

- Measurement 6 The measurement of trench for cable shall be the summation of the distance along the centre line of the route between the following points:
- (a) face of foundation to post, road lighting column. Lit Sign Unit, feeder pillar, electricity supply point and the like;
 - (b) the intersection of the centre line of trenches at trench junctions;
 - (c) the position of trench terminations shown in the Contract.

The measurement of trench for cable shall be measured once only irrespective of the number of cables in the trench. The depth of cable trenches shall be the vertical measurement between the underside of the bedding, or if no bedding is specified the underside of the cable, and the Earthworks Outline.

- 7 The measurement of cable shall be the summation of the individual lengths along the centre line of the route between the points of cable termination at each item of equipment.

Points of cable termination shall be:

- (a) in the case of loop detector feeders - the point at which the cable enters the terminal block;
- (b) in all other cases - the point at which the cables enter the boxes, distributors, lighting columns, cut-outs and the like.

- Itemisation 8 Separate items shall be provided for cabling in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Trench for cable, depth not exceeding 1.5 metres
	2 Trench for cable, depth exceeding 1.5 metres but not exceeding 2.0 metres and so on in steps of 0.5 metres
	3 Cable
II	1 Different widths of trench
	2 Different types and sizes of cable
III	1 Supplied by National Roads Authority

- Trench for Cable** 9 The items for trench for cable shall in accordance with the Preambles to Bill of Quantities General Directions include for:

- Item Coverage
- (a) excavation of acceptable material (as Series 600 paragraphs 17 and 18);
 - (b) excavation of unacceptable material (as Series 600 paragraph 19);
 - (c) excavation in Hard Material (as Series 600 paragraph 23);
 - (d) additional depth of excavation to maintain specified cover at obstructions;

- (e) additional excavation to accommodate extra lengths of cable;
- (f) locating, working around and supporting pipes, cables, services, apparatus and the like;
- (g) trimming, levelling and compacting;
- (h) cable bedding and covering;
- (i) backfilling and compaction;
- (j) troughing, lids, access points and bedding;
- lk**) disposal of material (as Series 600 paragraph 39);
- (l) marking tape or cable covers;
- (m) reinstatement of surfaces;
- (n) site records.

Cable

10 The items for cable shall in accordance with the Preambles to Bill of Quantities General Directions include for:

Item Coverage

- (a) extra length of cable required for connection into a unit, future retermination and tying in;
- (b) unsealing, clearing and swabbing out ducts, drawing cables through, replacing draw ropes, plugging and sealing duct ends and marking;
- (c) intermediate supports and fixing devices where cables leave trench and prior to entry into equipment;
- (d) supports to vertical cables;
- (e) sealing to cable ends;
- (f) cutting, tying together, sealing, coiling and strapping of unused cores;
- (g) unscheduled joints;
- (h) marker blocks, marker tape, identification tags, sleeves and the like;
- (i) twisting and snaking;
- l j**) preparation and supply of record drawings;
- (k) service connections and commissioning;
- (l) additional protection and support;
- (m) site records and colour coding.

Cable Supplied by the National Roads Authority

11 The items for cable supplied by the National Roads Authority shall in accordance with the Preambles to Bill of Quantities General Directions include for:

Item Coverage

- (a) loading, transporting from store, unloading and positioning for installation or re-installation;
- (b) replacing items damaged in the foregoing operations;
- (c) cable (as this Series paragraph 10);
- (d) modification and new materials.

Cable Joints and Terminations

Units

12 The unit of measurement shall be:

- (i) cable joints, cable terminations number.

Measurement

13 Cable joints shall be measured only where they are required specifically by the Contract. Unscheduled cable joints in running lengths shall not be measured.

Itemisation

14 Separate items shall be provided for cable joints and cable terminations in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Cable joint
	2 Cable termination
II	1 Different types
III	1 Different sizes

Cable Joints and Cable Terminations

15 The items for cable joints and cable terminations shall in accordance with the Preambles to Bill of Quantities General Directions include for:

Item Coverage

- (a) preparing, stripping and cleaning ends;
- (b) connectors, glands, clamps, sleeves, cleats, tags and terminal blocks;
- (c) connecting conductors to terminals;
- (d) removing "knock outs" and drilling backboard;
- (e) insulating ends of unused conductors;
- (f) bonding;
- (g) jointing kits;

- (h) numbering and lettering;
- (i) complying with wiring regulations and earthing (other than earth electrodes);
- (j) protection, curing and support of cable joints and keeping the cable joint free of moisture;
- (k) markers;
- (l) additional excavation in any material (as Series 600 paragraphs 17,18, 19 and 23);
- (m) links and jumper leads;
- (n) building out;
- (O) site records.

Feeder Pillars

Units **16** The unit of measurement shall be:

- (1) feeder pillar.....number.

Itemisation **17** Separate items shall be provided for feeder pillars in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Each type of feeder pillar
II	1 Supplied by National Roads Authority

Feeder Pillars **18** The items for feeder pillars shall in accordance with the Preambles to Bill of Quantities General Directions include for:

- Item Coverage
- (a) excavation of acceptable material (as Series 600 paragraphs 17 and 18);
 - (b) excavation of unacceptable material (as Series 600 paragraph 19);
 - (c) excavation in Hard Material (as Series 600 paragraph 23);
 - (d) brickwork, blockwork and stonework (as Series 2400 paragraphs 4 and 8);
 - (e) backfilling and compaction;
 - (f) disposal of material (as Series 600 paragraph 39);
 - (g) building in or forming cable ducts in bases;
 - (h) concrete (as Series 1700 paragraphs 4 and 9);

- (i) formwork (as Series 1700 paragraph 14);
- (j) reinforcement (as Series 1700 paragraph 25);
- (k) removing knock-outs, drilling or forming holes and pockets and casting in bars, sockets, base plates, plinths and anchorage assemblies;
- (l) footways and paved areas (as Series 1100 paragraph 21);
- (m) adhesives and epoxy or polyester mortar, bedding mortar or grout;
- (n) backboards, fixings, protective caps, sealing, grommets, spacers, mounting plates and strips;
- (o) complying with wiring regulations and earthing (other than earth electrodes);
- (p) conduit including screwed and threaded connections, bends, tees and the like and draw wires;
- (q) electrical equipment, batteries, colour coding, wiring and making connections, excluding electricity supplier's connection;
- (r) threading cable through ducts, sleeves, conduit and the like;
- (s) doors, locks and keys;
- (t) protective system (as Series 1900 paragraph 4);
- (u) notices, labelling, recording numbering and lettering;
- (v) in the case of equipment supplied by the National Roads Authority, loading, transporting from store, unloading and positioning for installation or re-installation and replacing items damaged in the foregoing operations;
- (w) filling, bedding and sealing;
- (x) cleaners, solvents and dessicants;
- (y) preparation and supply of record drawings;
- (z) service connections and commissioning.

**Feeder Pillars Supplied by
the National Roads Authority** **19**

The items for feeder pillars supplied by the National Roads Authority shall in accordance with the Preambles to Bill of Quantities General Directions include for:

Item Coverage

- (a) loading, transporting from store, unloading and positioning for installation or re-installation;
- (b) replacing items damaged in the foregoing operations;
- (c) modification and new materials;
- (d) feeder pillars (as this Series paragraph 18).

Earth Electrodes

Units	20	The unit of measurement shall be: (i) earth electrodes..... number.				
Measurement	21	The measurement of earth electrodes shall be the completion installation including conduit and cable between the structure, nearest Lit Sign Unit or lighting unit and the earth electrode.				
Itemisation	22	Separate items shall be provided for earth electrodes in accordance with Chapter II paragraphs 3 and 4 and the following: <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left; padding-right: 20px;">Group</th> <th style="text-align: left;">Feature</th> </tr> </thead> <tbody> <tr> <td style="padding-right: 20px;">1</td> <td>1 Different types and sizes of earth electrodes</td> </tr> </tbody> </table>	Group	Feature	1	1 Different types and sizes of earth electrodes
Group	Feature					
1	1 Different types and sizes of earth electrodes					

Earth Electrodes

Item Coverage	23	The items for earth electrodes shall in accordance with the Preambles to Bill of Quantities General Directions include for: <ul style="list-style-type: none"> (a) excavation of acceptable material (as Series 600 paragraphs 17 and 18); (b) excavation of unacceptable material (as Series 600 paragraph 19); (c) excavation in Hard Material (as Series 600 paragraph 23); (d) backfilling and compaction; (e) disposal of material (as Series 600 paragraph 39); (f) in-situ concrete (as Series 1700 paragraph 4); (g) formwork (as Series 1700 paragraph 14); (h) driving; (i) clamps, cables and making connections; (j) reinforcement (as Series 1700 paragraph 25); (k) covers, frames, seating and bedding; (l) earthing rods including pressure plates, glands and clamps; (m) conductor cable including preparing, stripping and cleaning ends and connections; (n) conduit including all purpose-made screwed and threaded connections, bends, tees and the like and draw wires; (o) threading cable through ducts, sleeves, conduit and the like;
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- (p) complying with wiring regulations;
- (q) markers, notices and recording;
- (r) preparation and supply of record drawings.