off-site;
 - (f) Making good overbreak and backfilling with embankment quality material and compaction;
 - (g) Finishing up to abutting surfaces;
 - (h) Protection and maintenance of surfaces; and
 - (i) Protection of adjacent structures, drains, services, kerbs and the like.
- 302.5.9 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **embankment foundation compaction** and **subgrade preparation** shall be inclusive of:
- (a) Grading, watering, levelling, compacting, trimming, regulating, proof rolling, rolling of the surface and final preparation to level;
 - (b) Finishing up to abutting surfaces;
 - (c) Protection and maintenance of surfaces; and
 - (d) Protection of adjacent structures, drains, services, kerbs and the like.
- 302.5.10 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **backfilling excavated unsuitable and/or contaminated material, subgrade improvement** and **embankment construction** shall be inclusive of:
- (a) Excavation of materials on-site, or from borrow pits or stockpiles or importation of materials;
 - (b) Hauling, depositing, spreading, grading, measuring, mixing, watering, levelling, compacting, trimming and final preparation to line and level;
 - (c) Crushing materials and removal of oversize materials;
 - (d) Trimming and shaping of filled surfaces, excavated surfaces, benches, berms and table drains;
 - (e) Additional material to replace material lost by settlement of, or penetration into, the underlying material;
 - (f) Excavation of surplus materials on-site and removal off-site;
 - (g) Backfilling behind kerbs (where not included in kerb rate under clause 407.4.1);
 - (h) Complying with requirements and constraints on the sequence, timing, rate of deposition and filling and equalisation of earth pressure;
 - (i) Protection of adjacent structures, drains, services, kerbs and the like; and
 - (j) Completion of earthworks final surfaces.

303 Material and Water Sources

303.1 Classification of Items

Separate items shall be provided for the following:

- Pit establishment.
- Water supplies

303.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Pit establishment	Item
Water supplies	Item

303.3 Rates and Prices to be Inclusive

303.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **pit establishment** shall be inclusive of:

- (a) Development and approval of the Construction Pit Management Plan;
- (b) Implementation of all operational controls;
- (c) Clearing;
- (d) Weed removal;
- (e) Topsoil removal;
- (f) Overburden removal;
- (g) Construction and maintenance of access tracks, fences and gates; and
- (h) Protection of existing fences and gates.

303.3.2 303.3.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **water supplies** shall be inclusive of:

- (a) Supply and servicing of the required quantities of suitable water for construction water and potable water both for construction activities and site facilities;
- (b) Supply of water for dust suppression;
- (c) Maintenance of principal supplied water bores;
- (d) Testing of water quality; and
- (e) Liaison with the relevant authorities.

304 Landscaping and Revegetation / Revegetation / Rehabilitation of Disturbed Areas

304.1 Classification of Items

Separate items shall be provided for the following:

- Transplanting.

- Herbicide treatment.
- Ground preparation.
- Erosion control.
- Topsoil respreading
- Imported topsoil.
- Seeding.
- Hydro-seeding.
- Grassing by turf.
- Grassing by stolons.
- Grassing by seed.
- Plants.
- Mulching.
- Hydro-mulching.
- Irrigation system.
- Pit reinstatement.
- Establishment of vegetation.

304.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Transplanting	No.
Herbicide treatment	ha or m ²
Ground preparation	ha or m ²
Erosion control	ha or m ²
Topsoil respreading	ha or m ²
Imported topsoil	ha or m ²
Seeding	ha or m ²
Hydro-seeding	ha or m ²
Grassing by turf	ha or m ²
Grassing by stolons	ha or m ²
Grassing by seed	ha or m ²
Plants	No.
Mulching	ha or m ²
Hydro-mulching	ha or m ²
Irrigation system	Item
Pit reinstatement	Item
Establishment of vegetation	wk

304.3 Method of Measurement

304.3.1 Imported topsoil; herbicide treatment; ground preparation; grassing; seeding; hydro-seeding; mulching; hydro-mulching; erosion control shall be measured as the plan area. Where the quantity of any item is equal to or greater than 1,000 m², the unit of measurement for that item shall be hectares (ha). Where the quantity of any item is less than 1,000 m², the unit of measurement for that item shall be square metres (m²).

304.3.2 Topsoil respreading shall be measured as the plan area. The area of non-designated areas, existing roadways, sidetracks, borrow pits, access tracks, surface drains, levees and guidebanks shall be excluded. Where the quantity of any item is equal to or greater than 1,000 m², the unit of measurement for that item shall be hectares (ha). Where the quantity of any item is less than 1,000 m², the unit of measurement for that item shall be square metres (m²).

304.4 Rates and Prices to be Inclusive

304.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **ground preparation** shall be inclusive of:

- (a) Removal of all rubbish, weeds, stones and other debris and disposal off-site;
- (b) Scarifying, ripping, cultivation and levelling;
- (c) Excavation of contaminated soil and disposal off-site and replacement with selected fill material; and
- (d) Temporary soil protection measures to prepare ground against; compaction, erosion, weed infestation and siltation.

304.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **topsoil respreading** shall be inclusive of:

- (a) Excavation of materials on site, from borrow pits or stockpiles;
- (b) Hauling, depositing, spreading, levelling, trimming and shaping;
- (c) Relocating surplus windrowed and stockpiled material around the site; and
- (d) Disposal of surplus material, debris, rubbish and the like off site.

304.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **imported topsoil** shall be inclusive of:

- (a) Load and transport topsoil material to site;
- (b) Multiple handling of topsoil material; and
- (c) Spreading, grading, levelling, trimming and shaping.

304.4.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **grassing by turf, grassing by stolons, grassing by seeding and hydro-seeding** shall be inclusive of:

- (a) Surface preparation including removal of stone, fine tilth cultivation and final grading;
- (b) Rolling, fertilising, soil conditioning and top dressing; and
- (c) Watering, weeding, cutting and mowing.

304.4.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **plants and transplanting** shall be inclusive of:

- (a) Excavation, backfill and disposal of surplus excavated material;
- (b) Fertilising, soil conditioning and mulching;

- (c) Watering, weeding and pruning;
- (d) Stakes, ties, guys, sleeves and adjusters;
- (e) Reinstatement of surrounding areas;
- (f) Protection of the plant root system; and
- (g) Temporary onsite storage of plants and watering prior to final planting.

304.4.6 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **erosion control** shall be inclusive of:

- (a) Surface preparation including removal of stones, spreading, grading, levelling, trimming and shaping; and
- (b) Installation and/or application of specified erosion control system.

304.4.7 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **mulching** shall be inclusive of:

- (a) Surface preparation including removal of stones, spreading, grading, levelling, trimming and shaping;
- (b) Installation of mulch control netting, weed control matting or erosion control matting; and
- (c) Supply and spread of mulch including necessary watering.

304.4.8 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **pit reinstatement** shall be inclusive of:

- (a) Clearing;
- (b) Ripping, shaping, levelling and trimming;
- (c) Overburden respreading;
- (d) Topsoil respreading;
- (e) Ripping, removal, rehabilitation and reinstatement of access tracks, fences and gates;
- (f) Reinstatement of existing fences and gates; and
- (g) Planting and seeding.

304.4.9 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **establishment of vegetation** shall be inclusive of:

- (a) Watering of vegetation including the supply of water;
- (b) Replacement of dead and stolen plants to meet completion criteria; and
- (c) Additional herbicide treatment to meet completion criteria.

304.4.10 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **seeding** shall be inclusive of:

- (a) Collection of seed stock;
- (b) Seed storage in secure facilities;
- (c) Seed pre-treatment and transportation to work site;
- (d) Excavation, backfill and disposal of surplus excavated material;
- (e) Fertilising, soil conditioning and mulching;
- (f) Watering, weeding and pruning;
- (g) Stakes, ties, guys, sleeves and adjusters; and
- (h) Reinstatement of surrounding areas

- 304.4.11 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **herbicide treatment** shall be inclusive of:
- (a) Protection of private property and public thoroughfares;
 - (b) Herbicide spray mix, which includes the addition of wetters, adjuvants and a non-toxic biodegradable coloured dye; and
 - (c) Application of herbicide spray mix to the designated areas.
- 304.4.12 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **irrigation system** shall be inclusive of:
- (a) Excavation in all materials except rock;
 - (b) Backfilling with embankment quality material and compaction;
 - (c) Disposal of surplus excavated material;
 - (d) Supply and installation of piping, connections, sprinklers, solenoids, controllers and all other fittings;
 - (e) Water supply connections;
 - (f) Thrust blocks;
 - (g) Primer and solvents for piping connections;
 - (h) Locating, working around and supporting pipes, cables, services, apparatus and the like; and
 - (i) Testing and commissioning.
- 304.4.13 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **hydro-mulching** shall be inclusive of:
- (a) Marking out designated areas on site;
 - (b) Surface preparation including removal of stones, spreading, grading, levelling, trimming and shaping;
 - (c) Protection of paths and sealed surfaces;
 - (d) Supply of cellulose fibre mulch, water, binder and dispersing agents;
 - (e) Mixing of materials on site;
 - (f) Spreading of hydro-mulch to the designated areas; and
 - (g) Cleaning up paths and sealed surfaces where over spraying may have occurred.

SERIES 400 - DRAINAGE

401 NOT USED

402 Surface Drains and Levees

402.1 Classification of Items

Separate items shall be provided for the following:

- Surface drains.
- Spoon drains.
- Levees.
- Table drain blocks.
- Check structures.
- Basins.
- Excavation in rock.

402.2 References

402.2.1 The units of measurement, the method of measurement and the rates and prices for excavation in rock shall be in accordance with Series 300 - Earthworks, Part 302. Note the additional method of measurement requirements for excavation in rock at 402.4.3.

402.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Surface drains	m
Spoon drains	m
Levees	m
Table drain blocks	No.
Check Structures	No.
Basins	No.

402.4 Method of Measurement

402.4.1 Levees associated with Type A, B and G drains shall not be measured separately.

402.4.2 Levees associated with basins shall not be measured separately.

402.4.3 Excavation in rock shall be measured as "Extra Over."

402.4.4 Table drains shall not be measured separately

402.5 Rates and Prices to be Inclusive

402.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **surface drains, levees, table drain blocks** and **basins** shall be inclusive of:

- (a) Clearing;

- (b) Topsoil removal and respreading of topsoil;
- (c) Excavation in all materials except rock;
- (d) Excavation above and below water level;
- (e) Excavation of materials on-site or from borrow pits or stockpiles or importation of materials;
- (f) Hauling, depositing, spreading, grading, measuring, mixing, watering, levelling, compacting, trimming and final preparation to line and level;
- (g) Trimming and shaping of filled surfaces, excavated surfaces, benches, berms, batters and inverts;
- (h) Additional material to replace material lost by settlement of, or penetration into, the underlying material;
- (i) Disposal of surplus excavated material;
- (j) Complying with requirements and constraints on the sequence, timing, rate of deposition and filling and equalisation of earth pressure;
- (k) Protection of adjacent structures, drains, services and the like;
- (l) Completion of earthworks final surfaces;
- (m) Connection to existing surfaces drains and levees;
- (n) Reinstatement of surrounding surfaces;
- (o) Levees associated with Type A, B and G drains; and
- (p) Levees associated with basins.

402.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **spoon drains** and **check structures** shall be inclusive of:

- (a) Clearing;
- (b) Topsoil removal and respreading of topsoil;
- (c) Excavation in all materials except rock;
- (d) Excavation above and below water level;
- (e) Backfilling with embankment quality material and compaction;
- (f) Disposal of surplus excavated material;
- (g) Trimming, grading, levelling and compacting base and sides of excavations;
- (h) Bedding and surround material;
- (i) Concrete, formwork and reinforcement;
- (j) Connection to existing surface drains and levees;
- (k) Reinstatement of surrounding surfaces; and
- (l) Checking for level.

403 Subsoil Drains

403.1 Classification of Items

Separate items shall be provided for the following:

- Subsoil drains.
- Cleanout / flushout points.

403.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Subsoil drains	m
Cleanout / flushout points	No.

403.3 Method of Measurement

403.3.1 Subsoil drains shall be measured as the plan length along the centreline of the pipe between the following terminations:

- (a) Reference points of structures;
- (b) The intersection of the centreline of the pipes at junctions;
- (c) The position of terminations shown on the drawings; and
- (d) The point at which the depth range changes.

403.3.2 The depth of subsoil drain trenches shall be the vertical measurement from the invert of the pipe:

- (a) To the commencing ground surface or to the final earthworks surface, whichever is the lower;
- (b) Where the invert of the pipe is at or above the commencing ground surface, to the specified minimum level of cover or to the final earthworks surface, whichever is the lower

403.3.3 Trench depths of subsoil drains shall commence at a depth not exceeding 1.5 metres and shall increase thereafter in 1.0 metre increments.

403.4 Rates and Prices to be Inclusive

403.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **subsoil drains** and **cleanout / flushout points** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Excavation above and below water level;
- (c) Backfilling with embankment quality material and compaction;
- (d) Backfill layers;
- (e) Disposal of surplus excavated material;
- (f) Bedding, haunching and surround material;
- (g) Pipes and fittings including cutting, laying, jointing and bedding;
- (h) Couplers, joiners, caps, covers, outlets, stop ends, bends, junctions, concrete surrounds and the like;
- (i) Building into drainage structures and end treatments;
- (j) Filter fabric and filter material;
- (k) Reinstatement of surrounding surfaces;
- (l) Flushing and cleaning;
- (m) Checking for line and level; and
- (n) Marker posts

404 Culverts

404.1 Classification of Items

Separate items shall be provided for the following:

- Culverts.
- Multi-barrel culverts.
- Stormwater drains.
- Ducts.
- Select bedding.
- Cement stabilised backfill.
- Reinforced concrete base slabs.
- Reinforced insitu concrete culvert end treatments.
- Excavation in rock.
- Precast concrete culvert end treatments.
- Removal of redundant culverts.
- Removal of redundant stormwater drains.

404.2 References

404.2.1 The units of measurement, the method of measurement and the rates and prices for excavation in rock shall be in accordance with Series 300 – Earthworks, Part 302. Note the additional method of measurement requirements for excavation in rock at 404.4.8.

404.3 Units of Measurement

The unit of measurement shall be:

Description	Unit
Culverts	m
Multi-barrel culverts	m
Stormwater drains	m
Ducts	m
Select bedding	m ³
Cement stabilised backfill	m ³
Reinforced concrete base slabs	m ³
Reinforced insitu concrete culvert end treatments	m ³
Precast concrete culvert end treatments	No.
Removal of redundant culverts	m
Removal of redundant stormwater drains	m

404.4 Method of Measurement

- 404.4.1 Culverts shall be measured as the plan length along the centreline of the culvert between end walls. Individual barrels shall not be measured separately for multi-barrel culverts.
- 404.4.2 Stormwater drains and ducts shall be measured as the plan length along the centreline of the pipe between the following terminations:
- (a) Reference points of structures;
 - (b) The intersection of the centreline of the pipes at junctions;
 - (c) The position of terminations shown on the drawings; and
 - (d) The point at which the depth range changes.
- 404.4.3 The depth of stormwater drain and duct trenches shall be the vertical measurement from the invert of the pipe:
- (a) To the commencing ground surface or to the final earthworks surface, whichever is the lower; and
 - (b) Where the invert of the pipe is at or above the commencing ground surface, to the specified minimum level of cover or to the final earthworks surface, whichever is the lower.
- 404.4.4 Trench depths of stormwater drains and ducts shall commence at a depth not exceeding 1.5 metres and shall increase thereafter in 1.0 metre increments.
- 404.4.5 Select bedding shall be measured compacted in place. No allowance shall be made for over break.
- 404.4.6 Cement stabilised backfill shall be measured as "Extra Over" compacted in place. No allowance shall be made for over break. The volume of the cement stabilised backfill displaced by the culverts, stormwater drains or ducts shall be excluded.
- 404.4.7 No deduction to reinforced concrete base slabs and reinforced insitu concrete culvert end treatments shall be made for:
- (a) Built-in items, pipes, holes, ducts, pockets, sockets, mortices and the like each not exceeding 0.10 cubic metres in volume;
 - (b) Reinforcement; and
 - (c) Individual fillets, chamfers, splays, drip grooves, rebates, recesses, grooves and the like not exceeding 100 millimetres in girth.
- 404.4.8 Excavation in rock shall be measured as "Extra Over."
- 404.4.9 Reinforced box culverts and reinforced pipe culverts stated on the drawings and specification as a designated structure which also has a specific structure number shall be measured under Series 800 – Bridge/Major Structures.

404.5 Rates and Prices to be Inclusive

- 404.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **culverts**, **stormwater drains** and **ducts** shall be inclusive of:
- (a) Excavation in all materials except rock;
 - (b) Excavation above and below water level;
 - (c) Backfilling with embankment quality material and compaction;
 - (d) Disposal of surplus excavated material;
 - (e) Bedding, haunching and surround material;

- (f) Pipes, boxes, link slabs and fittings including cutting, laying, jointing, sealants and bedding;
- (g) Building into drainage structures and end treatments;
- (h) Stop ends, bends and junctions;
- (i) Waterproof membrane;
- (j) Reinstatement of surrounding surfaces;
- (k) Flushing and cleaning; and
- (l) Checking for line and level.

404.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **select bedding** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Excavation above and below water level;
- (c) Disposal of surplus excavated material;
- (d) Trimming, grading, levelling and compacting base of excavations;
- (e) Excavation of materials on site, from borrow pits or stockpiles or importation of materials;
- (f) Hauling, depositing, spreading, grading, measuring, mixing, watering, levelling, compacting, trimming and final preparation to line and level;
- (g) Crushing materials and removal of oversize materials;
- (h) Additional material to replace material lost by settlement of, or penetration into, the underlying material;
- (i) Finishing up to abutting surfaces; and
- (j) Making good overbreak with embankment quality material and compaction.

404.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cement stabilised backfill** shall be inclusive of:

- (a) Excavation of materials, from borrow pits or stockpiles or importation of materials;
- (b) Hauling, depositing, spreading, grading, measuring, mixing, watering, levelling, compacting, trimming and final preparation to line and level;
- (c) Crushing materials and removal of oversize materials;
- (d) Shaping to cambers, falls and crowns;
- (e) Edge supports including any necessary formwork;
- (f) Making joints;
- (g) Finishing up to abutting surfaces; and
- (h) Making good overbreak with embankment quality material and compaction.

404.5.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **reinforced concrete base slabs** and **reinforced insitu concrete culvert end treatments** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Excavation above and below water level;
- (c) Disposal of surplus excavated material;

- (d) Concrete, formwork, reinforcement, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers to base slabs, headwalls, wingwalls, apron slabs, cut-off walls and other concrete elements;
- (e) Building in pipes and boxes;
- (f) Surface finishes;
- (g) Waterproof membrane;
- (h) Making good overbreak with embankment quality material and compaction;
- (i) Protection and maintenance of surfaces;
- (j) Reinstatement of surrounding surfaces; and
- (k) Checking for line and level.

404.5.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant culverts** and **removal of redundant stormwater drains** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Demolition and removal of pipes, boxes, ducts, slabs, aprons, walls, headwalls, end treatments, footings, bedding, haunch, surrounds and the like;
- (d) Disposal to spoil off-site;
- (e) Trimming bottoms and sides of excavations;
- (f) Sealing ends of pipes, boxes and ducts;
- (g) Keeping free from water;
- (h) Protection and maintenance of surfaces; and
- (i) Reinstatement of surrounding surfaces.

404.5.6 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **precast concrete culvert end treatments** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Excavation above and below water level;
- (c) Disposal of surplus excavated material;
- (d) Trimming, grading, levelling, compacting base and sides of excavations;
- (e) Headwalls, wingwalls, apron slabs and other precast concrete elements;
- (f) Mortar bedding;
- (g) In-situ concrete cut-off walls;
- (h) Waterproof membrane;
- (i) Making good overbreak with embankment quality material and compaction;
- (j) Reinstatement of surrounding surfaces; and
- (k) Checking for line and level.

405 Drainage Structures

405.1 Classification of Items

Separate items shall be provided for the following:

- Manholes.
- Gullies.
- Catchpits.
- Soakwells.
- Other drainage structures.
- Select bedding.
- Excavation in rock.
- Connection of pipe to existing drainage structures.
- Adjustment of level of cover of existing drainage structures.
- Removal of redundant drainage structures.

405.2 References

405.2.1 The units of measurement, the method of measurement and the rates and prices for select bedding shall be in accordance with Series 400 – Drainage, Part 404.

405.2.2 The units of measurement, the method of measurement and the rates and prices for excavation in rock shall be in accordance with Series 300 – Earthworks, Part 302. Note the additional method of measurement requirements for excavation in rock at 405.4.2.

405.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Manholes	No.
Gullies	No.
Catchpits	No.
Soakwells	No.
Other drainage structures	No.
Connection of pipe to existing drainage structures	No.
Adjustment of level of cover of existing drainage structures	No.
Removal of redundant drainage structures	No.

405.4 Method of Measurement

405.4.1 Manholes, gullies, catchpits, soakwells and other drainage structures shall be measured as the complete installation.

405.4.2 Excavation in rock shall be measured as “Extra Over”.

405.5 Rates and Prices to be Inclusive

405.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **manholes, gullies, catchpits, soakwells and other drainage structures** shall be inclusive of:

- Excavation in all materials except rock;
- Excavation above and below water level;

- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Trimming, grading, levelling, compacting base and sides of excavations;
- (f) Bedding and surround material;
- (g) Concrete, formwork, reinforcement, precast concrete, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (h) Brickwork;
- (i) Forming channels and benchings;
- (j) Building in pipes and boxes;
- (k) Footholes, step irons, access ladders and safety chains;
- (l) Covers, surrounds, frames, gratings, overflow weirs and lifting keys;
- (m) Protection and maintenance of surfaces;
- (n) Reinstatement of surrounding surfaces;
- (o) Flushing and cleaning; and
- (p) Checking for level.

405.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **adjustment of level of cover of existing drainage structures** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Taking up, storing and re-installing covers, surrounds and frames;
- (e) Concrete, formwork, reinforcement, precast concrete, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (f) Brickwork;
- (g) Building in pipes;
- (h) Footholes, step irons, access ladders and safety chains;
- (i) Maintaining existing flows;
- (j) Protection and maintenance of surfaces;
- (k) Reinstatement of surrounding surfaces;
- (l) Flushing and cleaning; and
- (m) Checking for level.

405.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant drainage structures** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal to spoil off-site;
- (d) Demolition;
- (e) Trimming bottom and sides of excavations;

- (f) Sealing ends of pipes, boxes and ducts;
- (g) Keeping free from water;
- (h) Protection and maintenance of surfaces; and
- (i) Reinstatement of surrounding surfaces.

406 Rock Protection

406.1 Classification of Items

Separate items shall be provided for the following:

- Rock protection.
- Grouted rock protection.
- Spalls.
- Rock mattresses.
- Gabions.
- Geotextile linings.

406.2 References

406.2.1 The units of measurement, the method of measurement and the rates and prices for geotextile linings shall be in accordance with Series 500 - Pavement and Surfacing, Part 501.

406.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Rock protection	m ²
Grouted rock protection	m ²
Spalls	m ²
Rock mattresses	m ²
Gabions	No.

406.4 Method of Measurement

406.4.1 Rock protection, grouted rock protection, spalls and rock mattresses shall be measured as the area of the top surface. No deduction shall be made for openings each not exceeding one square metre.

406.5 Rates and Prices to be Inclusive

406.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **rock protection**, **grouted rock protection** and **spalls** shall be inclusive of:

- (a) Sample panels;
- (b) Excavation in all materials including rock;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;

- (e) Trimming, grading, levelling and compacting base and sides of excavations;
- (f) Bedding and surround material;
- (g) Mortar bed; and
- (h) Filling joints with mortar.

406.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **gabions** and **rock mattresses** shall be inclusive of:

- (a) Sample panels;
- (b) Excavation in all materials including rock;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Trimming, grading, levelling and compacting base and sides of excavations;
- (f) Bedding and surround material;
- (g) Filling of gabions and rock mattresses;
- (h) Assembling, tying, fixing, staking and tensioning;
- (i) Mesh including cutting and folding to form special units and shapes; and
- (j) Bracing and wiring lids.

407 Kerbing

407.1 Classification of Items

Separate items shall be provided for the following:

- Kerbs.
- Driveway kerbs.
- Pedestrian ramps.
- Kerb openings.

407.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Kerbs	m
Driveway kerbs	m
Pedestrian ramps	No.
Kerb openings	No.

407.3 Method of Measurement

407.3.1 Kerbs shall include transition sections.

407.3.2 Pedestrian ramps, kerb openings and driveway kerbs shall be measured as "Extra Over".

407.4 Rates and Prices to be Inclusive

407.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **kerbs, driveway kerbs** and **pedestrian ramps** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Backfilling behind kerbs;
- (d) Disposal of surplus excavated material;
- (e) Trimming, grading, levelling and compacting base and sides of excavations;
- (f) Bedding and surround material;
- (g) Subgrade preparation;
- (h) Formwork, reinforcement, grouting, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints, joint fillers and bond breakers;
- (i) Finishing up to abutting surfaces;
- (j) Protection and maintenance of surfaces; and
- (k) Reinstatement of surrounding surfaces.

407.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **kerb openings** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Trimming, grading, levelling and compacting base and sides of excavations;
- (e) Bedding and surround material;
- (f) Subgrade preparation;
- (g) Pavements;
- (h) Formwork, reinforcement, grouting, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (i) Finishing up to abutting surfaces;
- (j) Protection and maintenance of surfaces; and
- (k) Reinstatement of surrounding surfaces.

408 Revetment Mattress

408.1 Classification of Items

Separate items shall be provided for the following:

- Revetment mattress.

408.2 Units of Measurement

Separate items shall be provided for the following:

Description	Unit
Revetment mattress	m ²

408.3 Method of Measurement

408.3.1 Revetment mattress shall be measured as the area of the top surface. No deduction shall be made for openings each not exceeding one square metre

408.4 Rates and Prices to be Inclusive

408.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **revetment mattress** shall be inclusive of:

- (a) Sample panels;
- (b) Excavation in all materials including rock;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Trimming, grading, levelling and compacting base of excavations;
- (f) Bedding and surround material;
- (g) Assembling, tying, fixing, staking, cutting and folding to form units and shapes;
- (h) Filling of revetment mattresses; and
- (i) Grouting.

409 NOT USED

410 Low Strength Infill

410.1 Classification of Items

Separate items shall be provided for the following:

- Pipes, boxes or ducts.
- Drainage structures.

410.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Low strength infill to pipes	m
Low strength infill to boxes	m
Low strength infill to ducts	m
Low strength infill to drainage structures	No.

410.3 Rates and Prices to be Inclusive

410.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **low strength infill** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;

- (c) Disposal of surplus excavated material;
- (d) Demolition;
- (e) Cleaning out and keeping free from water;
- (f) Removing and replacing covers and frames;
- (g) End supports including any necessary formwork;
- (h) Sealing ends of pipes, boxes and ducts;
- (i) Protection and maintenance of surfaces; and
- (j) Reinstatement of surrounding surfaces.

411 Floodways

411.1 Classification of Items

Separate items shall be provided for the following:

- Floodway edge wall.
- Floodway slab.
- Excavation in rock.

411.2 References

411.2.1 The units of measurement, the method of measurement and the rates and prices for excavation in rock shall be in accordance with Series 300 - Earthworks, Part 302. Note the additional method of measurement requirements for excavation in rock at 411.4.2.

411.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Floodway edge wall	m
Floodway slab	m ³

411.4 Method of Measurement

411.4.1 No deduction to floodway slabs shall be made for:

- (a) Built-in items, pipes, holes, ducts, pockets, sockets, mortices and the like each not exceeding 0.10 cubic metres in volume;
- (b) Reinforcement; and
- (c) Individual fillets, chamfers, splays, drip grooves, rebates, recesses, grooves and the like not exceeding 100 millimetres in girth.

411.4.2 Excavation in rock shall be measured as "Extra Over".

411.5 Rates and Prices to be Inclusive

411.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **floodway edge wall** and **floodway slab** shall be inclusive of:

- (a) Excavation in all materials except rock;

- (b) Excavation above and below water level;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Trimming, grading, levelling and compacting base and sides of excavations;
- (f) Bedding and surround material;
- (g) Subgrade preparation;
- (h) Formwork, reinforcement, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (i) Finishing up to abutting surfaces;
- (j) Protection and maintenance of surfaces; and
- (k) Reinstatement of surrounding surfaces.

SERIES 500 - PAVEMENT AND SURFACING

501 Pavements

501.1 Classification of Items

Separate items shall be provided for the following:

- Drainage layers.
- Geotextile linings.
- Sub-Base.
- Basecourse.
- Overlay.
- Final trimming of overlay.
- Insitu stabilisation of pavement layers.

501.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Drainage layers	m ²
Geotextile linings	m ²
Sub-base	m ²
Basecourse	m ²
Overlay	m ³
Final trimming of overlay	m ²
Insitu stabilisation of pavement layers	m ²

501.3 Method of Measurement

501.3.1 Drainage layers, sub-base, basecourse and final trimming of overlay shall be measured as the plan area of the top surface. No deduction shall be made for openings each not exceeding one square metre.

501.3.2 Geotextile linings shall be measured as the net plan area. No allowance for geotextile lining laps shall be made. No deduction shall be made for openings each not exceeding one square metre.

501.3.3 Insitu stabilisation of pavement layers shall be measured as "Extra over" as the plan area of the top surface. No deduction shall be made for openings each not exceeding one square metre.

501.3.4 Overlay shall be measured compacted in place.

501.3.5 Blend areas shall not be measured separately but the areas shall be included in the general pavement areas.

501.4 Rates and Prices to be Inclusive

501.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **drainage layers** shall be inclusive of:

- (a) Excavation of materials on site or from borrow pits or stockpiles or importation of materials;
- (b) Hauling, depositing, spreading, grading, measuring, mixing, watering, levelling, compacting, trimming and final preparation to line and level;
- (c) Crushing materials and removal of oversize materials;
- (d) Shaping to cambers, falls and crowns;
- (e) Edge support;
- (f) Making joints;
- (g) Finishing up to abutting surfaces;
- (h) Protection and maintenance of surfaces; and
- (i) Protection of adjacent structures.

501.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **geotextile linings** shall be inclusive of:

- (a) Preparation of surface to receive the geotextile linings;
- (b) Protection and maintenance of surfaces; and
- (c) Protection of adjacent structures.

501.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **sub-base, basecourse** and **overlay** shall be inclusive of:

- (a) Excavation of materials from borrow pits or stockpiles or importation of materials;
- (b) Hauling, depositing, spreading, grading, measuring, mixing, watering, levelling, compacting, trimming and final preparation to line and level;
- (c) Crushing materials and removal of oversize materials;
- (d) Shaping to cambers, falls and crowns;
- (e) Edge support;
- (f) Making joints;
- (g) Scarifying and blending to existing pavement layers;
- (h) Finishing up to abutting surfaces;
- (i) Protection and maintenance of surfaces including underlying surfaces;
- (j) Protection of adjacent structures and kerbs;
- (k) Curing; and
- (l) Hydrated cement stabilisation and bitumen stabilisation (where required).

501.4.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **final trimming of overlay** shall be inclusive of:

- (a) Grading, watering, levelling, compacting, trimming and final preparation to line and level;
- (b) Shaping to cambers, falls and crowns;
- (c) Finishing up to abutting surfaces;
- (d) Protection and maintenance of surfaces; and
- (e) Protection of adjacent structures and kerbs.

501.4.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **insitu stabilisation of pavement layers** shall be inclusive of:

- (a) Scarifying, pulverising, depositing, spreading, grading, measuring, mixing, watering, levelling, compacting, trimming and final preparation to line and level;
- (b) Shaping to cambers, falls and crowns;
- (c) Edge support;
- (d) Making joints;
- (e) Scarifying and blending to existing pavement layers;
- (f) Finishing up to abutting surfaces;
- (g) Protection and maintenance of surfaces;
- (h) Protection of adjacent structures and kerbs; and
- (i) Curing.

502 Stone Mastic Asphalt

502.1 Classification of Items

Separate items shall be provided for the following:

- Stone Mastic Asphalt of uniform thickness and grade.
- Stone Mastic Asphalt of varying thickness.

502.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Stone Mastic Asphalt of uniform thickness and grade	m ²
Stone Mastic Asphalt of varying thickness	t

502.3 Method of Measurement

502.3.1 Stone mastic asphalt of uniform thickness and grade shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

502.3.2 Stone Mastic Asphalt of varying thickness shall be calculated from certified weighbridge dockets and shall exclude waste, excess material and rejected material.

502.4 Rates and Prices to be Inclusive

502.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **stone mastic asphalt** shall be inclusive of:

- (a) Surface preparation including cleaning, sweeping and removal of loose material;
- (b) Finishing up to abutting surfaces;
- (c) Protection and maintenance of surfaces;
- (d) Protection of adjacent structures and kerbs;
- (e) Removal and disposal of existing road pavement marking and raised pavement markers to spoil off-site;
- (f) Temporary raised pavement markers;
- (g) Removal, storage and reinstatement of existing guide posts and signs;

- (h) Reinstatement of surrounding surfaces;
- (i) Tack coat;
- (j) Warm mix additive;
- (k) Paving tape; and
- (l) Polymer Modified Binder.

503 Bituminous Surfacing

503.1 Classification of Items

Separate items shall be provided for the following:

- Prime coats.
- Primerseal coats.
- Seal coats.
- Bond coats with Geotextile Fabric.
- Marking for future centre and edge lines.

503.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Prime coats	m ²
Primerseal coats	m ²
Seal coats	m ²
Bond coats with Geotextile Fabric	m ²
Marking for future centre and edge lines	m

503.3 Method of Measurement

503.3.1 Prime coats, primerseal coats, seal coats and bond coats with geotextile fabric shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

503.4 Rates and Prices to be Inclusive

503.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **prime coats, primerseal coats, seal coats and bond coats with geotextile fabric** shall be inclusive of:

- (a) Surface preparation including sweeping, removal of loose material, watering and rolling;
- (b) Preparation, removal and rehabilitation of temporary storage areas;
- (c) Precoating aggregate;
- (d) Adhesion agents;
- (e) Finishing up to abutting surfaces;
- (f) Protection and maintenance of surfaces;
- (g) Protection of adjacent structures and kerbs;

- (h) Removal and disposal of existing road pavement markings and raised pavement markers to spoil off-site;
- (i) Removal, storage and reinstatement of existing guide posts and signs; and
- (j) Reinstatement of surrounding surfaces.

503.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **marking for future centre and edge lines** shall be inclusive of:

- (a) Surface preparation including cleaning, sweeping and removal of loose material.

504 Asphalt Wearing Course

504.1 Classification of Items

Separate items shall be provided for the following:

- Asphalt of uniform thickness and grade.
- Asphalt of uniform thickness and grade with Polymer Modified Binder (PMB).
- Asphalt of varying thickness.
- Asphalt of varying thickness with PMB.
- Asphalt items with Warm Mix Additive.

504.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Asphalt of uniform thickness and grade	m ²
Asphalt of varying thickness	t

504.3 Method of Measurement

504.3.1 Asphalt of uniform thickness and grade with or without PMB shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre

504.3.2 Asphalt of varying thickness with or without PMB shall be calculated from certified weighbridge dockets and shall exclude waste, excess material and rejected material.

504.4 Rates and Prices to be Inclusive

504.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **asphalt** shall be inclusive of:

- (a) Surface preparation including cleaning, sweeping and removal of loose material;
- (b) Finishing up to abutting surfaces;
- (c) Protection and maintenance of surfaces;
- (d) Protection of adjacent structures and kerbs;
- (e) Removal and disposal of existing road pavement marking and raised pavement markers to spoil off-site;
- (f) Temporary raised pavement markers;
- (g) Removal, storage and reinstatement of existing guide posts and signs;

- (h) Reinstatement of surrounding surfaces;
- (i) Tack coat;
- (j) Paving tape; and
- (k) Polymer Modified Binder where stated.

505 Segmental Paving

505.1 Classification of Items

Separate items shall be provided for the following:

- Brick paving.
- Slab paving.
- Tactile ground surface indicators.
- Removal, storage and relaying of existing brick paving.
- Removal, storage and relaying of existing slab paving.

505.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Brick paving	m ²
Slab paving	m ²
Tactile ground surface indicators	m ²
Removal, storage and relaying of existing brick paving	m ²
Removal, storage and relaying of existing slab paving	m ²

505.3 Method of Measurement

505.3.1 Segmental paving shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

505.4 Rates and Prices to be Inclusive

505.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **segmental paving** shall be inclusive of:

- (a) Provision of samples;
- (b) Excavation in all materials including rock;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Trimming, grading, levelling and compacting base and sides of excavations;
- (f) Bedding and surround material;
- (g) Subgrade preparation;
- (h) Subbase and basecourse layers;
- (i) Header courses and mortar footings;

- (j) Finishing up to abutting surfaces including coloured mortar or concrete seal;
- (k) Filling joints with sand;
- (l) Making good any damage and replacing losses and breakages;
- (m) Protection and maintenance of surfaces;
- (n) Protection of adjacent structures and kerbs; and
- (o) Reinstatement of surrounding surfaces.

506 Enrichment Seals

506.1 Classification of Items

Separate items shall be provided for the following:

- Enrichment seal.

506.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Enrichment seal	m ²

506.3 Method of Measurement

506.3.1 Enrichment seal shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

506.4 Rates and Prices to be Inclusive

506.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **enrichment seal** shall be inclusive of:

- (a) Surface preparation including sweeping, removal of loose material, watering and rolling;
- (b) Finishing up to abutting surfaces;
- (c) Protection and maintenance of surfaces;
- (d) Protection of adjacent structures and kerbs;
- (e) Removal and disposal of existing road pavement marking and raised pavement markers to spoil off-site;
- (f) Removal, storage and reinstatement of existing guide posts and signs; and
- (g) Reinstatement of surrounding surfaces.

507 Microsurfacing

507.1 Classification of Items

Separate items shall be provided for the following:

- Microsurfacing.

507.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Microsurfacing	m ³

507.3 Method of Measurement

507.3.1 Microsurfacing shall be measured compacted in place of dry mineral aggregate (excluding filler).

507.4 Rates and Prices to be Inclusive

507.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **microsurfacing** shall be inclusive of:

- (a) Mix design;
- (b) Provision of samples;
- (c) Surface preparation including sweeping, removal of loose material, watering and rolling;
- (d) Tack coat;
- (e) Finishing up to abutting surfaces;
- (f) Protection and maintenance of surfaces;
- (g) Protection of adjacent structures and kerbs;
- (h) Removal and disposal of existing road pavement markings and raised pavement markers to spoil off-site;
- (i) Removal, storage and reinstatement of existing guide posts and signs; and
- (j) Reinstatement of surrounding surfaces.

508 Cold Planing

508.1 Classification of Items

Separate items shall be provided for the following:

- Cold planing.

508.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Cold planing	m ²

508.3 Method of Measurement

508.3.1 Cold planing shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

508.4 Rates and Prices to be Inclusive

508.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cold planing** shall be inclusive of:

- (a) Finishing up to abutting surfaces;

- (b) Protection and maintenance of surfaces;
- (c) Protection of adjacent structures and kerbs;
- (d) Disposal to spoil off-site; and
- (e) Reinstatement of surrounding surfaces.

509 Polymer Modified Bituminous Surfacing

509.1 Classification of Items

Separate items shall be provided for the following:

- Seal coats.

509.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Seal coats	m ²

509.3 Method of Measurement

509.3.1 Polymer modified bituminous surfacing shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre

509.4 Rates and Prices to be Inclusive

509.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **polymer modified bituminous surfacing** shall be inclusive of:

- (a) Surface preparation including sweeping, removal of loose material, watering and rolling;
- (b) Preparation, removal and rehabilitation of temporary storage areas;
- (c) Precoating aggregate;
- (d) Adhesion agents;
- (e) Finishing up to abutting surfaces;
- (f) Protection and maintenance of surfaces;
- (g) Protection of adjacent structures and kerbs;
- (h) Removal and disposal of existing road pavement markings and raised pavement markers to spoil off-site;
- (i) Removal, storage and reinstatement of existing guide posts and signs; and
- (j) Reinstatement of surrounding surfaces.

510 Asphalt Intermediate Course

510.1 Classification of Items

Separate items shall be provided for the following:

- Asphalt of uniform thickness and grade.
- Asphalt of uniform thickness and grade with Polymer Modified Binder (PMB).
- Asphalt of varying thickness.
- Asphalt of varying thickness with PMB.

- Asphalt items with Warm Mix Additive.

510.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Asphalt of uniform thickness and grade	m ²
Asphalt of varying thickness	t

510.3 Method of Measurement

510.3.1 Asphalt of uniform thickness and grade with or without PMB shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

510.3.2 Asphalt of varying thickness with or without PMB shall be calculated from certified weighbridge docketts and shall exclude waste, excess material and rejected material.

510.4 Rates and Prices to be Inclusive

510.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **asphalt of uniform thickness and grade** and **asphalt of varying thickness** shall be inclusive of:

- (a) Surface preparation including cleaning, sweeping and removal of loose material;
- (b) Finishing up to abutting surfaces;
- (c) Protection and maintenance of surfaces;
- (d) Protection of adjacent structures and kerbs;
- (e) Removal and disposal of existing road pavement marking and raised pavement markers to spoil off-site;
- (f) Temporary raised pavement markers;
- (g) Removal, storage and reinstatement of existing guide posts and signs;
- (h) Reinstatement of surrounding surfaces;
- (i) Tack coat;
- (j) Paving tape; and
- (k) Polymer Modified Binder where stated.

SERIES 600 - TRAFFIC FACILITIES

601 Signs

601.1 Classification of Items

Separate items shall be provided for the following:

- Signs.
- Removal of redundant signs.
- Relocation of signs.
- Replacement of sign posts.
- Replacement of sign panels.

601.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Signs	No.
Removal of redundant signs	No.
Relocation of signs	No.
Replacement of sign posts	No.
Replacement of sign panels	No.

601.3 Method of Measurement

601.3.1 Signs shall be measured as the complete installation and shall be subdivided into groups as either, single post signs, double post signs or major signs.

601.4 Rates and Prices to be Inclusive

601.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **signs** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Footings;
- (e) Concrete, formwork, reinforcement;
- (f) Sockets in structures;
- (g) Surface treatments including corrosion protection, painting and anti-graffiti coating;
- (h) Reinstatement of pavements and surrounding surfaces; and
- (i) Temporary screening of signs.

601.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant signs** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;

- (c) Removal of existing footings;
- (d) Reinstatement of pavements and surrounding surfaces;
- (e) Delivery of salvageable material to nominated storage area; and
- (f) Disposal to spoil off-site.

601.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of signs** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Removal of existing footings and disposal to spoil off-site;
- (e) Storage;
- (f) Footings;
- (g) Reinstatement of pavements and surrounding surfaces;
- (h) Temporary screening of signs; and
- (i) Cleaning of sign panels and posts.

601.4.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices **for replacement of sign posts** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Removal of existing footings and disposal to spoil off-site;
- (e) Footings;
- (f) Concrete, formwork, reinforcement;
- (g) Surface treatments including corrosion protection, painting and anti-graffiti coating;
- (h) Reinstatement of pavements and surrounding surfaces;
- (i) Removal, storage, reinstatement and cleaning of sign panels;
- (j) Support and bracing to sign panel of multiple post signs;
- (k) Removal, storage and reinstatement or replacement (where required) of fixings, brackets and the like; and
- (l) Temporary screening of signs.

601.4.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **replacement of sign panels** shall be inclusive of:

- (a) Removal of existing sign panels and disposal to spoil off-site;
- (b) Removal, storage and reinstatement or replacement (where required) of fixings, brackets and the like;
- (c) Surface treatments including corrosion protection, painting and anti-graffiti coating; and
- (d) Temporary screening of signs.

602.1 Classification of Items

Separate items shall be provided for the following:

- Guide posts.
- Removal of redundant guide posts.
- Relocation of guide posts.

602.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Guide posts	No.
Removal of redundant guide posts	No.
Relocation of guide posts	No.

602.3 Method of Measurement

602.3.1 Guide posts shall be measured as the complete installation.

602.4 Rates and Prices to be Inclusive

602.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **guide posts** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Footings;
- (e) Sockets in structures;
- (f) Surface treatments including corrosion protection, painting and anti-graffiti coating; and
- (g) Reinstatement of pavements and surrounding surfaces.

602.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant guide posts** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Removal of existing footings;
- (d) Reinstatement of pavements and surrounding surfaces;
- (e) Delivery of salvageable material to nominated storage area; and
- (f) Disposal to spoil off-site.

602.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of guide posts** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;

- (d) Removal of existing footings and disposal to spoil off-site;
- (e) Storage;
- (f) Footings;
- (g) Sockets in structures;
- (h) Reinstatement of pavements and surrounding surfaces; and
- (i) Cleaning of guide post.

603 Safety and Traffic Barrier Systems

603.1 Classification of Items

Separate items shall be provided for the following:

- W-Beam road safety barrier systems.
- Thrie-Beam road safety barrier systems.
- Precast concrete road safety barrier systems.
- Insitu concrete road safety barrier systems.
- Wire rope road safety barrier systems inclusive of end treatments and transitions.
- End treatments and transitions for; W-Beam, Thrie-Beam, precast and insitu concrete road safety barrier systems.
- Steel section traffic barriers for structures.
- W-Beam traffic barriers for structures.
- Thrie-Beam traffic barriers for structures.
- Precast concrete traffic barriers for structures.
- Insitu concrete barriers for structures.
- End treatments and transitions for traffic barriers for structures.
- Removal of redundant road safety barrier systems.
- Removal of redundant traffic barriers for structures.
- W-Beam and Thrie-Beam barrier curved to a radius of 45m or less.

603.2 Units of Measurement

The units of measurement shall be:

Description	Unit
W-Beam road safety barrier systems	m
Thrie-Beam road safety barrier systems	m
Precast concrete road safety barrier systems	m
Insitu concrete road safety barrier systems	m
Wire rope road safety barrier systems inclusive of end treatments and transitions	m
End treatments and transitions for; W-Beam, Thrie-Beam, precast and insitu concrete road safety barrier systems	No.
Steel section traffic barriers for structures	m
W-Beam traffic barriers for structures	m

Description	Unit
Thrie-Beam traffic barriers for structures	m
Precast concrete traffic barriers for structures	m
In situ concrete barriers for structures	m
End treatments and transitions for traffic barriers for structures	No.
Removal of redundant road safety barrier systems	m
Removal of redundant traffic barriers for structures	m
W-Beam and Thrie-Beam barrier curved to a radius of 45m or less	m

603.3 Method of Measurement

- 603.3.1 Safety and traffic barrier systems shall be measured as the developed length along the centreline of the barrier between the barrier end treatment and/or transition posts.
- 603.3.2 Removal of redundant safety and traffic barrier systems shall be measured as the developed length along the centreline of the barrier between each end treatment and/or transition post.
- 603.3.3 Shop curved steel sections of W-Beam and Thrie-Beam where the barrier is curved to a radius of 45m or less shall be measured as "Extra Over" the relevant barrier system.

603.4 Rates and Prices to be Inclusive

- 603.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for; **W-Beam, Thrie-Beam and wire rope road safety barrier systems, steel section, W-Beam and Thrie-Beam traffic barriers for structures, W-Beam and Thrie-Beam where the barrier is curved to a radius of 45m or less, end treatments and transitions** shall be inclusive of:
- Preparation of shop drawings;
 - Examining and checking steel for segregation, laminations, cracks and surface flaws, and carrying out any remedial works;
 - Cutting, marking off, drilling, notching, machining, form fitting, edge preparation, cambering, welding, rivets, bolting, pre-heating and taking measures to counteract shrinkage or distortion due to welding, gouging, thermal cutting or heat treatment;
 - Handling, lifting, assembly and erection including jacking, craning and stacking steelwork clear of the ground;
 - Baseplates, sockets, ends, ramps, angles, joint fittings, bolts, holding down bolts, washers, nuts, fastenings, casting in bolts, bonding agents, attachments, fixings, fillers and sealing materials and the like;
 - Wedging and grouting under base plates;
 - Temporary packers, bracing, wedging, packing, bolting and welding and subsequent removal and making good damaged materials and coatings;
 - Excavation in all materials including rock;

- (i) Backfilling with embankment quality material and compaction;
- (j) Disposal of surplus excavated material;
- (k) Footings;
- (l) Concrete, formwork, reinforcement;
- (m) Joining to existing road safety barrier systems, traffic barriers for structures, balustrades and handrails;
- (n) Post sockets including epoxy mortar and dry sand;
- (o) Descaling and wire brushing parts of steelwork to be encased in or in contact with concrete;
- (p) Materials testing and providing certificates of compliance;
- (q) Weld testing and inspection;
- (r) Fabrication inspection and air tightness including provision of threaded nipples and their removal and seal welding hole after testing;
- (s) Protecting steelwork including making good damaged materials and coatings;
- (t) Providing run on and run off plate extension plates and extending welds at joints;
- (u) Qualification tests for welders;
- (v) Procedure trials for welding, flame cutting and shearing;
- (w) Surface treatments including corrosion protection; and
- (x) Reinstatement of pavements and surrounding surfaces.

603.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **insitu concrete road safety barrier systems and traffic barriers for structures, end treatments and transitions** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Trimming, grading, levelling and compacting base and sides of excavations;
- (e) Bedding and surround material;
- (f) Mix design and trial mixes;
- (g) Formwork, reinforcement, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (h) Recesses, fillets, chamfers, drip grooves, splays, rebates, drip grooves and the like;
- (i) Holes, ducts, pockets, sockets, mortices, cast-in items and the like;
- (j) Joining to existing road safety barrier systems and traffic barriers for structures;
- (k) Finishing up to abutting surfaces;
- (l) Protection and maintenance of surfaces; and
- (m) Reinstatement of pavements and surrounding surfaces.

603.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant road safety barrier systems and removal of redundant traffic barriers for structures** shall be inclusive of:

- (a) Excavation in all materials including rock;

- (b) Backfilling with embankment quality material and compaction;
- (c) Removal of existing footings, anchor blocks, end treatments and transitions;
- (d) Reinstatement of pavements and surrounding surfaces;
- (e) Delivery of salvageable material to nominated storage area;
- (f) Disposal to spoil off-site; and
- (g) Making good severed ends of existing barrier systems.

604 Pavement Marking

604.1 Classification of Items

Separate items shall be provided for the following:

- Road pavement markings.
- Raised pavement markers.
- Temporary raised pavement markers.
- Removal of redundant painted road pavement markings.
- Removal of redundant raised pavement markers.

604.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Road pavement markings	m ² , m, No.
Raised pavement markers	No.
Temporary raised pavement markers	Item
Removal of redundant painted road pavement markings	Item
Removal of redundant raised pavement markers	No.

604.3 Rates and Prices to be Inclusive

604.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **road pavement markings** shall be inclusive of:

- (a) Provision of temporary traffic signs and traffic control devices;
- (b) Surface preparation including cleaning, sweeping and removal of loose material;
- (c) Tack coats and prime coats;
- (d) Protection of existing surfaces; and
- (e) Removal of temporary raised pavement markers and disposal to spoil off-site.

604.3.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **raised pavement markers** and **temporary raised pavement markers** shall be inclusive of:

- (a) Provision of temporary traffic signs and traffic control devices;
- (b) Surface preparation including cleaning, sweeping and removal of loose material;

- (c) Tack coats and prime coats;
- (d) Adhesives and grout; and
- (e) Removal of temporary raised pavement markers and disposal to spoil off-site.

604.3.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant road pavement markings** and **removal of redundant raised pavement markers** shall be inclusive of:

- (a) Provision of temporary traffic signs and traffic control devices;
- (b) Protection and making good any existing surfaces; and
- (c) Disposal to spoil off-site.

605 Grab Rails and Bollards

605.1 Classification of Items

Separate items shall be provided for the following:

- Grab rails.
- Bollards.
- Removal of redundant grab rails.
- Removal of redundant bollards.
- Relocation of grab rails.
- Relocation of bollards.

605.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Grab rails	No.
Bollards	No.
Removal of redundant grab rails	No.
Removal of redundant bollards	No.
Relocation of grab rails	No.
Relocation of bollards	No.

605.3 Method of Measurement

605.3.1 Grab rails and bollards shall be measured as the complete installation.

605.4 Rates and Prices to be Inclusive

605.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **grab rails** and **bollards** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Footings;
- (e) Concrete, formwork, reinforcement;

- (f) Sockets in structures;
- (g) Surface treatments including corrosion protection, painting, reflective tape and anti-graffiti coating; and
- (h) Reinstatement of pavements and surrounding surfaces.

605.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant grab rails** and **removal of redundant bollards** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Removal of existing footings;
- (d) Reinstatement of pavements and surrounding surfaces;
- (e) Delivery of salvageable material to nominated storage area; and
- (f) Disposal to spoil off-site.

605.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of grab rails** and **relocation of bollards** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Removal of existing footings and disposal to spoil off-site;
- (e) Storage;
- (f) Footings;
- (g) Concrete, formwork, reinforcement;
- (h) Sockets in structures;
- (i) Reinstatement of pavements and surrounding surfaces;
- (j) Cleaning of grab rails and bollards; and
- (k) Reinstatement of surface treatments including corrosion protection, painting, reflective tape and anti-graffiti coating.

606 Tactile Ground Surface Indicators

606.1 Method of Measurement

606.1.1 Tactile Ground Surface Indicators as noted in Specification 606 are measured under SMM Clause 505 Segmental Paving

SERIES 700 - ELECTRICAL AND INTELLIGENT TRANSPORT SYSTEMS

701 Roadway Lighting

701.1 Classification of Items

Separate items shall be provided for the following:

- Lighting pole bases.
- Lighting poles.
- Luminaires.
- Switchboards.
- Conduits.
- Excavation in rock for conduits.
- Directional drilling conduits.
- Cable pits.
- Cabling.
- Connection to consumer mains.
- Under bridge lighting.
- Bridge mounted lighting poles.
- Relocation of existing street lighting poles.

701.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Lighting pole bases	No.
Lighting poles	No.
Luminaires	No.
Switchboards	No.
Conduits	m
Excavation in rock for conduits	m
Directional drilling conduits	m
Cable pits	No.
Cabling	m
Connection to consumer mains	Item
Under bridge lighting	No.
Bridge mounted lighting poles	No.
Relocation of existing street lighting poles	No.

701.3 Method of Measurement

- 701.3.1 The lighting pole type, height, base, outreach, luminaire, with or without roadside help phone mounting etc. is variable and details of these components will need to be included in the item description for each different combination.
- 701.3.2 The cabling core size will vary dependant on the street lighting design and will require a separate item for each cable size.
- 701.3.3 Excavation in rock for conduits shall be measured as "Extra Over" the conduit item.
- 701.3.4 Directional drilling conduits shall be measured as "Extra Over" the conduit item.
- 701.3.5 Conduits and cabling shall be measured net on plan and as being the distance between pits, switchboards, junction boxes, poles or cabinets. Additional cabling for gradients, jointing, terminating, slack and looping shall be included for in the rates.

701.4 Rates and Prices to be Inclusive

- 701.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **lighting pole bases** shall be inclusive of:
- (a) Excavation in all materials including rock;
 - (b) Backfilling with embankment quality material and compaction;
 - (c) Disposal of surplus excavated material;
 - (d) Concrete, formwork, reinforcement;
 - (e) Holding down bolts complete with nuts, washers and grouting;
 - (f) Conduits between pole base and cable pit including all purpose made screwed and threaded connections, bends, tees, draw wire, fittings and the like; and
 - (g) Reinstatement of pavements and surrounding surfaces.
- 701.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **lighting poles** shall be inclusive of:
- (a) Lighting poles erected complete;
 - (b) Access door;
 - (c) Slip base, slip washer, slip base holding down bolts, nuts, lock-nuts, washers, shims;
 - (d) Levelling base, initial and re-torquing of holding down bolts;
 - (e) Drains;
 - (f) Covering holding down bolts with bituminous paint;
 - (g) Grouting holding down bolts;
 - (h) Surface treatments including corrosion protection and painting;
 - (i) Pole number; and
 - (j) Conduits and cabling from control gear to connection into the circuit.
- 701.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **luminaires** shall be inclusive of:
- (a) Control gear, fuses, switches and the like;
 - (b) Wiring and connections;
 - (c) Bird guard; and

(d) Focusing and testing.

701.4.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **switchboards** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Concrete, formwork, reinforcement;
- (e) Holding down bolts complete with nuts, washers and grouting;
- (f) Electrical equipment, wiring, switches, connections, light sensitive relays, earthing, earth stakes, protective devices, fittings and the like;
- (g) Conduits entering into the switchboard including screwed and threaded connections, bends, tees, draw wire, fittings, covers and the like;
- (h) Surface treatments including brushed aluminium finish and anti-graffiti coating;
- (i) Switchboard number;
- (j) Locks and keys;
- (k) Drains;
- (l) Weatherproofing including door seals; and
- (m) Reinstatement of pavements and surrounding surfaces.

701.4.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **conduits** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Conduits including screwed and threaded connections, bends, tees, draw wire, fittings, covers and the like;
- (e) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (f) Laying and installing conduits in trenches including bedding and surround material;
- (g) Casting into concrete and fixing within structures;
- (h) Sealing exposed ends of conduits; and
- (i) Reinstatement of pavements and surrounding surfaces.

701.4.6 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **excavation in rock for conduits** shall be inclusive of:

- (a) Preliminary site trials of plant;
- (b) Where blasting is permitted, preliminary site trials of blasting, measurement and recording of vibrations, checking and adjusting accuracy of seismographs, preparatory work for blasting, notifying the Superintendent when explosives are to be brought onto site, screens and other protective covers, drilling shot holes, charging, stemming, blasting and pre-splitting;
- (c) Excavation including loosening and breaking up of rock;
- (d) Trimming of surfaces and removal of loose rock;
- (e) Removal and disposal of rock off-site;

- (f) Making good overbreak and backfilling with embankment quality material and compaction;
- (g) Finishing up to abutting surfaces;
- (h) Protection and maintenance of surfaces; and
- (i) Protection of adjacent structures, drains, services, kerbs and the like.

701.4.7 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cable pits** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Building in conduits;
- (e) Bellmouths to conduits;
- (f) Concrete, formwork, reinforcement;
- (g) Concrete surrounds;
- (h) Marker plaques;
- (i) Drains;
- (j) Reinstatement of pavements and surrounding surfaces;
- (k) Lids; and
- (l) Padlock and keys (only when pits are used in the installation of, Series 700 - Cable Conduits for Intelligent Transport Systems, Part 704).

701.4.8 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cabling** shall be inclusive of:

- (a) Lengths of cabling slack required to make the connections and to form loops in cable pits, poles, controllers and the like. Additional cabling for gradients, jointing and looping;
- (b) Supports and fixing devices required to support cabling;
- (c) Jointing, connecting and sealing including all connectors and insulating materials;
- (d) Identification markings;
- (e) Installation of cables within conduits; and
- (f) Cabling in equipment, cabinets and poles required to complete connection

701.4.9 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for connection to **consumer mains** shall be inclusive of:

- (a) Cabling, connection to power supply and point of attachment devices.

701.4.10 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of existing street lighting poles** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Concrete, formwork, reinforcement;
- (e) Holding down bolts complete with nuts, washers and grouting;

- (f) Conduits between pole base and cable pit including all purpose made screwed and threaded connections, bends, tees, draw wire, fittings and the like;
- (g) Reinstatement of pavements and surrounding surfaces;
- (h) Lighting poles erected complete;
- (i) Access door;
- (j) Slip base, slip washer, slip base holding down bolts, nuts, lock-nuts, washers, shims;
- (k) Levelling base, initial and re-torquing of holding down bolts;
- (l) Drains;
- (m) Covering holding down bolts with bituminous paint;
- (n) Grouting holding down bolts;
- (o) Surface treatments including corrosion protection and painting;
- (p) Pole identification plate; and
- (q) Conduits and cabling from control gear to connection into the circuit.

702 Roadside Help Phones

702.1 Classification of Items

Separate items shall be provided for the following:

- Roadside help phones.
- Paved surrounds.
- Relocation of existing roadside help phones.

702.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Roadside help phones	No.
Paved surrounds	No.
Relocation of existing roadside help phones	No.

702.3 Rates and Prices to be Inclusive

702.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **roadside help phones** and **relocation of existing roadside help phones** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Footings;
- (e) Holding down bolts complete with nuts, washers and grouting;
- (f) Electrical equipment, wiring, switches, connections, connections to power supplies, connections to communication (Telstra or other) networks, earthing, fittings and the like;

- (g) Conduits including screwed and threaded connections, bends, tees, draw wire, fittings and the like;
- (h) Surface treatments including corrosion protection, painting and anti-graffiti coating;
- (i) Storage;
- (j) Reinstatement of pavements and surrounding surfaces;
- (k) Temporary screening of signs; and
- (l) Cleaning.

702.3.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **paved surrounds** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Subgrade preparation;
- (e) Subbase and basecourse layers;
- (f) Concrete, formwork, reinforcement;
- (g) Bedding;
- (h) Blending surround to segmental paving including header courses and mortar bedding;
- (i) Finishing up to abutting surfaces;
- (j) Protection and maintenance of surfaces;
- (k) Protection of adjacent structures and kerbs; and
- (l) Reinstatement of surrounding surfaces.

703 Closed Circuit Television (CCTV) Monitoring Cameras

703.1 Classification of Items

Separate items shall be provided for the following:

- Temporary CCTV Cameras.
- CCTV Cameras.
- Removal of CCTV Cameras.
- Relocation of CCTV Cameras.
- Conduits.
- Excavation in rock for conduits.
- Directional drilling conduits.
- Cabling.
- Cable pits.

703.2 References

703.2.1 The units of measurement, the method of measurement and the rates and prices for cabling, conduits, excavation in rock for conduits, directional drilling conduits and cable pits shall be in accordance with Series 700 – Electrical and Lighting, Part 701.

703.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Temporary CCTV Cameras	No.
CCTV Cameras	No.
Removal of CCTV Cameras	No.
Relocation of CCTV Cameras	No.

703.4 Rates and Prices to be Inclusive

703.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **CCTV cameras** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (e) Footings;
- (f) Camera pole and camera housing erected complete;
- (g) Cameras and associated equipment;
- (h) Electrical equipment, wiring, switches, connections, earthing, earth stakes, fittings, CCTV field cabinet, top-hat or equipment housing and the like;
- (i) Communications' equipment, wiring, switches, connections, connections to Main Roads or 3rd party communication networks and the like;
- (j) Equipment control software;
- (k) Provision of electrical power feed;
- (l) Surface treatments including powder coating, painting and anti-graffiti coating;
- (m) Reinstatement of pavements and surrounding surfaces; and
- (n) Sockets in structures.

703.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of CCTV cameras** shall be inclusive of:

- (a) Power and communication alterations, disconnections and connections;
- (b) Excavation in all materials including rock;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (f) Reinstatement of pavements and surrounding surfaces;
- (g) Dismantling;
- (h) Removal of existing footings and disposal to spoil off-site;
- (i) Removal of camera poles and camera housing complete; and

(j) Delivery of salvageable material to nominated storage area.

703.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **temporary CCTV cameras** and **relocation of CCTV cameras** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (e) Footings;
- (f) Camera pole and camera housing erected complete;
- (g) Cameras and associated equipment;
- (h) Electrical equipment, wiring, switches, connections, earthing, earth stakes, fittings, CCTV field cabinet, top-hat or equipment housing and the like;
- (i) Communications' equipment, wiring, switches, connections, connections to Main Roads or 3rd party communication networks and the like;
- (j) Equipment control software;
- (k) Provision of electrical power feed;
- (l) Surface treatments including powder coating, painting and anti-graffiti coating;
- (m) Reinstatement of pavements and surrounding surfaces;
- (n) Sockets in structures;
- (o) Power and communication alterations, disconnections and connections;
- (p) Dismantling;
- (q) Removal of existing footings and disposal to spoil off-site;
- (r) Removal of camera poles and camera housing complete; and
- (s) Delivery of salvageable material to nominated storage area.

704 Cable Conduits for Intelligent Transport Systems

704.1 Classification of Items

Separate items shall be provided for the following:

- Conduits.
- Excavation in rock for conduits.
- Directional drilling conduits.
- Cable pits.

704.2 References

704.2.1 The units of measurement, the method of measurement and the rates and prices for conduits, excavation in rock for conduits, directional drilling conduits and cable pits shall be in accordance with Series 700 - Electrical and Lighting, Part 701.

705 Optical Fibre Installations

705.1 Classification of Items

Separate items shall be provided for the following:

- Optical fibre installations.
- Conduits.
- Excavation in rock for conduits.
- Directional drilling conduits.
- Cable pits.

705.2 References

705.2.1 The units of measurement, the method of measurement and the rates and prices for conduits, excavation in rock for conduits, directional drilling conduits and cable pits shall be in accordance with Series 700 - Electrical and Lighting, Part 701.

705.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Optical fibre installations	m

705.4 Method of Measurement

705.4.1 The optical fibre cabling shall be measured as the plan length between pits, poles and/or cabinets and no allowance shall be made in the measurement for the requirement of cabling within cabinets, poles, pits or for spare optical fibre cabling as required.

705.5 Rates and Prices to be Inclusive

705.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **optical fibre installations** shall be inclusive of:

- (a) Lengths of fibre optic cabling slack required to make the connections and to form loops in cable pits, cabinets and the like;
- (b) Longitudinal, Fibre Optic Break Out Tray (FOBOT), change in direction road / rail crossings and underground closures spare cable requirements;
- (c) Fibre Optic Break Out Tray's (FOBOT's) and patch panels;
- (d) Jointing closures and associated materials required;
- (e) Supports and fixing devices required to support closures and cabling;
- (f) Identification labelling & markings; and
- (g) Pit and duct cleaning, hauling rope, lubricant and installation of cables within pits and conduits.

706 NOT USED

707 Supply and Install Variable Message Signs (Fixed type)

707.1 Classification of Items

Separate items shall be provided for the following:

- Variable message signs.

- Conduits.
- Excavation in rock for conduits.
- Directional drilling conduits.
- Cabling.
- Cable pits.

707.2 References

The units of measurement, the method of measurement and the rates and prices for cabling, conduits, excavation in rock for conduits, directional drilling conduits and cable pits shall be in accordance with Series 700 – Electrical and Lighting, Part 701.

707.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Variable message signs	No.

707.4 Method of Measurement

707.4.1 The variable message signs will be measured as the complete installation.

707.5 Rates and Prices to be Inclusive

707.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **variable message signs** shall be inclusive of:

- Excavation in all materials including rock;
- Backfilling with embankment quality material and compaction;
- Disposal of surplus excavated material;
- Locating, working around and supporting pipes, cables, services, apparatus and the like;
- Footings;
- Structural steel gantry frames;
- Variable message signs complete;
- Variable message sign field cabinet (pad or pole mounted);
- Variable message sign poles erected complete;
- Electrical equipment, wiring, switches, connections, earthing, earth stakes, fittings and the like;
- Communications' equipment, wiring, switches, connections, connections to Main Roads or 3rd party communication networks and the like;
- Equipment control software;
- Connection to power;
- Surface treatments including powder coating, painting and anti-graffiti coating;
- Reinstatement of pavements and surrounding surfaces; and
- Solar panels installed complete.

708 NOT USED

709 Electronic Speed Limit Signs

709.1 Classification of Items

Separate items shall be provided for the following:

- Electronic speed limit signs.
- Conduits.
- Excavation in rock for conduits.
- Directional drilling conduits.
- Cabling.
- Cable pits.

709.2 References

The units of measurement, the method of measurement and the rates and prices for cabling, conduits, excavation in rock for conduits, directional drilling conduits and cable pits shall be in accordance with Series 700 – Electrical and Lighting, Part 701.

709.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Electronic speed limit signs	No.

709.4 Method of Measurement

709.4.1 Electronic speed limit signs will be measured as the complete installation.

709.5 Rates and Prices to be Inclusive

709.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **electronic speed limit signs** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (e) Footings;
- (f) Structural steel gantry frames;
- (g) Electronic speed limit signs complete;
- (h) Electronic speed limit sign field cabinet (pad or pole mounted);
- (i) Electronic speed limit sign poles erected complete;
- (j) Electrical equipment, wiring, switches, connections, earthing, earth stakes, fittings and the like;
- (k) Communications' equipment, wiring, switches, connections, connections to Main Roads or 3rd party communication networks and the like;
- (l) Equipment control software;
- (m) Connection to power;

- (n) Surface treatments including powder coating, painting and anti-graffiti coating;
- (o) Reinstatement of pavements and surrounding surfaces; and
- (p) Solar panels installed complete.

710 NOT USED

711 Traffic Control Equipment Software – Included with 712

712 Traffic Signals

712.1 Classification of Items

Separate items shall be provided for the following:

- Traffic signal controllers.
- Traffic signal poles.
- Traffic signal lantern sets.
- Pedestrian push buttons.
- Advanced flashing warning signals.
- Detection loops.
- Conduits.
- Excavation in rock for conduits.
- Directional drilling conduits.
- Cabling.
- Cable pits.
- Connection to consumer mains.
- Relocation of traffic signals.

712.2 References

712.2.1 The units of measurement, the method of measurement and the rates and prices for; conduits, excavation in rock for conduits, directional drilling conduits, cabling, cable pits and connection to consumer mains shall be in accordance with Series 700 - Electrical and Lighting, Part 701.

712.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Traffic signal controllers	No.
Traffic signal poles	No.
Traffic signal lantern sets	No.
Pedestrian push buttons	No.
Advanced flashing warning signals	No.
Detection loops	No.
Relocation of traffic signals	Item

712.4 Method of Measurement

712.4.1 Traffic signal lantern sets shall be measured as the complete installation and shall be subdivided into groups of varying number of aspect lantern sets.

712.5 Rates and Prices to be Inclusive

712.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **traffic signal controllers, poles, pedestrian push buttons, advanced flashing** and **warning signals** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (e) Footings;
- (f) Traffic signal poles;
- (g) Advanced flashing warning signals poles, sign and aspects erected complete;
- (h) Electrical equipment, wiring, switches, connections, earthing, earth stakes, fittings and the like;
- (i) Communications' equipment, wiring, switches, connections, connections to communication (Telstra or other) networks and the like;
- (j) Pole and traffic controller unit numbers;
- (k) Surface treatments including powder coating, painting and anti-graffiti coating;
- (l) Reinstatement of pavements and surrounding surfaces; and
- (m) Set up, maintenance and removal of temporary communications.

712.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **traffic signal lantern sets** shall be inclusive of:

- (a) lanterns, aspects, target boards, visors installed complete;
- (b) Electrical equipment, wiring, connections, earthing, fittings and the like;
- (c) Communications' equipment, wiring, switches, connections, connections to Main Roads or other 3rd Party communication networks and the like;
- (d) Equipment control software;
- (e) Pole and traffic controller unit numbers;
- (f) Set up, maintenance and removal of temporary communications; and
- (g) All other electrical and mechanical fittings and fixtures to complete traffic signalling not allowed for elsewhere.

712.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **detection loops** shall be inclusive of:

- (a) Excavation and cutting in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Sealing of loop wire in cut surface;
- (d) Disposal of surplus excavated material;
- (e) Locating, working around and supporting pipes, cables, services, apparatus and the like;

- (f) Electrical equipment, wiring, connections, earthing, fittings and the like;
- (g) Reinstatement of pavements and surrounding surfaces; and
- (h) Set up, maintenance and removal of temporary communications.

712.5.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of traffic signals** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (e) Footings;
- (f) Traffic signal poles;
- (g) Advanced flashing warning signals poles, sign and aspects erected complete;
- (h) Electrical equipment, wiring, switches, connections, earthing, earth stakes, fittings and the like;
- (i) Communications' equipment, wiring, switches, connections, connections to communication (Telstra or other) networks and the like;
- (j) Equipment control software;
- (k) Pole and traffic controller unit numbers;
- (l) Surface treatments including powder coating, painting and anti-graffiti coating;
- (m) Reinstatement of pavements and surrounding surfaces;
- (n) Set up, maintenance and removal of temporary communications; and
- (o) Cable pits installed complete.

713 Uninterruptable Power Supply for Traffic Signals

713.1 Classification of Items

Separate items shall be provided for the following:

- Uninterruptable power supply for traffic signals.
- Conduits.
- Directional drilling conduits.
- Cabling.
- Cable pits.
- Connection to consumer mains.
- Excavation in rock for conduits.

713.2 References

713.2.1 The units of measurement, the method of measurement and the rates and prices for; conduits, excavation in rock for conduits, directional drilling conduits, cabling, cable pits and connection to consumer mains shall be in accordance with Series 700 - Electrical and Lighting, Part 701.

713.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Uninterruptable Power Supply for Traffic Signals	Item

713.4 Method of Measurement

713.4.1 Uninterruptable power supply are variable dependant on size, load and battery number and details of these components will need to be included in the item description for each different combination.

713.5 Rates and Prices to be Inclusive

713.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **uninterruptable power supply for traffic signals** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Locating, working around and supporting pipes, cables, services, apparatus and the like;
- (e) Reinstatement of pavements and surrounding surfaces
- (f) Connection to power supply and point of attachment devices;
- (g) Electrical equipment, wiring, switches, connections, earthing, earth stakes, fittings and the like;
- (h) Batteries;
- (i) Uninterruptable Power Supply and cabinet complete;
- (j) Traffic signal terminations;
- (k) Constructing hardstand and plinth; and
- (l) Sockets in structures.

SERIES 800 - BRIDGE/MAJOR STRUCTURES

801 Excavation and Backfill for Structures

801.1 Classification of Items

Separate items shall be provided for the following:

- Structural excavation.
- Excavation in rock.
- Embankment construction.

801.2 References

801.2.1 The units of measurement, the method of measurement and the rates and prices for excavation in rock and embankment construction shall be in accordance with Series 300 - Earthworks, Part 302. Note the additional method of measurement requirements for excavation in rock at 801.4.3.

801.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Structural excavation	m ³

801.4 Method of Measurement

801.4.1 Structural excavation shall be measured as the volume which is to be occupied by the structure or foundation, plus any additional volume vertically above any part of the structure or foundation up to existing ground surface or earthworks final surface, whichever is the lower. In the case of structures or foundations constructed in fill material, no measurement shall be made. The total volume of excavation for any one structure or foundation shall be assigned to the item with a depth range within which its maximum depth falls.

801.4.2 Structural excavation shall commence at a depth not exceeding 1.0 metre and shall increase thereafter in 1.0 metre increments.

801.4.3 Excavation in rock shall be measured as "Extra Over" the structural excavation item.

801.5 Rates and Prices to be Inclusive

801.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **structural excavation** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Excavation above and below water level;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Trimming, grading, levelling and compacting base and sides of excavations;
- (f) Excavating around and between piles and the like;
- (g) Additional excavation required by the Contractor in excess of the sizes measured, planking and strutting, timbering, shoring, temporary sheet piling and the like including backfilling, compaction and reinstatement;

- (h) Protection of adjacent structures, drains, services, instrumentation and the like; and
- (i) Completion of earthworks final surfaces.

802 Mechanically Stabilised Earth Walls

802.1 Classification of Items

Separate items shall be provided for the following:

- Mechanically stabilised earth wall.

802.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Mechanically stabilised earth wall	Item

802.3 Rates and Prices to be Inclusive

802.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **mechanically stabilised earth wall** shall be inclusive of:

- (a) Design, documentation and verification;
- (b) Provision of samples and trial panels;
- (c) Submission of details of proposed system for approval;
- (d) Installation complete including levelling pads, footings, precast facing panels, reinforcing strips, cappings, caulking and sealing between and under units;
- (e) Excavation in all materials except rock;
- (f) Backfilling with embankment quality material and compaction;
- (g) Cement stabilised layer;
- (h) Disposal of surplus excavated material;
- (i) Protection of adjacent structures;
- (j) Reinstatement of surrounding surfaces; and
- (k) Surface finishes including sandblasted concrete finish, curing, protection, treatment to concrete faces and anti-graffiti coating.

803 Dismantling and Demolition

803.1 Classification of Items

Separate items shall be provided for the following:

- Demolition of bridges.
- Removal of redundant deck overlay.
- Removal of redundant traffic barriers for structures and balustrades.

803.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Demolition of bridges	m ²
Removal of redundant deck overlay	m ²
Removal of redundant traffic barriers for structures and balustrades	m

803.3 Method of Measurement

803.3.1 Demolition of bridges and removal of redundant deck overlay shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

803.3.2 Removal of redundant traffic barriers for structures and balustrades shall be measured as the developed length along the centreline from each end, inclusive of anchors, end pieces or terminals.

803.4 Rates and Prices to be Inclusive

803.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **demolition of bridges** and **removal of redundant deck overlay** shall be inclusive of:

- (a) Carrying out surveys of bridges prior to demolition;
- (b) Disconnecting and sealing of services, and marking and recording the position of sealed services, including liaising with relevant authorities;
- (c) Protecting areas, structures and surfaces adjacent to demolition works from damage;
- (d) Making good damage to adjacent areas, structures and surfaces;
- (e) Delivery of salvageable material to nominated storage area; and
- (f) Disposal to spoil off-site.

803.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant traffic barriers for structures and balustrades** shall be inclusive of:

- (a) Protecting areas, structures and surfaces adjacent to demolition works from damage;
- (b) Making good damage to adjacent areas, structures and surfaces;
- (c) Delivery of salvageable material to nominated storage area; and
- (d) Disposal to spoil off-site.

804 NOT USED

805 NOT USED

806 NOT USED

807 NOT USED

808 Incremental Launching

808.1 Classification of Items

Separate items shall be provided for the following:

- Casting bay and temporary supports.

- Launching girder.
- Launching system.
- Launching of deck segments.

808.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Casting bay and temporary supports	Item
Launching girder	Item
Launching system	Item
Launching of deck segments	No.

808.3 Rates and Prices to be Inclusive

808.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **incremental launching** shall be inclusive of:

- Design, documentation and verification;
- Clearing, preparation of the site, excavation in all materials including rock, filling, compaction, levelling, trimming and disposal of surplus material;
- Foundations, bases, hardstandings and supports;
- Construction, fabrication and erection of all temporary works including the casting bay, temporary supports, launching girder, launching system, launching bearings, lateral guides, launching jacks, braking systems, safety switches and other safety measures, communications systems and the like;
- Provision of everything necessary to support the design and construction loads;
- Setting to tolerances and allowing for tolerances, settlements, deflections, rotations and longitudinal movements;
- Launching;
- Controlling and monitoring jacking forces;
- Transferring the weight of the structure to the permanent bearings;
- Provision of survey plates/markers and monitoring;
- Surface treatments and protection;
- Maintenance of all temporary works;
- Protection of adjacent structures;
- Demolition and removal of all temporary works and all necessary remedial works required; and
- Reinstatement of surrounding surfaces.

809 NOT USED

810 Driven Steel Piles

810.1 Classification of Items

Separate items shall be provided for the following:

- Mobilisation and demobilisation of piling plant.
- Steel piles.
- Galvanising of steel piles.
- Other surface treatments of piles.
- Preparation, handling and pitching of piles.
- Driving of piles.
- Site welded splice to steel piles.
- Steel pile extensions.
- Re-driving of piles.
- Cutting tops off piles.

810.2 References

810.2.1 The units of measurement, the method of measurement and the rates and prices for galvanising shall be in accordance with Series 800 - Bridge/Major Structures, Part 835.

810.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Mobilisation and demobilisation of piling plant.	Item
Steel piles	t
Other surface treatments of piles	m ²
Preparation, handling and pitching of piles	No.
Driving of piles	m
Site welded splice to steel piles	No.
Steel pile extensions	t
Re-driving of piles	m
Cutting tops off piles	No.

810.4 Method of Measurement

810.4.1 Mobilisation and demobilisation of piling plant shall be measured separately for each bridge or structure.

810.4.2 The mass of steel piles, steel pile extensions and galvanising shall be calculated using the nominal unit mass of each section in accordance with the relevant Australian Standard. No allowance shall be made for rolling margin.

810.4.3 The number of steel piles shall be stated in the item description.

810.4.4 Driving piles shall be measured from the toe to the underside of the structure or foundation, or in the case of piles to be extended, to the site joint provided that after re-driving the site joint is below the structure or foundation. The length of re-driving shall be excluded.

810.4.5 Redriving piles shall be measured from the site joint to the underside of the structure or foundation, provided that after re-driving the site joint is below the structure or foundation.

810.4.6 Surface treatment of piles shall be measured as "Extra Over."

810.5 Rates and Prices to be Inclusive

810.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **mobilisation and demobilisation of piling plant** shall be inclusive of:

- (a) Bringing piling plant and equipment to the site of the structure;
- (b) Erecting and setting up piling plant and equipment including site preparation, levelling and provision of access ramps and hardstands;
- (c) Moving and setting up piling plant and equipment at each pile position including site preparation, levelling and provision of access ramps and hardstands;
- (d) Dismantling and removing piling plant and equipment; and
- (e) Removal of access ramps and hardstands.

810.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for steel piles and steel pile extensions shall be inclusive of:

- (a) Fabrication of steel piles into required lengths; and
- (b) Preparation of pile toe and head.

810.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for preparation, handling and pitching of piles shall be inclusive of:

- (a) Fixing pile in piling plant ready for driving.

810.5.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for driving piles shall be inclusive of:

- (a) Pre-boring or jetting where permitted by the Superintendent;
- (b) Dollying below existing ground level;
- (c) Taking observations and compiling records of each pile;
- (d) Driving of piles including temporary supports and any necessary guide arrangements;
- (e) Additional costs for premature cutting off head of each pile as driving completed to facilitate driving of adjacent piles; and
- (f) Moving piling plant and equipment between piles at individual sites.

810.5.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **site welded splice to steel piles** shall be inclusive of:

- (a) Cutting off and disposal of surplus length of pile to spoil off-site;
- (b) Forming connection with old work including welding; and
- (c) Lost time, moving piling plant and equipment, standing time and disruption caused by the process of lengthening.

810.5.6 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **re-driving piles** shall be inclusive of:

- (a) Driving to a set or level;
- (b) Taking observations and compiling the records of piles;

- (c) Driving of piles including temporary supports and any necessary guide arrangements; and
 - (d) Moving piling plant and equipment back and driving lengthened pile.
- 810.5.7 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cutting off tops of piles** shall be inclusive of:
- (a) Cutting off and disposal of surplus length of pile to spoil off-site;
 - (b) Forming holes in steel members;
 - (c) Capping plates;
 - (d) Cutting and stripping concrete from the head to the required level and exposing the reinforcement required for bonding into the structure;
 - (e) Fixing reinforcement required to bond into the structure;
 - (f) Bending and tying the projecting reinforcement required to bond into the structure; and
 - (g) Removal of surface treatments.

811 Driven Concrete Piles

811.1 Classification of Items

Separate items shall be provided for the following:

- Mobilisation and demobilisation of piling plant.
- Concrete piles.
- Preparation, handling and pitching of piles.
- Driving of piles.
- Concrete pile extensions.
- Re-driving of piles.
- Cutting tops off piles.

811.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Mobilisation and demobilisation of piling plant.	Item
Concrete piles	No.
Preparation, handling and pitching of piles	No.
Driving of piles	m
Concrete pile extensions	m
Re-driving of piles	m
Cutting tops off piles	No.

811.3 Method of Measurement

811.3.1 Mobilisation and demobilisation of piling plant shall be measured separately for each bridge or structure.

811.3.2 Driving piles shall be measured from the toe to the underside of the structure or foundation, or in the case of piles to be extended, to the site joint provided that

after re-driving the site joint is below the structure or foundation. The length of re-driving shall be excluded.

- 811.3.3 Re-driving piles shall be measured from the site joint to the underside of the structure or foundation, provided that after re-driving the site joint is below the structure or foundation.

811.4 Rates and Prices to be Inclusive

- 811.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **mobilisation and demobilisation of piling plant** shall be inclusive of:

- (a) Bringing piling plant and equipment to the site of the structure;
- (b) Erecting and setting up piling plant and equipment including site preparation, levelling and provision of access ramps and hardstands;
- (c) Moving and setting up piling plant and equipment at each pile position including site preparation, levelling and provision of access ramps and hardstands;
- (d) Dismantling and removing piling plant and equipment; and
- (e) Removal of access ramps and hardstands.

- 811.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **concrete piles** shall be inclusive of:

- (a) Concrete, formwork, reinforcement;
- (b) Prestressing; and
- (c) Pile shoes, tapered points, head bands, chamfers, couplers, lifting points and reference markings.

- 811.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **preparation, handling and pitching of piles** shall be inclusive of:

- (a) Fixing pile in piling plant ready for driving.

- 811.4.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **driving piles** shall be inclusive of:

- (a) Pre-boring or jetting where permitted by the Superintendent;
- (b) Dollying below existing ground level;
- (c) Taking observations and compiling records of each pile;
- (d) Driving of piles including temporary supports and any necessary guide arrangements;
- (e) Additional costs for premature cutting off head of each pile as driving completed to facilitate driving of adjacent piles; and
- (f) Moving piling plant and equipment between piles at individual sites.

- 811.4.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **concrete pile extensions** shall be inclusive of:

- (a) Cutting off and disposal of surplus length of pile to spoil off-site;
- (b) Forming connection with old work including splicing, tying or welding reinforcement;
- (c) Concrete, formwork and reinforcement;
- (d) Precast members and the like, joints, fitments, head bands; and

- (e) Lost time, moving piling plant and equipment, standing time and disruption caused by the process of lengthening including waiting for the concrete to achieve a specified strength or age.

811.4.6 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **re-driving piles** shall be inclusive of:

- (a) Driving to a set or level;
- (b) Taking observations and compiling the records of piles;
- (c) Driving of piles including temporary supports and any necessary guide arrangements; and
- (d) Moving piling plant and equipment back and driving lengthened pile.

811.4.7 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cutting off tops of piles** shall be inclusive of:

- (a) Cutting off and disposal of surplus length of pile to spoil off-site;
- (b) Forming holes in steel members;
- (c) Capping plates;
- (d) Cutting and stripping concrete from the head to the required level and exposing the reinforcement required for bonding into the structure;
- (e) Fixing reinforcement required to bond into the structure;
- (f) Bending and tying the projecting reinforcement required to bond into the structure; and
- (g) Removal of surface treatments.

812 Bored Piles

812.1 Classification of Items

Separate items shall be provided for the following:

- Mobilisation and demobilisation of piling plant.
- Steel pile casings.
- Preparation, handling and pitching of pile casings.
- Installation of pile casings.
- Excavation within steel pile casing.
- Reinforcement in piles.
- Concrete in piles.
- Cutting tops off piles.
- Pile integrity testing.
- Pile load testing.

812.2 References

812.2.1 The units of measurement, the method of measurement and the rates and prices for excavation within pile casings shall be in accordance with Series 800 - Bridge/Major Structures, Part 801. Note the additional method of measurement requirements for excavation within pile casings at 812.4.5.

812.2.2 The units of measurement, the method of measurement and the rates and prices for concrete shall be in accordance with Series 800 - Bridge/Major Structures,

Part 820. Note the additional method of measurement requirements for concrete at 812.4.5.

812.2.3 The units of measurement, the method of measurement and the rates and prices for reinforcement shall be in accordance with Series 800 - Bridge/Major Structures, Part 822.

812.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Mobilisation and demobilisation of piling plant.	Item
Steel pile casings	t
Preparation, handling and pitching of pile casings	No.
Installation of pile casings	M
Cutting tops off piles	No.
Pile integrity testing	No.
Pile load testing	No.

812.4 Method of Measurement

812.4.1 Mobilisation and demobilisation of piling plant shall be measured separately for each bridge or structure.

812.4.2 The mass of steel pile casings shall be calculated using the nominal unit mass of each section in accordance with the relevant Australian Standard. No allowance shall be made for rolling margin.

812.4.3 The number of steel pile casings shall be stated in the item description.

812.4.4 Installation of pile casings shall be measured from the toe of the casing to the underside of the structure or foundation.

812.4.5 Excavation within steel pile casings and concrete in piles shall be measured from the toe of the casing to the underside of the structure or foundation.

812.5 Rates and Prices to be Inclusive

812.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **mobilisation and demobilisation of piling plant** shall be inclusive of:

- (a) Bringing piling plant and equipment to the site of the structure;
- (b) Erecting and setting up piling plant and equipment including site preparation, levelling and provision of access ramps and hardstands;
- (c) Moving and setting up piling plant and equipment at each pile position including site preparation, levelling and provision of access ramps, hardstands and guidewalls;
- (d) Dismantling and removing piling plant and equipment; and
- (e) Removal of access ramps, hardstands and guidewalls.

812.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **steel pile casings** shall be inclusive of:

- (a) Design and fabrication of steel pile casings into required lengths; and
 - (b) Preparation of pile toe and head.
- 812.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **preparation, handling and pitching of pile casings** shall be inclusive of:
- (a) Fixing pile case in piling plant ready for installation.
- 812.5.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **installation of pile casings** shall be inclusive of:
- (a) Pre-boring or jetting where permitted by the Superintendent;
 - (b) Dollying below existing ground level;
 - (c) Taking observations and compiling records of each pile casing;
 - (d) Installation of pile casings including temporary supports and any necessary guide arrangements;
 - (e) Additional costs for premature cutting off head of each pile as installation completed to facilitate installation of adjacent piles;
 - (f) Moving piling plant and equipment between piles at individual sites; and
 - (g) Removal of steel pile casing on completion of concreting.
- 812.5.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cutting tops off piles** shall be inclusive of:
- (a) Cutting off and disposal of surplus length of pile to spoil off-site;
 - (b) Forming holes in steel members;
 - (c) Cutting and stripping concrete from the head to the required level and exposing the reinforcement required for bonding into the structure;
 - (d) Fixing reinforcement required to bond into the structure; and
 - (e) Bending and tying the projecting reinforcement required to bond into the structure.
- 812.5.6 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **pile integrity testing** and **pile load testing** shall be inclusive of:
- (a) Excavation in all materials except rock;
 - (b) Excavation above and below water level;
 - (c) Backfilling with embankment quality material and compaction;
 - (d) Disposal of surplus excavated material;
 - (e) Provision and installation of testing equipment;
 - (f) Maintaining exclusion zones;
 - (g) Trimming, grading, levelling and compacting base and sides of excavations;
 - (h) Excavating around the test pile and cleaning of pile;
 - (i) Additional excavation required by the Contractor, planking and strutting, timbering, shoring, temporary sheet piling and the like including backfilling, compaction and reinstatement;
 - (j) Provision of safe access for inspection;
 - (k) Protection of adjacent structures, drains, services, instrumentation and the like; and
 - (l) Removal of test pile and disposal off site.

813 Cased Piles

Included in Section 812 Bored Piles.

814 Continuous Flight Auger Piles

814.1 Classification of Items

Separate items shall be provided for the following:

- Mobilisation and demobilisation of piling plant.
- Auguring piles in preparation for receiving concrete.
- Reinforcement in piles.
- Concrete in piles.
- Cutting tops off piles.
- Pile integrity testing.
- Pile load testing.
- Capping to piles.

814.2 References

814.2.1 The units of measurement, the method of measurement and the rates and prices for concrete shall be in accordance with Series 800 - Bridge/Major Structures, Part 820. Note the additional method of measurement requirements for concrete at 814.4.2.

814.2.2 The units of measurement, the method of measurement and the rates and prices for formwork shall be in accordance with Series 800 - Bridge/Major Structures, Part 821.

814.2.3 The units of measurement, the method of measurement and the rates and prices for reinforcement shall be in accordance with Series 800 - Bridge/Major Structures, Part 822.

814.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Mobilisation and demobilisation of piling plant.	Item
Auguring piles in preparation for receiving concrete	m ³
Cutting tops off piles	No.
Pile integrity testing	No.
Pile load testing	No.
Capping to piles	m ³ / m ² / t

814.4 Method of Measurement

814.4.1 Mobilisation and demobilisation of piling plant shall be measured separately for each bridge or structure.

814.4.2 Auguring piles in preparation for receiving concrete and concrete in piles shall be measured from the toe of the pile to the underside of the structure or foundation.

814.4.3 Capping to piles shall be broken into its constituent parts of concrete, formwork and reinforcement.

814.5 Rates and Prices to be Inclusive

814.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **mobilisation and demobilisation of piling plant** shall be inclusive of:

- (a) Bringing piling plant and equipment to the site of the structure;
- (b) Erecting and setting up piling plant and equipment including site preparation, levelling and provision of access ramps and hardstands;
- (c) Moving and setting up piling plant and support equipment at each pile position including site preparation, levelling and provision of access ramps, hardstands and guidewalls;
- (d) Dismantling and removing piling plant and equipment; and
- (e) Removal of access ramps, hardstands and guidewalls.

814.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **auguring piles in preparation for receiving concrete** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Excavation above and below water level;
- (c) Pre-boring or jetting where permitted by the Superintendent;
- (d) Taking observations and compiling records of each pile;
- (e) Removal of spoil and disposal off site; and
- (f) Moving piling plant and equipment between piles at individual sites.

814.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **concrete in piles** shall be inclusive of:

- (a) Mix design;
- (b) Trial mixes;
- (c) Pumping and placing of concrete;
- (d) Oversupply of concrete; and
- (e) Recording and measurement of extraction rates.

814.5.4 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **cutting tops off piles** shall be inclusive of:

- (a) Cutting off and disposal of surplus length of pile to spoil off-site;
- (b) Forming holes in steel members;
- (c) Cutting and stripping concrete from the head to the required level and exposing the reinforcement required for bonding into the structure;
- (d) Fixing reinforcement required to bond into the structure; and
- (e) Bending and tying the projecting reinforcement required to bond into the structure.

814.5.5 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **pile integrity testing** and **pile load testing** shall be inclusive of:

- (a) Excavation in all materials except rock;
- (b) Excavation above and below water level;

- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Provision and installation of testing equipment;
- (f) Maintaining exclusion zones;
- (g) Trimming, grading, levelling and compacting base and sides of excavations;
- (h) Excavating around the test pile and cleaning of pile;
- (i) Additional excavation required by the Contractor, planking and strutting, timbering, shoring, temporary sheet piling and the like including backfilling, compaction and reinstatement;
- (j) Provision of safe access for inspection;
- (k) Protection of adjacent structures, drains, services, instrumentation and the like; and
- (l) Removal of test pile and disposal off site.

815 NOT USED

816 NOT USED

817 NOT USED

818 NOT USED

819 Falsework

819.1 Classification of Items

Separate items shall be provided for the following:

- Provision and erection of falsework.
- Maintenance of falsework.
- Removal of falsework.

819.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Provision and erection of falsework	Item
Maintenance of falsework	Item
Removal of falsework	Item

819.3 Rates and Prices to be Inclusive

819.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **falsework** shall be inclusive of:

- (a) Design, documentation and verification;
- (b) Provision everything necessary to support formwork and design loads;
- (c) Protection of adjacent structures;
- (d) Setting falsework to tolerances and allowing for settlements and deflections;
- (e) Provision of openings through falsework; and

- (f) Provision of safety rails, barricades, netting and the like.

820 Concrete for Structures

820.1 Classification of Items

Separate items shall be provided for the following:

- Differing qualities and classes of in-situ concrete.
- Various in-situ concrete elements.

820.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Concrete	m ³
Blinding	m ²

820.3 Method of Measurement

820.3.1 No deduction shall be made for:

- (a) Built-in items, pipes, holes, ducts, pockets, sockets, mortices and the like each not exceeding 0.10 cubic metres in volume;
- (b) Reinforcement and prestressing materials; and
- (c) Individual fillets, chamfers, splays, drip grooves, rebates, recesses, grooves and the like not exceeding 100 millimetres in girth.

820.3.2 The area of blinding concrete shall be measured as the net plan area of the structure upon which will be built. No allowance for additional blinding outside the founding base of the concrete structure

820.4 Rates and Prices to be Inclusive

820.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **concrete** shall be inclusive of:

- (a) Mix design;
- (b) Trial mixes;
- (c) Mixing, placing in or against any surface including soil faces, compaction, finishing to unformed surface finishes;
- (d) Formwork to upper inclined surfaces, except where separate items have been measured;
- (e) Making good after removal of formwork including the removal of laitance;
- (f) Construction, contraction and expansion joints (whether shown on the Drawings or not), except where separate items have been measured;
- (g) Scabbling of construction joints, contraction joints and expansion joints;
- (h) Curing and protecting, including evaporation retarding coating and all special requirements;
- (i) Falls, cambers and shaped profiles;
- (j) Weep holes, pipe sleeves and the like;

- (k) Holes, ducts, pockets, sockets, mortices and the like not exceeding 0.10 cubic metres each in volume including formwork;
- (l) Formwork to edges of blinding concrete;
- (m) All additional concrete required filling overbreak and working spaces;
- (n) All sundry items such as sockets, levelling pins, proprietary construction joint material, strips of polystyrene, bond breakers and the like, except where measured separately; and
- (o) Filling of tie bar holes.

821 Formwork

821.1 Classification of Items

Separate items shall be provided for the following:

- Differing qualities and classes of formwork.
- Various in-situ concrete elements.
- Curved formwork.
- Permanent formwork.
- Void formers.

821.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Formwork	m ²
Void formers	m

821.3 Method of Measurement

821.3.1 Formwork shall be measured as the net area in contact with the finished concrete, subject to the qualifications stated below. No deduction shall be made for openings each not exceeding one square metre.

821.3.2 Formwork 300mm wide and less shall not be measured separately but the areas shall be included in the general formwork areas.

821.3.3 Formwork shall not be measured to:

- (a) Construction, contraction and expansion joints (whether shown on the Drawings or not);
- (b) Pockets, cored holes, boxings, holes, ducts, sockets, mortices and the like each not exceeding 0.10 cubic metres in volume;
- (c) Rebates, chases, fillets, chamfers, splays, drip grooves, recesses, grooves and the like not exceeding 100 millimetres total girth measured on the faces in contact with the concrete;
- (d) Edges of blinding concrete; and
- (e) Upper inclined surfaces of concrete, unless formwork to upper inclined surfaces of concrete is shown on the Drawings.

821.3.4 Where concrete, other than blinding concrete, is placed in structural foundations, formwork shall be measured to the sides of such concrete foundations

regardless of whether or not any formwork is used, except where it is expressly stated on the Drawings that the concrete is to be cast against the soil face.

821.3.5 Profiled formwork shall be measured as the plane (not developed) area of the profile concrete. No allowance shall be made for bearing surfaces for permanent formwork.

821.3.6 Formwork shall be included in the Schedule of Rates or Bill of Quantities in the same sequence as items of concrete.

821.3.7 The number of void formers shall be stated in the item description.

821.4 Rates and Prices to be Inclusive

821.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **formwork** shall be inclusive of:

- (a) Design, documentation and verification;
- (b) Provision of samples and trial panels;
- (c) Centring, fabricating, erecting, assembling, cutting, levelling, fixing in position, fitting and taking measures to produce the required shapes of concrete;
- (d) Falsework, except where measured separately;
- (e) Setting formwork to tolerances and allowing for settlements and deflections;
- (f) Forming cambers and falls;
- (g) Linings, release agents, surface retarders and other measures to produce the required finish to the surface of the concrete;
- (h) Filletting to form rebates, chases, chamfers and splayed internal angles drips, blockings, boxings and other ancillary items not exceeding 100mm total girth;
- (i) Cutting and fitting around projecting members, pipes, reinforcement and the like;
- (j) Sealing joints between formwork panels and adjoining surfaces and components;
- (k) Forming all construction joints, contraction joints and expansion joints, except where separate items have been measured;
- (l) Scabbling of construction joints, contraction joints and expansion joints;
- (m) Providing personnel to check formwork during concrete placement;
- (n) Maintaining in place until striking and allowing for any variation from the minimum period for striking arising from weather conditions;
- (o) Striking, taking down and removing;
- (p) Making good concrete after removal including the removal of laitance;
- (q) Protection of surrounding surfaces;
- (r) Executing the work in the sequences required;
- (s) Withdrawing through confined openings where required by the sequence of construction; and
- (t) Any additional concrete provided in lieu of formwork to fill overbreak and working spaces.

821.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **void formers** shall be inclusive of:

- (a) Fixing void formers to prevent displacement during concreting operations;
- (b) Capping or blocking off ends where applicable;

- (c) Sealing ends and joints;
- (d) Cutting and fitting around projecting members, pipes, reinforcement and the like;
- (e) Where required, removal of void formers; and
- (f) Where required, the provision of drains and vents to void formers.

822 Steel Reinforcement

822.1 Classification of Items

Separate items shall be provided for the following:

- Bar reinforcement.
- Wire reinforcement.
- Fabric reinforcement.
- Trench mesh.
- Mechanical splices.
- Galvanising.

822.2 References

822.2.1 The units of measurement, the method of measurement and the rates and prices for galvanising shall be in accordance with Series 800 - Bridge/Major Structures, Part 835.

822.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Bar reinforcement	t
Wire reinforcement	t
Fabric reinforcement	m ²
Trench mesh	m
Mechanical splices	No.

822.4 Method of Measurement

822.4.1 The mass of bar reinforcement and wire reinforcement shall be calculated using the nominal unit mass of each section in accordance with the relevant Australian Standard. No allowance shall be made for rolling margin or for the mass of chairs, spacers, hangers, supports and the like.

822.4.2 Bar reinforcement and wire reinforcement shall be grouped into diameters less than 16mm, diameters 16mm to 36mm and diameters exceeding 36mm.

822.4.3 Single lengths of bar reinforcement and wire reinforcement in excess of 10 metres shall not be measured separately but shall be included with the general reinforcement masses.

822.4.4 No allowance shall be made for laps to fabric reinforcement and trench mesh. No deduction shall be made for openings each not exceeding one square metre.

822.4.5 Reinforcement shall be included in the Schedule of Rates or Bill of Quantities in the same sequence as items of concrete.

822.5 Rates and Prices to be Inclusive

822.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **bar reinforcement, wire reinforcement, fabric reinforcement** and **trench mesh** shall be inclusive of:

- (a) Provision of bending schedules;
- (b) Cleaning, cutting and bending;
- (c) All chairs, spacers, hangers, blocks, supports and the like where required and securing reinforcement in position with tie wire or approved equivalent;
- (d) Extra reinforcement at laps;
- (e) All lengths in excess of 10 metres;
- (f) All welding of reinforcement;
- (g) Epoxy coatings; and
- (h) Protection of projecting reinforcement.

822.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **mechanical splices** shall be inclusive of:

- (a) Protective wrapping;
- (b) Greasing; and
- (c) Epoxy coatings.

823 NOT USED

824 Prestressing of Concrete

824.1 Classification of Items

Separate items shall be provided for the following:

- Anchorages.
- Couplers.
- Prestressing tendons.
- Prestressing bars.
- Stressing and grouting.

824.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Anchorage	No.
Couplers	No.
Prestressing tendons	m
Prestressing bars	No.
Stressing and grouting	No.

824.3 Method of Measurement

824.3.1 Tendons shall be measured as the plan length between the outside faces of anchorages and couplers.

824.3.2 The number of prestressing tendons shall be stated in the item description.

824.4 Rates and Prices to be Inclusive

824.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **anchorages** and **couplers** shall be inclusive of:

- (a) Tendon anchorages, couplers, bearing plates, cones, wedges, reinforcing helices, grout inlets, vents and other components and fixing to tendons; and
- (b) Forming recesses and jack seatings.

824.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **prestressing tendons** and **prestressing bars** shall be inclusive of:

- (a) Forming, installing and sealing tendon ducts, sheaths or duct formers to profile;
- (b) Steel cables, wires, strands or bars, tagging, binders, spacers, and proving that tendons and bars are free to move between anchorages or couplers in ducts;
- (c) Grout inlets, vents and other components;
- (d) Allowing for variation of length in tendons contained in the same Schedule of Rates or Bill of Quantities item;
- (e) Cleaning tendons, bars, components and ducts; and
- (f) Marking grout and vent points with tendon or bar identification.

824.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **stressing and grouting** shall be inclusive of:

- (a) Checking the accuracy of load measuring equipment and adjusting;
- (b) Applying prestress in one or more stages;
- (c) Gripping and trimming tendons;
- (d) Taking observations and compiling a record of stressing and grouting operations and supplying copies to the Superintendent;
- (e) Flushing out for grout, grouting trials, grouting, sealing vent holes and end anchorages, treating ends of tendons;
- (f) Allowing for variation of length in tendons contained in the same Schedule of Rates or Bill of Quantities item;
- (g) Calculation in respect of the required jacking force and extension; and
- (h) Releasing tension and re-tensioning where pull-in is greater than that agreed by the Superintendent.

825 Sandblasted Concrete Finish

825.1 Classification of Items

Separate items shall be provided for the following:

- Various in-situ concrete elements.

825.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Sandblasted finish to in-situ concrete	m ²

825.3 Method of Measurement

825.3.1 The measurement shall be the area of the sandblasted finish to in-situ concrete surfaces shown on the Drawings or specified, except for concrete faces formed with profiled formwork in which case the measurement shall be the plane (not developed) area of the concrete. No deduction shall be made for openings each not exceeding one square metre.

825.3.2 Sandblasted finish to precast concrete members and precast concrete parapet panels shall not be measured.

825.4 Rates and Prices to be Inclusive

825.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **sandblasted concrete finish** shall be inclusive of:

- (a) Samples and trial panels;
- (b) Exposing aggregates, removing loose material from the concrete and washing down;
- (c) Protection of surrounding surfaces;
- (d) Dust control;
- (e) Encapsulation; and
- (f) Collection and removal of grit and removal and disposal of debris off site.

826 NOT USED

827 NOT USED

828 Precast Concrete Members

828.1 Classification of Items

Separate items shall be provided for the following:

- Beams.
- Planks.
- Parapet panels.
- Other precast members.

828.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Beams	No.
Planks	No.
Parapet panels	No.

Description	Unit
Other precast members	No.

828.3 Method of Measurement

828.3.1 The length of beams, planks or parapet panels shall be stated in the item description.

828.4 Rates and Prices to be Inclusive

828.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **precast concrete members** and **precast concrete parapet panels** shall be inclusive of:

- (a) Preparation of shop drawings;
- (b) Mix design;
- (c) Trial mixes and trial members;
- (d) Formwork and reinforcement;
- (e) Surface finishes including sandblasted concrete finish, curing, protection and treatment to concrete faces;
- (f) Recesses, fillets, chamfers, splays, rebates, drip grooves and the like;
- (g) Holes, ducts, pockets, sockets, mortices, cast-in items and the like;
- (h) Matching members for side-by-side construction;
- (i) Marking members for identification and delivery in matching sequence;
- (j) Lifting devices including removal of lifting devices and filling or reinstatement of voids and holes;
- (k) Erection and fixing in final position;
- (l) Temporary bracing or stays to prevent displacement;
- (m) Bedding, jointing and pointing including cramps, dowels or other fixing devices;
- (n) Caulking and sealing between and under units;
- (o) Cutting and trimming; and
- (p) Prestressing tendons, prestressing bars, ducts, anchorages and couplers, stressing and grouting.

829 Precast Concrete Parapet Panels – Included with 828

830 Structural Steel

830.1 Classification of Items

Separate items shall be provided for the following:

- Columns.
- Beams.
- Bracing.
- Beam base plates.
- Column base plates.

830.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Structural steelwork	t
Base plates	No.

830.3 Method of Measurement

830.3.1 The mass of structural steelwork shall be calculated from the overall length of the members with no deductions for splay cuts or mitred ends. The total mass of the finished member comprising rolled sections, plates, stiffeners, cleats and splice plates shall be calculated using the nominal unit mass of each section in accordance with the relevant Australian Standard. No allowance shall be made for rolling margin, shear studs, weld fillets, bolts, nuts, washers, rivets and protective coatings.

830.3.2 The number of columns, beams or braces shall be stated in the item description.

830.4 Rates and Prices to be Inclusive

830.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **structural steelwork** shall be inclusive of:

- (a) Preparation of shop drawings;
- (b) Examining and checking steel for segregation, laminations, cracks and surface flaws, and carrying out any remedial works;
- (c) Cutting, marking off, drilling, notching, machining, form fitting, edge preparation, cambering, welding, rivets, bolting, pre-heating and taking measures to counteract shrinkage or distortion due to welding, gouging, thermal cutting or heat treatment;
- (d) Shear studs including welding to steel members;
- (e) Handling, lifting, assembly and erection including jacking, craneage and stacking steelwork clear of the ground;
- (f) Bolts, holding down bolts, washers, nuts, fastenings, casting in bolts, bonding agents, attachments, fixings, fillers and sealing materials and the like;
- (g) Wedging and grouting under base plates;
- (h) Temporary earthworks, skates, packers, bracing, wedging, packing, bolting and welding including that required for concrete work and transporting beams, subsequent removal and making good damaged materials and coatings;
- (i) Descaling and wire brushing parts of steelwork to be encased in or in contact with concrete;
- (j) Materials testing and providing certificates of compliance;
- (k) Weld testing and inspection;
- (l) Fabrication inspection and air tightness including provision of threaded nipples and their removal and seal welding hole after testing;
- (m) Protecting steelwork including making good damaged materials and coatings;
- (n) Providing run on and run off plate extension plates and extending welds at joints;

- (o) Qualification tests for welders; and
- (p) Procedure trials for welding, flame cutting and shearing.

831 Minor Steel Items

831.1 Classification of Items

Separate items shall be provided for the following:

- Minor steel items.

831.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Minor steel items	m ² , m, No., Item

831.3 Method of Measurement

831.3.1 Galvanising, painting and other surface finishes shall not be measured separately.

831.3.2 Expansion joint edgings and expansion joint cover plates shall be measured in Series 800 - Bridge/Major Structures, Part 870.

831.4 Rates and Prices to be Inclusive

831.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **minor steel items** shall be inclusive of:

- (a) Preparation of shop drawings;
- (b) Examining and checking steel for segregation, laminations, cracks and surface flaws, and carrying out any remedial works;
- (c) Cutting, marking off, drilling, notching, machining, form fitting, edge preparation, cambering, welding, rivets, bolting, pre-heating and taking measures to counteract shrinkage or distortion due to welding, gouging, thermal cutting or heat treatment;
- (d) Shear studs including welding to steel members;
- (e) Handling, lifting, assembly and erection including jacking, craneage and stacking steelwork clear of the ground;
- (f) Bolts, holding down bolts, washers, nuts, fastenings, casting in bolts, bonding agents, attachments, fixings, fillers and sealing materials and the like;
- (g) Wedging and grouting under base plates;
- (h) Temporary earthworks, skates, packers, bracing, wedging, packing, bolting and welding including that required for concrete work and transporting beams, subsequent removal and making good damaged materials and coatings;
- (i) Descaling and wire brushing parts of steelwork to be encased in or in contact with concrete;
- (j) Materials testing and providing certificates of compliance;
- (k) Weld testing and inspection;

- (l) Fabrication inspection and air tightness including provision of threaded nipples and their removal and seal welding hole after testing;
- (m) Protecting steelwork including making good damaged materials and coatings;
- (n) Providing run on and run off plate extension plates and extending welds at joints;
- (o) Qualification tests for welders;
- (p) Procedure trials for welding, flame cutting and shearing;
- (q) Surface treatments including corrosion protection, galvanising, painting and other surface finishes; and
- (r) Reinstatement of pavements and surrounding surfaces.

832 NOT USED

833 Bridge Balustrade

833.1 Classification of Items

Separate items shall be provided for the following:

- Balustrades.
- Handrails.
- End treatments or transitions.

833.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Balustrades	m
Handrails	m
End treatments or transitions	No.

833.3 Method of Measurement

833.3.1 Balustrades and handrails shall be measured as the developed length along the centreline between the connections to end pieces, terminations or transitions.

833.3.2 Galvanising, painting and other surface finishes shall not be measured separately.

833.4 Rates and Prices to be Inclusive

833.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **balustrades, handrails, end treatments and transitions** shall be inclusive of:

- (a) Preparation of shop drawings;
- (b) Examining and checking steel for segregation, laminations, cracks and surface flaws, and carrying out any remedial works;
- (c) Cutting, marking off, drilling, notching, machining, form fitting, edge preparation, cambering, welding, rivets, bolting, pre-heating and taking measures to counteract shrinkage or distortion due to welding, gouging, thermal cutting or heat treatment;

- (d) Handling, lifting, assembly and erection including jacking, crange and stacking steelwork clear of the ground;
- (e) Baseplates, sockets, ends, ramps, angles, joint fittings, bolts, holding down bolts, washers, nuts, fastenings, casting in bolts, bonding agents, attachments, fixings, fillers and sealing materials and the like;
- (f) Wedging and grouting under base plates;
- (g) Temporary packers, bracing, wedging, packing, bolting and welding and subsequent removal and making good damaged materials and coatings;
- (h) Excavation in all materials including rock;
- (i) Backfilling with embankment quality material and compaction;
- (j) Disposal of surplus excavated material;
- (k) Footings;
- (l) Concrete, formwork, reinforcement;
- (m) Joining to existing road safety barrier systems, traffic barriers for structures, balustrades and handrails;
- (n) Posts, post sockets including epoxy mortar and dry sand;
- (o) Descaling and wire brushing parts of steelwork to be encased in or in contact with concrete;
- (p) Materials testing and providing certificates of compliance;
- (q) Weld testing and inspection;
- (r) Fabrication inspection and air tightness including provision of threaded nipples and their removal and seal welding hole after testing;
- (s) Protecting steelwork including making good damaged materials and coatings;
- (t) Providing run on and run off plate extension plates and extending welds at joints;
- (u) Qualification tests for welders;
- (v) Procedure trials for welding, flame cutting and shearing;
- (w) Surface treatments including corrosion protection, painting, galvanising, reflective tape and anti-graffiti coating; and
- (x) Reinstatement of pavements and surrounding surfaces.

834 NOT USED

835 Protective Treatment of Steelwork

835.1 Classification of Items

Separate items shall be provided for the following:

- Galvanising.
- Painting.
- Hot metal spray.

835.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Galvanising	t
Painting	m ²
Hot metal spray	m ²

835.3 Method of Measurement

835.3.1 Galvanising shall be measured as “Extra Over” the mass of steelwork and shall be the total mass galvanised of the finished member comprising rolled sections, plates, stiffeners, cleats and splice plates calculated using the nominal unit mass of each section in accordance with the relevant Australian Standard. No allowance shall be made for rolling margin, shear studs, weld fillets, bolts, nuts, washers, rivets and protective coatings.

835.3.2 Painting and hot metal spray shall be measured in square metres of the surface area of the steelwork treated.

835.4 Rates and Prices to be Inclusive

835.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **galvanising, painting and hot metal spray** shall be inclusive of:

- (a) Provision of samples;
- (b) Procedure trials;
- (c) Protection of adjacent surfaces;
- (d) Grit blasting as required including collecting and disposal of grit and debris off site;
- (e) Encapsulation; and
- (f) Making good and touching up damaged surfaces.

- 836 NOT USED
- 837 NOT USED
- 838 NOT USED
- 839 NOT USED
- 840 NOT USED
- 841 NOT USED
- 842 NOT USED
- 843 NOT USED
- 844 NOT USED
- 845 NOT USED
- 846 NOT USED
- 847 NOT USED
- 848 NOT USED
- 849 NOT USED
- 850 Timber Bridges

850.1 Classification of Items

Separate items shall be provided for the following:

- Preparation of timber decking to receive concrete overlay.
- Treatment of decking planks.
- Treatment of stringers.
- Routine maintenance of outside timber stringers.
- Timber handrail maintenance.
- Halfcap repair or replacement.
- Stringer or corbel replacement.
- Stringer strengthening.
- Groundline treatment of piles.
- Waterline treatment of piles.
- Repair of split piles.
- Pile bands.
- Repair of split stringers.
- Stringer and corbel bolting.
- Pile repair.
- Deck drainage.
- Marine organism protection.
- Repair and installation of bolted connections.
- Bolt tightening and fastener maintenance.
- End grain sealing.
- Removal of deck vegetation.
- Vegetation and debris clearance below bridge.
- Termite inspection and treatment.
- Adjustment to road surface levels at approach slabs and expansion joints.
- Modifications to navigation pier protective systems.
- Replacement of fender systems.

850.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Preparation of timber decking to receive concrete overlay	m ²
Treatment of decking planks	m
Treatment of stringers	m
Routine maintenance of outside timber stringers	m
Timber handrail maintenance	m

Description	Unit
Halfcap repair or replacement	m
Stringer or corbel replacement	m
Stringer strengthening	m
Groundline treatment of piles	No.
Waterline treatment of piles	No.
Repair of split piles	No.
Pile bands	No.
Repair of split stringers	No.
Stringer and corbel bolting	No.
Pile repair	No.
Deck drainage	No.
Marine organism protection	No.
Repair and installation of bolted connections	No.
Bolt tightening and fastener maintenance	No., Item
End grain sealing	Item
Removal of deck vegetation	Item
Vegetation and debris clearance below bridge	Item
Termite inspection and treatment	Item
Adjustment to road surface levels at approach slabs and expansion joints	Item
Modifications to navigation pier protective systems	Item
Replacement of fender systems	Item

850.3 Method of Measurement

850.3.1 Preparation of timber decking to receive concrete overlay shall be measured as the plan area of the retained timber deck. No deduction shall be made for openings each not exceeding one square metre.

850.3.2 The number of timber stringers, corbels or halfcaps to be treated, maintained, replaced or strengthened shall be stated in the item description.

850.4 Rates and Prices to be Inclusive

850.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **preparation of timber decking to receive concrete overlay** shall be inclusive of:

- (a) Removal of loose material and cleaning of retained deck planks;
- (b) Anti-fungal treatment;
- (c) Removal and replacement of unsound timber decking including machining timber to required sizes;
- (d) Tightening of timber decking including additional spikes where required; and
- (e) Hessian.

850.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **timber bridge maintenance and refurbishment** shall be inclusive of:

- (a) Removal of loose material and cleaning of retained bridge structure;
- (b) Anti-fungal treatment;
- (c) Adequately supporting the bridge structure;
- (d) Removal and disposal of redundant items, debris, rubbish and the like to spoil off-site;
- (e) Steel members complete with attached and loose connections, stiffeners, cleats, plates, shear studs, brackets, outriggers, corbels, flange plates, shims and the like;
- (f) Timber, steel or other packers;
- (g) Bolts, threaded rods, screws, chemical anchors, washers, curved washers, spikes and the like;
- (h) Site welding, site drilling, site cutting and the like;
- (i) Cutting and removing packing from conduits, ducts, pipes and the like;
- (j) Removal and replacement of unsound timber including machining timber to required sizes;
- (k) Filling unused bolt holes;
- (l) Surface treatments including corrosion protection;
- (m) Excavation in all materials including rock;
- (n) Backfilling with embankment quality material and compaction;
- (o) Disposal of surplus excavated material;
- (p) Reinstatement of surrounding surfaces;
- (q) Concrete, formwork and reinforcement;
- (r) Acrylic wrapping; and
- (s) Waterproof paste, sealant, epoxy, grout, non-shrink cementitious grout and the like.

851 NOT USED

852 NOT USED

853 NOT USED

854 NOT USED

855 NOT USED

856 NOT USED

857 NOT USED

858 NOT USED

859 NOT USED

860 Bridge Bearings

860.1 Classification of Items

Separate items shall be provided for the following:

- Bridge bearings.
- Approach slab bearings.

860.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Bearings	No.

860.3 Rates and Prices to be Inclusive

860.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **bearings** shall be inclusive of:

- Nuts, bolts, washers, dowels, dowel caps, protective caps, dust covers, sockets, sleeves, wrappings, adhesives and lubricants;
- Surface preparation and protection;
- Protective treatments including corrosion protection of metal components, painting and greasing;
- Marking bearings for identification purposes;
- Drilling or forming holes and pockets and casting-in bolts, dowels, sockets, base plates and anchorage assemblies and the like;
- Forming all plinths where required including all concrete, formwork and reinforcement;
- Temporary supports and stays to prevent displacement;
- Setting and releasing locking mechanisms;
- Adhesives, epoxy mortar, cement mortar, grout and the like including surface preparation;
- Alterations to concrete, formwork, reinforcement and the like; and
- Testing of bearings.

861 NOT USED

862 NOT USED

863 NOT USED

864 NOT USED

865 NOT USED

866 NOT USED

867 NOT USED

868 NOT USED

869 NOT USED

870 Compression Joint Seal

870.1 Classification of Items

Separate items shall be provided for the following:

- Compression joint seal (inclusive of expansion joint edgings and cover plates).

870.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Compression joint seal	m

870.3 Method of Measurement

870.3.1 The type and number of expansion joints shall be stated in the item description.

870.3.2 Expansion joint edgings and expansion joint cover plates shall not be measured separately.

870.4 Rates and Prices to be Inclusive

870.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **compression joint seal** shall be inclusive of:

- (a) Preparation of shop drawings;
- (b) Preparing and cleaning surfaces;
- (c) Priming and greasing surfaces of the joint;
- (d) Adhesives and sealants;
- (e) Masking, protection or other treatments and subsequent removal;
- (f) Complying with temperature constraints;
- (g) Expansion joint edgings and expansion joint cover plates;
- (h) Preventing displacement;
- (i) Templates, guides and temporary devices;
- (j) Setting the joint;
- (k) Forming or cutting sealing grooves in pavements including sealing;
- (l) Bedding mortars, grouting materials, filling materials, sealants, nosings and the like including grouting in holding-down bolts;
- (m) Treating surfaces of joint exposed at finished road level to prevent skidding;
- (n) Making good the gap between joint and adjacent pavement surface; and
- (o) Surface treatments including corrosion protection to metal components.

871 Finger Plate Expansion Joint

871.1 Classification of Items

Separate items shall be provided for the following:

- Finger plate expansion joint.

871.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Finger plate expansion joint	m

871.3 Method of Measurement

871.3.1 The type and number of expansion joints shall be stated in the item description.

871.4 Rates and Prices to be Inclusive

871.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **finger plate expansion joints** shall be inclusive of:

- (a) Preparation of shop drawings;
- (b) Preparation and cleaning of surfaces;
- (c) Templates, guides and temporary devices;
- (d) Setting the joint;
- (e) Protective or other treatments and greasing, including surface preparation;
- (f) Forming or cutting sealing grooves in pavements including sealing;
- (g) Bedding mortars, grouting materials, filling materials, sealants, nosings and the like including grouting in holding-down bolts;
- (h) Temporary protection measures and subsequent removal;
- (i) Treating surfaces of joint exposed at finished road level to prevent skidding;
- (j) Making good the gap between joint and adjacent pavement surface;
- (k) Surface treatments including corrosion protection; and
- (l) Cover plates.

872 NOT USED

873 NOT USED

874 NOT USED

875 Waterproof Membrane

875.1 Classification of Items

Separate items shall be provided for the following:

- Waterproof membrane.

875.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Waterproof membrane	m ²

875.3 Method of Measurement

- 875.3.1 Waterproof membrane shall be measured as the net area of the surface covered. No deduction shall be made for openings each not exceeding one square metre. No allowance shall be made for laps.
- 875.3.2 Waterproof membrane 300mm wide and less shall not be measured separately but the areas shall be included in the general waterproof membrane areas.

875.4 Rates and Prices to be Inclusive

- 875.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **waterproof membrane** shall be inclusive of:
- (a) Preparing, cleaning and drying surfaces;
 - (b) Priming, adhesive coats, undercoats and intermediate coats as appropriate;
 - (c) Laying to falls, cambers and curves;
 - (d) Nibs, angle fillets, external angles, mitres, stops and the like;
 - (e) Sealing at edges, chases, around interruptions and projections and the like;
 - (f) Making good imperfections;
 - (g) Joints and overlaps;
 - (h) Making good up to abutting surfaces including cleaning;
 - (i) Temporary measures to provide for drainage of surface water;
 - (j) Temporary protection measures and subsequent removal; and
 - (k) Protection of surrounding surfaces.

SERIES 900 - MISCELLANEOUS

901 Concrete – General Works

901.1 Classification of Items

Separate items shall be provided for the following:

- Concrete infill.
- Footpaths.

901.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Concrete infill	m ²
Footpaths	m ²

901.3 Method of Measurement

901.3.1 Concrete infill and footpaths shall be measured as the plan area. No deduction shall be made for openings each not exceeding one square metre.

901.4 Rates and Prices to be Inclusive

901.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **concrete infill** and **footpaths** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Trimming, grading, levelling and compacting base and sides of excavations;
- (e) Subgrade preparation;
- (f) Bedding and surround material;
- (g) Formwork, reinforcement, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (h) Finishing up to abutting surfaces;
- (i) Protection and maintenance of surfaces; and
- (j) Reinstatement of surrounding surfaces.

902 NOT USED

903 Fencing

903.1 Classification of Items

Separate items shall be provided for the following:

- Fences.
- Gates.
- Relocation of fences.
- Relocation of gates.

- Removal of redundant fences and gates.

903.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Fences	m
Gates	No.
Relocation of fences	m
Relocation of gates	No.
Removal of redundant fences and gates	m

903.3 Method of Measurement

903.3.1 Fences shall be measured as the developed length along the centreline from each end.

903.3.2 Removal of redundant gates shall not be measured separately but shall be included in the length of redundant fence removal.

903.4 Rates and Prices to be Inclusive

903.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **fences** and **gates** shall be inclusive of:

- (a) Clearing;
- (b) Excavation in all materials including rock;
- (c) Backfilling with embankment quality material and compaction;
- (d) Disposal of surplus excavated material;
- (e) Trimming or filling ground on line of fencing to maintain uniform clearance between bottom of fence or gate and ground;
- (f) Footings;
- (g) Baseplates, sockets, ends, ramps, angles, joint fittings, holding down bolts, washers, nuts, fastenings and the like;
- (h) Posts, hinges, fastenings, stops, locks, keys, fittings, chains, gate furniture and the like;
- (i) Strainer wires, strainer posts, strainer assemblies and the like;
- (j) Adjustment of fencing to a flowing alignment including additional lengths of posts;
- (k) Joining to existing fencing, walls, road safety barrier systems, traffic barriers for structures, handrails, balustrades and the like;
- (l) Making good severed ends of existing fences and other items, including fixing posts at ends of strained fences and restraining fences;
- (m) Forming openings in existing fences and making good;
- (n) Surface treatments including corrosion protection, painting, PVC coatings and powder coating; and
- (o) Reinstatement of pavements and surrounding surfaces.

903.4.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of fences and gates** shall be inclusive of:

- (a) Clearing;
- (b) Excavation in all materials including rock;
- (c) Backfilling with embankment quality material and compaction;
- (d) Removal of existing footings and disposal to spoil off-site;
- (e) Disposal of surplus excavated material;
- (f) Trimming or filling ground on line of fencing to maintain uniform clearance between bottom of fence or gate and ground;
- (g) Footings;
- (h) Baseplates, sockets, ends, ramps, angles, joint fittings, holding down bolts, washers, nuts, fastenings and the like;
- (i) Posts, hinges, fastenings, stops, locks, keys, fittings, chains, gate furniture and the like;
- (j) Strainer wires, strainer posts, strainer assemblies and the like;
- (k) Adjustment of fencing to a flowing alignment including additional lengths of posts;
- (l) Joining to existing fencing, walls, road safety barrier systems, traffic barriers for structures, handrails, balustrades and the like;
- (m) Making good severed ends of existing fences and other items, including fixing posts at ends of strained fences and restraining fences;
- (n) Forming openings in existing fences and making good; and
- (o) Reinstatement of pavements and surrounding surfaces.

903.4.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant fences and gates** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Removal of existing footings;
- (d) Reinstatement of pavements and surrounding surfaces;
- (e) Delivery to nominated storage area;
- (f) Disposal to spoil off-site; and
- (g) Making good severed ends of existing fences and other items, including fixing posts at ends of strained fences and restraining fences.

904 Noise Walls

904.1 Classification of Items

Separate items shall be provided for the following:

- Reinforced concrete footings to brick / block walls.
- Brick noise walls.
- Block noise walls.
- Piers to brick / block walls.
- Cappings to brick / block walls.

- Excavation in rock to brick / block walls.
- Concrete panel and post noise walls.

904.2 References

904.2.1 The units of measurement, the method of measurement and the rates and prices for excavation in rock to brick / block walls shall be in accordance with Series 300 – Earthworks, Part 302. Note the additional method of measurement requirements for excavation in rock to brick / block walls at 904.4.3.

904.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Reinforced concrete footings to brick / block walls	m ³
Brick noise walls	m ²
Block noise walls	m ²
Piers to brick / block walls	m
Cappings to brick / block walls	No.
Concrete panel and post noise walls	m

904.4 Method of Measurement

904.4.1 No deduction to reinforced concrete footings shall be made for:

- Built-in items, pipes, holes, ducts, pockets, sockets, mortices and the like each not exceeding 0.10 cubic metres in volume;
- Reinforcement; and
- Individual fillets, chamfers, splays, drip grooves, rebates, recesses, grooves and the like not exceeding 100 millimetres in girth.

904.4.2 Piers to brick / block walls shall be measured as “Extra Over.” The number of piers and pier dimensions on plan shall be stated in the item description.

904.4.3 Excavation in rock to brick / block walls shall be measured as “Extra Over.”

904.4.4 Brick / block noise walls shall be measured from the top level of the footing/foundation to the top level of the last wall course.

904.4.5 Concrete panel and post noise walls shall be measured as the developed length along the centreline from each end. The overall height of the noise wall panels shall be stated in the item description.

904.5 Rates and Prices to be Inclusive

904.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **reinforced concrete footings to brick / block walls** shall be inclusive of:

- Clearing;
- Topsoil removal and respreading of topsoil;
- Excavation in all materials except rock;
- Backfilling with embankment quality material and compaction;

- (e) Disposal of surplus excavated material;
- (f) Trimming, grading, levelling and compacting base and sides of excavations;
- (g) Bedding and surround material;
- (h) Formwork, reinforcement, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (i) Finishing up to abutting surfaces;
- (j) Protection and maintenance of surfaces; and
- (k) Reinstatement of surrounding surfaces.

904.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **brick and block noise walls, brick / block cappings and brick / block piers** shall be inclusive of:

- (a) Sample panels;
- (b) Bedding, jointing, coursing, pointing, fair-faced work, rough and fair cutting and cleaning;
- (c) Brick and limestone bricks, blocks, copings, bands, plinths, corbels, sills, bullnoses and the like;
- (d) Forming cavities, reveals, chases, rebates, recesses, angles, quoins and the like;
- (e) Ties, dowels, cramps and the like;
- (f) Centring and temporary supports;
- (g) Bonding into existing work or tying to concrete or other types of structures;
- (h) Reinforcement;
- (i) Filling cavities;
- (j) Building in pipes, bolts and the like and forming small openings; and
- (k) Damp-proof courses.

904.5.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **concrete panel and post noise walls** shall be inclusive of:

- (a) Sample panels;
- (b) Clearing;
- (c) Topsoil removal and respreading of topsoil;
- (d) Excavation in all materials including rock;
- (e) Backfilling with embankment quality material and compaction;
- (f) Disposal of surplus excavated material;
- (g) Trimming, grading, levelling, filling and compacting ground on line of noise walls to maintain uniform clearance between bottom of noise wall and ground;
- (h) Bedding and surround material;
- (i) Footings, posts, panels, cappings, capping channels, fittings, fixings, baseplates, sockets, angles, ends stops, holding down bolts, washers, nuts, fastenings, seals and the like;
- (j) Adjustment of noise walls to a flowing alignment including additional lengths of posts;
- (k) Joining to existing fencing, walls, road safety barrier systems, traffic barriers for structures, handrails, balustrades and the like;

- (l) All surface treatments including anti-graffiti coatings, corrosion protection, galvanising, painting, patterns, textures and powder coating;
- (m) Finishing up to abutting surfaces;
- (n) Protection and maintenance of surfaces; and
- (o) Reinstatement of pavements and surrounding surfaces.

905 Limestone Retaining Walls

905.1 Classification of Items

Separate items shall be provided for the following:

- Reinforced concrete footings.
- Limestone retaining walls.
- Excavation in rock.

905.2 References

905.2.1 The units of measurement, the method of measurement and the rates and prices for excavation in rock shall be in accordance with Series 300 – Earthworks, Part 302. Note the additional method of measurement requirements for excavation in rock at 905.4.2.

905.3 Units of Measurement

The units of measurement shall be:

Description	Unit
Reinforced concrete footings	m ³
Limestone retaining walls	m ²

905.4 Method of Measurement

905.4.1 No deduction to reinforced concrete footings shall be made for:

- (a) Built-in items, pipes, holes, ducts, pockets, sockets, mortices and the like each not exceeding 0.10 cubic metres in volume;
- (b) Reinforcement; and
- (c) Individual fillets, chamfers, splays, drip grooves, rebates, recesses, grooves and the like not exceeding 100 millimetres in girth.

905.4.2 Excavation in rock shall be measured as “Extra Over.”

905.4.3 Limestone retaining walls shall be measured as the net area of the wall face.

905.4.4 Separate items shall be provided for measurement of differing number of course height walls.

905.4.5 Walls shall be measured from the top level of the footing/foundation to the top level of the last wall course.

905.5 Rates and Prices to be Inclusive

905.5.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **reinforced concrete footings** shall be inclusive of:

- (a) Clearing;
- (b) Topsoil removal and respreading of topsoil;
- (c) Excavation to accommodate the foundation width of the retaining wall including additional required working area in all materials except rock;
- (d) Backfilling with embankment quality material and compaction;
- (e) Disposal of surplus excavated material;
- (f) Trimming, grading, levelling and compacting base and sides of excavations;
- (g) Bedding and surround material;
- (h) Formwork, reinforcement, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (i) Finishing up to abutting surfaces;
- (j) Protection and maintenance of surfaces; and
- (k) Reinstatement of surrounding surfaces.

905.5.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **limestone retaining walls** shall be inclusive of:

- (a) Bedding, jointing, coursing, pointing, fair-faced work, rough and fair cutting and cleaning;
- (b) Brick and limestone bricks, blocks, copings, bands, plinths, corbels, sills, bullnoses and the like;
- (c) Forming cavities, reveals, chases, rebates, recesses, angles, quoins and the like;
- (d) Ties, dowels, cramps and the like;
- (e) Centring and temporary supports;
- (f) Bonding into existing work or tying to concrete or other types of structures;
- (g) Reinforcement;
- (h) Filling cavities;
- (i) Building in pipes, bolts and the like and forming small openings; and
- (j) Damp-proof courses.

906 Stock Grids

906.1 Classification of Items

Separate items shall be provided for the following:

- Stock grid pit.
- Stock grids.
- Removal of redundant stock grids.

906.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Stock grid pit	No.
Stock grids	No.

Description	Unit
Removal of redundant stock grids	No.

906.3 Rates and Prices to be Inclusive

906.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **stock grid pit** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Surface treatments including corrosion protection and painting;
- (e) Reinstatement of pavements and surrounding surfaces;
- (f) Bedding, haunching and surround material;
- (g) Boxes, link slabs and fittings including cutting, laying, jointing, sealants and bedding;
- (h) Concrete, formwork, reinforcement, surface finishes, curing, treatment of concrete faces, construction joints, expansion joints, contraction joints and joint fillers;
- (i) Building in pipes and boxes;
- (j) Surface finishes;
- (k) Making good overbreak with embankment quality material and compaction;
- (l) Building into drainage structures and end treatments;
- (m) Stop ends, bends and junctions;
- (n) Reinstatement of surrounding surfaces;
- (o) Flushing and cleaning; and
- (p) Checking for line and level.

906.3.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **stock grid** shall be inclusive of:

- (a) Preparation of shop drawings;
- (b) Examining and checking steel for segregation, laminations, cracks and surface flaws, and carrying out any remedial works;
- (c) Cutting, marking off, drilling, notching, machining, form fitting, edge preparation, cambering, welding, rivets, bolting, pre-heating and taking measures to counteract shrinkage or distortion due to welding, gouging, thermal cutting or heat treatment;
- (d) Shear studs including welding to steel members;
- (e) Handling, lifting, assembly and erection including jacking, craneage and stacking steelwork clear of the ground;
- (f) Bolts, holding down bolts, washers, nuts, fastenings, casting in bolts, bonding agents, attachments, fixings, fillers and sealing materials and the like;
- (g) Wedging and grouting under base plates;

- (h) Temporary earthworks, skates, packers, bracing, wedging, packing, bolting and welding including that required for concrete work and transporting beams, subsequent removal and making good damaged materials and coatings;
- (i) Descaling and wire brushing parts of steelwork to be encased in or in contact with concrete;
- (j) Materials testing and providing certificates of compliance;
- (k) Weld testing and inspection;
- (l) Fabrication inspection and air tightness including provision of threaded nipples and their removal and seal welding hole after testing;
- (m) Protecting steelwork including making good damaged materials and coatings;
- (n) Providing run on and run off plate extension plates and extending welds at joints;
- (o) Qualification tests for welders;
- (p) Procedure trials for welding, flame cutting and shearing;
- (q) Surface treatments including corrosion protection, galvanising, painting and other surface finishes; and
- (r) Reinstatement of pavements and surrounding surfaces.

906.3.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant stock grid** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Reinstatement of pavements and surrounding surfaces;
- (d) Delivery to nominated storage area; and
- (e) Disposal to spoil off-site.

907 Litter Bins

907.1 Classification of Items

Separate items shall be provided for the following:

- Litter bins.
- Removal of redundant litter bins.
- Relocation of litter bins.

907.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Litter bins	No.
Removal of redundant litter bins	No.
Relocation of litter bins	No.

907.3 Rates and Prices to be Inclusive

907.3.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **litter bins** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Footings;
- (e) Concrete, formwork and reinforcement;
- (f) Surface treatments including corrosion protection, painting and anti-graffiti coating; and
- (g) Reinstatement of pavements and surrounding surfaces.

907.3.2 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **removal of redundant litter bins** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Removal of existing footings;
- (d) Reinstatement of pavements and surrounding surfaces;
- (e) Delivery of salvageable material to nominated storage area; and
- (f) Disposal to spoil off-site.

907.3.3 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **relocation of litter bins** shall be inclusive of:

- (a) Excavation in all materials including rock;
- (b) Backfilling with embankment quality material and compaction;
- (c) Disposal of surplus excavated material;
- (d) Removal of existing footings and disposal to spoil off-site;
- (e) Storage;
- (f) Footings;
- (g) Concrete, formwork and reinforcement;
- (h) Reinstatement of pavements and surrounding surfaces;
- (i) Cleaning of litter bin; and
- (j) Reinstatement of surface treatments including corrosion protection, painting and anti-graffiti coating.

908 Anti-Graffiti and Approved Anti-Graffiti Products

908.1 Classification of Items

Separate items shall be provided for the following:

- Anti-graffiti coating.
- Inspections for occurrences and removal of graffiti.

908.2 Units of Measurement

The units of measurement shall be:

Description	Unit
Anti-graffiti coating	m ²
Inspections for occurrences and removal of graffiti	Item

908.3 Method of Measurement

908.3.1 The measurement shall be the area of the anti-graffiti coating shown on the drawings or specified, except for irregular surfaces in which case the measurement shall be the plane (not developed) area of the surface. No deduction shall be made for openings each not exceeding one square metre.

908.4 Rates and Prices to be Inclusive

908.4.1 In accordance with Section 3 Preambles, part 3.2 General Directions, the rates and prices for **anti-graffiti coating** shall be inclusive of:

- (a) Provision of samples and trial panels;
- (b) Removal of existing graffiti;
- (c) Preparation of the surfaces to receive the anti-graffiti coating; and
- (d) Masking surrounding surfaces.