

Specification (Measurement)

**Transport and Main Roads Specifications
MRS331 Overhead Line Equipment (OHLE)**

March 2024



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1 Introduction

This Specification applies to the construction of overhead wiring structures and overhead wiring.

This Specification shall be read in conjunction with MRS01 *Introduction to Specifications* and other Specifications as appropriate.

This Specification forms part of the Transport and Main Roads Specification Manual.

2 Measurement of work

2.1 Standard Work Items

In accordance with the provisions of Clause 2.1.3 of MRS01 *Introduction to Specifications*, the Standard Work Items incorporated in this Specification are listed in Table 2.1.

Table 2.1 – Standard Work Items

Standard Item No.	Description	Unit of Measurement
OHLE Removal / Demolition		
80351	Removal or demolition of OHLE foundations, [description]	each
80352	Removal or demolition of OHLE [single masts cantilever masts portals], complete, [description]	each
80353	Removal or demolition of OHLE [drop verticals guy anchor assembly anchor brackets], [description]	each
80354	Removal or demolition of OHLE bonds, [description]	each
80355	Removal or demolition of OHLE wiring, complete, [description]	track m
80356	Removal or demolition of OHLE [catenary contact return earth] wire, [description]	m
80357	Removal or demolition of OHLE cantilevers, complete, [description]	each
80358	Removal or demolition of OHLE [dropper assembly jumper assembly terminations], [description]	each
80359	Removal or demolition of OHLE mid point tie assemblies, [with without] turnbuckle, [description]	each
80360	Removal or demolition of OHLE [return conductor supports pull off arms insulators feeders switches switching frames section insulators isolators motorised switching operating unit], [description]	each
OHLE Foundation		
80381	OHLE foundations, [regular piled in rock], [description]	each
OHLE Structures Supply		
80401	Supply of OHLE single masts, complete, [description]	each
80402	Supply of OHLE cantilever masts, complete, [description]	each
80403	Supply of OHLE portals, complete, [description]	each
80404	Supply of OHLE [drop verticals guy anchor assembly anchor brackets], [description]	each
80405	Supply of OHLE bonds, [description]	each

Standard Item No.	Description	Unit of Measurement
OHLE Structures Installation		
80421	Installation of OHLE single masts, complete, [description]	each
80422	Installation of OHLE cantilever masts, complete, [description]	each
80423	Installation of OHLE portals, complete, [description]	each
80424	Installation of OHLE [drop verticals guy anchor assembly anchor brackets], [description]	each
80425	Installation of OHLE bonds, [description]	each
OHLE Structures Supply / Installation		
80441	Supply and installation of OHLE single masts, complete, [description]	each
80442	Supply and installation of OHLE cantilever masts, complete, [description]	each
80443	Supply and installation of OHLE portals, complete, [description]	each
80444	Supply and Installation of OHLE [drop verticals guy anchor assembly anchor brackets], [description]	each
80445	Supply and installation of OHLE bonds, [description]	each
OHLE Wiring Supply		
80461	Supply of OHLE wiring, complete, [description]	m
80462	Supply of OHLE [catenary contact return earth] wire, [description]	m
80463	Supply of OHLE cantilevers, [description]	each
80464	Supply of OHLE [dropper jumper] assembly, [description]	each
80465	Supply of OHLE terminations, [fixed moving] anchor, [single double] wire, [with without] guy, [description]	each
80466	Supply of OHLE mid point tie assemblies, [with without] turnbuckle, [description]	each
80467	Supply of OHLE [return conductor supports pull off arms insulators feeders switches switching frames section insulators isolators], [description]	each
OHLE Wiring Installation		
80481	Installation of OHLE wiring, complete, [description]	track m
80482	Installation of OHLE [catenary contact return earth] wire, [description]	m
80483	Installation of OHLE cantilevers, [description]	each
80484	Installation of OHLE [dropper jumper] assembly, [description]	each
80485	Installation of OHLE terminations, [fixed moving] anchor, [single double] wire, [with without] guy, [description]	each
80486	Installation of OHLE mid point tie assemblies, [with without] turnbuckle, [description]	each
80487	Installation of OHLE [return conductor supports pull off arms insulators feeders switches switching frames section insulators isolators], [description]	each

Standard Item No.	Description	Unit of Measurement
OHLE Wiring Supply / Installation		
80511	Supply and installation of OHLE wiring, complete, [description]	track m
80512	Supply and installation of OHLE [catenary contact return earth] wire, [description]	m
80513	Supply and installation of OHLE cantilevers, [description]	each
80514	Supply and installation of OHLE [dropper jumper] assembly, [description]	each
80515	Supply and installation of OHLE terminations, [fixed moving] anchor, [single double] wire, [with without] guy, [description]	each
80516	Supply and installation of OHLE mid point tie assemblies, [with without] turnbuckle, [description]	each
80517	Supply and installation of OHLE [return conductor supports pull off arms insulators feeders switches switching frames section insulators isolators], [description]	each
OHLE Miscellaneous		
80531	Testing and commissioning of OHLE, [description]	lump sum

2.2 Work Operations

Work Operations included in the Standard Work Items are specified in the relevant clause adjacent to each Standard Work Item listed in Table 2.1.

2.2.1 OHLE Removal / Demolition

Item 80351 Removal or demolition of OHLE foundations, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) excavation to expose foundations
- c) removal of foundations
- d) utilising or disposing of excavated and removed or demolished materials, and
- e) backfilling resulting excavations.

Item 80352 Removal or demolition of OHLE [single masts | cantilever masts | portals], complete, [description]

Item 80353 Removal or demolition of OHLE [drop verticals | guy anchor assembly | anchor brackets], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) de-energisation of circuits
- c) removal of masts, booms, bridges, kneebraces, drop verticals, guy anchors, anchor plates, anchor bracket, access ladders and walkways, access prevention devices, and any other fittings and attachments, as appropriate

- d) dismantling of the above components, as appropriate
- e) transporting, unloading, and stockpiling of components for re-use at a later stage, where necessary
- f) transport of materials selected for salvage to the nominated storage Site, and
- g) removing from Site and disposing of all surplus materials.

Item 80354 Removal or demolition of OHLE bonds, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) de-energisation of circuits
- c) removal of bonding equipment
- d) removing from Site and disposing of all surplus materials, and
- e) making good of any rail connection.

Item 80355 Removal or demolition of OHLE wiring, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) de-energisation of circuits
- c) disconnection of cables
- d) dismantling, demolition, and removal of components as appropriate
- e) transporting, unloading, and stockpiling of components for re-use at a later stage, where necessary
- f) transport of materials selected for salvage to the nominated storage Site, and
- g) removing from Site and disposing of all surplus materials.

Item 80356 Removal or demolition of OHLE [catenary | contact | return | earth] wire, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) de-energisation of circuits
- c) disconnection of cables
- d) dismantling, demolition, and removal of components as appropriate
- e) transporting, unloading, and stockpiling of components for re-use at a later stage, where necessary
- f) transport of materials selected for salvage to the nominated storage Site, and
- g) removing from Site and disposing of all surplus materials.

Item 80357 Removal or demolition of OHLE cantilevers, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) de-energisation of circuits
- c) removal of cantilever components including jibs, tie rods, pull off and push off arms, insulator posts, insulators, clamps, and any other fittings and attachments, as appropriate
- d) dismantling of the above components, as appropriate
- e) transporting, unloading, and stockpiling of components for re-use at a later stage, where necessary
- f) transport of materials selected for salvage to the nominated storage Site, and
- g) removing from Site and disposing of all surplus materials.

Item 80358 Removal or demolition of OHLE [dropper assembly | jumper assembly | terminations], [description]

Item 80359 Removal or demolition of OHLE mid point tie assemblies, [with | without] turnbuckle, [description]

Item 80360 Removal or demolition of OHLE [return conductor supports | pull off arms | insulators | feeders | switches | switching frames | section insulators | isolators | motorised switching operating unit], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) de-energisation of circuits
- c) removal of components, fittings, and attachments, as appropriate
- d) dismantling of the above components, as appropriate
- e) transporting, unloading, and stockpiling of components for re-use at a later stage, where necessary
- f) transport of materials selected for salvage to the nominated storage Site, and
- g) removing from Site and disposing of all surplus materials.

2.2.2 OHLE Foundations

Item 80381 OHLE foundations, [regular | piled | in rock], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) excavation for footing
- c) disposal of excavated material
- d) provision of formwork, where necessary
- e) supply and installation of reinforcing, anchor cage or ragbolt assembly, as appropriate

- f) supply of and installation of holding down bolts, as appropriate
- g) grouting of bar in rock, as appropriate
- h) supply, placement and finishing of concrete
- i) stripping formwork and cleaning up, and
- j) backfill, as appropriate.

2.2.3 OHLE Structures Supply

Item 80401 Supply of OHLE single masts, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of mast
- c) supply of all fixing bolts, nuts and washers, and
- d) handling, transport to Site, and storage on the Site.

Item 80402 Supply of OHLE cantilever masts, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of mast, boom, and kneebrace
- c) supply of all fixing bolts, nuts and washers, and
- d) handling, transport to Site, and storage on the Site.

Item 80403 Supply of OHLE portals, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of masts, bridge, and kneebraces
- c) supply of all fixing bolts, nuts and washers, and
- d) handling, transport to Site and storage on the Site.

Item 80404 Supply of OHLE [drop verticals | guy anchor assembly | anchor brackets], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of components
- c) supply of all fixing bolts, nuts and washers, and
- d) handling, transport to Site and storage on the Site.

Item 80405 Supply of OHLE bonds, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of bonding cable and crimp lug, where necessary
- c) supply of Cadweld tail, mould, and ancillary welding materials, where necessary
- d) supply of all fixing bolts, nuts, and washers, and
- e) handling, transport to Site and storage on the Site.

2.2.4 OHLE Structures Installation

Item 80421 Installation of OHLE single masts, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and cartage on the Site, where necessary
- c) assembly of mast
- d) installation of mast on foundation, and
- e) mortar grouting of base plate, where necessary.

Item 80422 Installation of OHLE cantilever masts, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and cartage on the Site, where necessary
- c) assembly of mast, boom, and kneebrace
- d) installation of mast on foundation, and
- e) mortar grouting of base plate, where necessary.

Item 80423 Installation of OHLE portals, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and cartage on the Site, where necessary
- c) assembly of masts, bridge, and kneebraces
- d) installation of masts on foundation, and
- e) mortar grouting of base plate, where necessary.

Item 80424 Installation of OHLE [drop verticals | guy anchor assembly | anchor brackets], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

- b) rehandling and cartage on the Site, where necessary
- c) assembly of components, and
- d) installation of components.

Item 80425 Installation of OHLE bonds, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and cartage on the Site, where necessary
- c) grinding of the structure and rail surface, where necessary
- d) drilling of structure and rail, where necessary
- e) fitting of crimp lugs to cable, and
- f) connection to structure and rail by bolting or welding, as appropriate.

2.2.5 OHLE Structures Supply / Installation

Item 80441 Supply and installation of OHLE single masts, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of mast
- c) supply of all fixing bolts, nuts and washers
- d) handling, transport to Site, and storage on the Site
- e) rehandling and transport on the Site, where necessary
- f) assembly of mast
- g) installation of mast on foundation, and
- h) mortar grouting of base plate, where necessary.

Item 80442 Supply and installation of OHLE cantilever masts, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of mast, boom, and kneebrace
- c) supply of all fixing bolts, nuts and washers
- d) handling, transport to Site, and storage on the Site
- e) rehandling and transport on the Site, where necessary
- f) assembly of mast, boom, and kneebrace
- g) installation of mast on foundation, and
- h) mortar grouting of base plate, where necessary.

Item 80443 Supply and installation of OHLE portals, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of masts, bridge, and kneebraces
- c) supply of all fixing bolts, nuts and washers
- d) handling, transport to Site and storage on the Site
- e) rehandling and transport on the Site, where necessary
- f) assembly of masts, bridge, and kneebraces
- g) installation of masts on foundation, and
- h) mortar grouting of base plate, where necessary.

Item 80444 Supply and installation of OHLE [drop verticals | guy anchor assembly | anchor brackets], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of components
- c) supply of all fixing bolts, nuts and washers
- d) handling, transport to Site and storage on the Site
- e) rehandling and transport on the Site, where necessary
- f) assembly of components, and
- g) installation of components

Item 80445 Supply and installation of OHLE bonds, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of bonding cable and crimp lug, where necessary
- c) supply of Cadweld tail, mould, and ancillary welding materials, where necessary
- d) supply of all fixing bolts, nuts, and washers
- e) handling, transport to Site and storage on the Site
- f) rehandling and transport on the Site, where necessary
- g) grinding of the structure and rail surface, where necessary
- h) drilling of structure and rail, where necessary
- i) fitting of crimp lugs to cable, and
- j) connection to structure and rail by bolting or welding, as appropriate.

2.2.6 OHLE Wiring Supply

Item 80461 Supply of OHLE wiring, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of wire
- c) supply and fabrication of cantilever components including jibs, tie rods, pull off and push off arms, insulator posts, insulators, clamps, and any other fittings and attachments, as appropriate
- d) supply and fabrication of all other OHLE components
- e) supply of all fixing bolts, nuts, and washers, and
- f) handling, transport to Site, and storage on the Site.

Item 80462 Supply of OHLE [catenary | contact | return | earth] wire, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of wire, and
- c) handling, transport to Site, and storage on the Site.

Item 80463 Supply of OHLE cantilevers, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of cantilever components including jibs, tie rods, pull off and push off arms, insulator posts, insulators, clamps, and any other fittings and attachments, as appropriate, and
- c) handling, transport to Site, and storage on the Site.

Item 80464 Supply of OHLE [dropper | jumper] assembly, [description]

Item 80465 Supply of OHLE terminations, [fixed | moving] anchor, [single | double] wire, [with | without] guy, [description]

Item 80466 Supply of OHLE mid point tie assemblies, [with | without] turnbuckle, [description]

Item 80467 Supply of OHLE [return conductor supports | pull off arms | insulators | feeders | switches | switching frames | section insulators | isolators], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of all components
- c) supply of all fixing bolts, nuts, and washers, and
- d) handling, transport to Site, and storage on the Site.

2.2.7 OHLE Wiring Installation

Item 80481 Installation of OHLE wiring, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and transport on the Site, where necessary
- c) preassembly of components, as necessary
- d) assembly and installation of cantilever on mast or drop vertical
- e) assembly and installation of all other components on mast, boom, bridge, or drop vertical, as appropriate
- f) installation of wire, and
- g) connection and termination of wire.

Item 80482 Installation of OHLE [catenary | contact | return | earth] wire, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and transport on the Site, where necessary
- c) installation of wire, and
- d) connection and termination of wire.

Item 80483 Installation of OHLE cantilevers, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and transport on the Site, where necessary
- c) preassembly of cantilever components, as necessary, and
- d) assembly and installation of cantilever on mast or drop vertical.

Item 80484 Installation of OHLE [dropper | jumper] assembly, [description]

Item 80485 Installation of OHLE terminations, [fixed | moving] anchor, [single | double] wire, [with | without] guy, [description]

Item 80486 Installation of OHLE mid point tie assemblies, [with | without] turnbuckle, [description]

Item 80487 Installation of OHLE [return conductor supports | pull off arms | insulators | feeders | switches | switching frames | section insulators | isolators], [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) rehandling and transport on the Site, where necessary

- c) preassembly of components, as necessary, and
- d) assembly and installation of components on mast, boom, bridge, or drop vertical, as appropriate.

2.2.8 OHLE Wiring Supply / Installation

Item 80511 Supply and installation of OHLE wiring, complete, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of wire
- c) supply and fabrication of cantilever components including jibs, tie rods, pull off and push off arms, insulator posts, insulators, clamps, and any other fittings and attachments, as appropriate
- d) supply and fabrication of all other OHLE components
- e) supply of all fixing bolts, nuts, and washers
- f) handling, transport to Site, and storage on the Site
- g) rehandling and transport on the Site, where necessary
- h) preassembly of components, as necessary
- i) assembly and installation of cantilever on mast or drop vertical
- j) assembly and installation of all other components on mast, boom, bridge, or drop vertical, as appropriate
- k) installation of wire, and
- l) connection and termination of wire.

Item 80512 Supply and installation of OHLE [catenary | contact | return | earth] wire, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of wire
- c) handling, transport to Site, and storage on the Site
- d) rehandling and transport on the Site, where necessary
- e) installation of wire, and
- f) connection and termination of wire.

Item 80513 Supply and installation of OHLE cantilevers, [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*

- b) supply and fabrication of cantilever components including jibs, tie rods, pull off and push off arms, insulator posts, insulators, clamps, and any other fittings and attachments, as appropriate
- c) handling, transport to Site, and storage on the Site
- d) rehandling and transport on the Site, where necessary
- e) preassembly of cantilever components, as necessary, and
- f) assembly and installation of cantilever on mast or drop vertical.

Item 80514 **Supply and installation of OHLE [*dropper* | *jumper*] assembly, [*description*]**

Item 80515 **Supply and installation of OHLE terminations, [*fixed* | *moving*] anchor, [*single* | *double*] wire, [*with* | *without*] guy, [*description*]**

Item 80516 **Supply and installation of OHLE mid point tie assemblies, [*with* | *without*] turnbuckle, [*description*]**

Item 80517 **Supply and installation of OHLE [*return conductor supports* | *pull off arms* | *insulators* | *feeders* | *switches* | *switching frames* | *section insulators* | *isolators*], [*description*]**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and fabrication of all components
- c) supply of all fixing bolts, nuts, and washers
- d) handling, transport to Site, and storage on the Site
- e) rehandling and transport on the Site, where necessary
- f) preassembly of components, as necessary, and
- g) assembly and installation of components on mast, boom, bridge, or drop vertical, as appropriate.

2.2.9 OHLE Miscellaneous

Item 80531 **Testing and commissioning of OHLE, [*description*]**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) preparation of inspection and testing plan
- c) interface checks
- d) visual inspection
- e) pantograph running test
- f) electrical tests
- g) record and rectification of hazards and defects, where practical

- h) certification and handover, and
- i) as built documentation.

2.3 Measurement

If any item for which a quantity of work is listed in the Schedule of Rates has not been priced by the Contractor, it will be deemed that due allowance has been made in the prices of other items for the cost of the activity which has not been priced.

2.3.1 Measurement of OHLE structures and OHLE wiring

This Specification provides Standard Work Items for:

- a) supply only
- b) installation only, and
- c) supply and installation

of overhead line equipment components.

Any combination of Standard Work Items relating to these methods of measurement may be used in the Schedule of Rates. However, where a Standard Work Item for supply and installation of a particular component or group of components is included in the Schedule of Rates, no supply only nor installation only Standard Work Item shall also apply to that component or group of components, as applicable.

2.3.2 Measurement of OHLE bonds

Where Standard Work Items 80405, 80425, and/or 80445 are not included in the Schedule of Rates for the Contract, the Work Operations associated with that Work Item shall be deemed to be included in the other Work Items included in the Contract.

2.3.3 Measurement of complete items

Where a Standard Work Item for supply and installation of a complete OHLE group of components is included in the Schedule of Rates, no supply only, installation only, nor supply and installation Standard Work Item shall also apply to that work.

2.4 Calculation of quantities

2.4.1 General

Unless specified otherwise in Clause 2.4, quantities shall be calculated in accordance with the provisions of Clause 2.1.1 of MRS01 *Introduction to Specifications*.

2.4.2 Supply only

Where overhead line equipment components are supplied only under the Contract (i.e., not installed), the quantity shall be the exact quantity supplied and quantities shall not be rounded in accordance with Clause 2.1.1 of MRS01 *Introduction to Specifications*.

Where overhead line equipment components are installed only or are supplied and installed under the Contract, the quantity shall be measured in accordance with the remainder of this Clause and normal rounding of the final quantity shall apply.

2.4.3 Overhead wiring

The quantity shall be the length of overhead wiring run along the centreline of the track as shown on or calculated from the Drawings. Any additional wiring for sag, stagger, terminations and the like are to be addressed in the rate.

2.5 Overhead line equipment materials supplied by the Principal

2.5.1 Supply of overhead line equipment materials

Where listed in the Principal Supplied Material List (Form C7827), overhead line equipment materials shall be supplied by the Principal. Where not so listed, trackwork materials shall be supplied by the Contractor.

2.5.2 Supply location

Overhead line equipment materials supplied by the Principal will be made available at the point of delivery and by the transport mode shown in the Principal Supplied Material List (Form C7827).

2.5.3 Time of delivery

The time of delivery shall generally conform to the construction program supplied by the Contractor with its tender.

Should on-Site construction be delayed, the Contractor may be required to accept delivery of the overhead line equipment materials at any time after the programmed date and to store the overhead line equipment materials at no cost to the Principal.

2.5.4 Acceptance of overhead line equipment materials by the Contractor

The Contractor shall check the overhead line equipment materials for quantity and condition upon taking delivery and shall immediately report to the Administrator any defect or deficiency.

Nonconformance

2.5.5 Damage to overhead line equipment materials

In the event of any overhead line equipment materials sustaining damage after the overhead line equipment materials has been accepted by the Contractor or Principal, the overhead line equipment materials shall be set aside until it has been inspected by the Administrator or Principal.

Nonconformance The cost of repairs to the damaged overhead line equipment materials and the cost of replacing the rejected overhead line equipment materials shall be borne by the Contractor or manufacturer.

