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Transport Infrastructure Ireland

TII Publications

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Method of Measurement for Road Works Series MM 1500 - Motorway Communications

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About TII

Transport Infrastructure Ireland (TII) is responsible for managing and improving the country's national road and light rail networks.

About TII Publications

TII maintains an online suite of technical publications, which is managed through the TII Publications website. The contents of TII Publications is clearly split into 'Standards' and 'Technical' documentation. All documentation for implementation on TII schemes is collectively referred to as TII Publications (Standards), and all other documentation within the system is collectively referred to as TII Publications (Technical). This system replaces the NRA Design Manual for Roads and Bridges (NRA DMRB) and the NRA Manual of Contract Documents for Road Works (NRA MCDRW).

Document Attributes

Each document within TII Publications has a range of attributes associated with it, which allows for efficient access and retrieval of the document from the website. These attributes are also contained on the inside cover of each current document, for reference. For migration of documents from the NRA and RPA to the new system, each current document was assigned with new outer front and rear covers. Apart from the covers, and inside cover pages, the documents contain the same information as previously within the NRA or RPA systems, including historical references such as those contained within NRA DMRB and NRA MCDRW.

Document Attributes

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NRA DMRB and MCDRW References

For all documents that existed within the NRA DMRB or the NRA MCDRW prior to the launch of TII Publications, the NRA document reference used previously is listed above under 'historical reference'. The TII Publication Number also shown above now supersedes this historical reference. All historical references within this document are deemed to be replaced by the TII Publication Number. For the equivalent TII Publication Number for all other historical references contained within this document, please refer to the TII Publications website.

Series 1500: Motorway Communications

Locating Buried Communications Cable

- Units 1 The unit of measurement shall be:
- (i) locating buried communications cable linear metre.
- Measurement 2 The measurement shall be the length of the buried communication cable located (as this Series paragraph 7 for the measurement of cable).
- Itemisation 3 Separate items shall be provided for locating buried communications cable in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Locating buried communications cable
II	1 In carriageways, footways, bridge decks, and paved areas
	2 In verges, embankments and cuttings
	3 In central reserves

Locating Buried Communications Cable

- 4 The items for locating buried communications cable shall in accordance with the Preambles to Bill of Quantities General Directions include for:
- Item Coverage
- (a) marking the cable runs on the ground;
- (b) location system and removal;
- (c) maintaining location system;
- (d) proving insulation integrity and supplying results to the Employer's Representative;
- (e) trial pits (as Series 600 paragraph 166).

Communications Cabling and Trench for Communication Cable

- Units 1 The unit of measurement shall be:
- (i) trench for communication cable linear metre.
- (ii) communication cable linear metre
- Measurement 2 The measurement of trench for communication cable shall be the summation of the distance along the centre line of the route between the following points:
- (a) face of foundation to cabinet, 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;
- (d) the internal faces of chambers;
- (e) the point of change of stage depth.

The measurement of trench for communications 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, of if no bedding is specified the underside of the cable, and the Earthworks Outline.

- 7 The measurement of communications cables 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 and the like.

Itemisation

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

Group	Feature
I	1 Trench for communications cable, depth not exceeding 1.5 metres
	2 Trench for communications cable, depth exceeding 1.5 metres but not exceeding 2.0 metres and so in steps of 0.5 metres
	3 Communications cable
II	1 Different widths of trench
	2 Different types and sizes of cable
III	1 In Duct
	2 Fixed above ground
IV	1 In side slopes of cutting or side slopes of embankments

Trench for Communications Cable

Item Coverage

- 9 The items for trench for communications cable shall in accordance with the Preambles to Bill of Quantities General Directions include for:
- (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 ends of ducts and 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;
- (k) disposal of material (as Series 600 paragraph 39);
- (l) marking tape or cable covers;
- (m) reinstatement of surfaces;
- (n) protection at drain crossings
- (o) formwork (as Series 1700 paragraph 14)
- (p) movement joint to beds, surrounds and the like:
- (q) site records.

Communications Cable

10 The items for communications 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, cable lubrication, duct belmouths, cable chutes, 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) provision of buried loops; (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, labels and the like;
- (i) twisting and snaking; (j) service connections;
- (k) additional protection and support;
- (l) notification of lengths and provision of schedule of lengths and locations;
- (m) in the case of gantries – conduits, trunking and cable trays;
- (n) colour coding;
- (o) supports to vertical and horizontal communication cables;
- (p) cable management in chamber;
- (q) electricity supply until handover.

11 *Not Used*

Communications Cable Joints and Terminations

Units

12 The unit of measurement shall be:

- (i) communications cable joints, communications cable terminations ...

Measurement number.
13 Communications cable joints and communications cable terminations shall be measured only where they are required specifically by the Contract. Unscheduled communications cable joints in running lengths shall not be measured.

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

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

Communications Cable Joints and Communications Cable Terminations

Item Coverage

- 15** The items for communications cable joints and terminations shall in accordance with the Preambles to Bill of Quantities General Directions include for:
- (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) disposal of material (as Series 900 paragraph 39).

Communications Equipment

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

- (u) notices, labelling, numbering and lettering;
- (v) filling, bedding and sealing;
- (w) alignment and sighting;
- (x) cleaners, solvents and dessicants;
- (y) preparation and supply of record drawings;
- (z) additional protection and support;
- (aa) service connections and commissioning.
- (bb) guardrails;
- (cc) electricity supply until handover.

19 Not Used

Remove from Store and Re-install Communications Cabling and Equipment

- | | |
|-------------|---|
| Units | <p>20 The units of measurement shall be:</p> <ul style="list-style-type: none"> (i) cable linear metre. (ii) cabinets, posts, brackets, signal indicators and the like..... number. (iii) shelves, racking, frames and the like number. (iv) electronic units and the like number. |
| Measurement | <p>21 Re-installed cables shall be measured in accordance with this Series paragraph 7.</p> |
| Itemisation | <p>22 Separate items shall be provided for remove from store and re-install communications cabling and equipment in accordance with Chapter II paragraph 3 and 4 and the following:</p> |

Group	Feature
I	<ul style="list-style-type: none"> 1 Remove from store and re-install cable 2 Remove from store and re-install cabinets, posts, brackets, signal indicators and the like. 3 Remove from store and re-install shelves, racking, frames and the like 4 Remove from store and re-install electronic units and the like
II	1 Different types
III	1 Different sizes

Remove from Store and Re-Install Communications Cabling and Equipment

Item Coverage

- 23** The items for remove from store and re-install communications cabling and equipment shall in accordance with the Preambles to Bill of Quantities General Directions include for:
- (a) loading, transporting from store, unloading and positioning for re-installation;

- (b) replacing items damaged during the foregoing operations;
- (c) modification and new materials;
- (d) communications cables (as this Series paragraph 10);
- (e) service ducts (as Series 500 paragraph 12);
- (f) communications cable joints and communications cable terminations (as this Series paragraph 15);
- (g) communications equipment (as this Series paragraph 18).

Loop Detector Installations

Units **24** The unit of measurement shall be:

- (i) loop detector installations..... number.

Measurement **25** The measurement of loop detector installations shall be the complete installation from the joint with the feeder cable including the chamber box or pit within which the joint is located.

The joint of the feeder cable to the loop cable shall be measured in accordance with paragraph 15.

Itemisation **26** Separate items shall be provided for loop detector installations in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Loop detector installations
II	1 Different types
III	1 Different sizes
IV	1 Different locations

Loop Detector Installations

Item Coverage

27 The items for loop detector installations shall in accordance with the Preambles to Bill of Quantities General Directions include for:

- (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) disposal of material (as Series 600 paragraph 39);
- (e) marking out, cutting or forming slots, drying, damming, backfilling, cleaning and sealing;
- (f) chambers, boxes and pits (as Series 500 paragraph 32);
- (g) ducts (as Series 500 paragraph 12);
- (h) building in ends of ducts;
- (i) forming drainage holes;
- (j) supports and foundations to cables;
- (k) communications cable (as this Series paragraph 10);

- (l) in situ concrete (as Series 1700 paragraph 4);
- (m) formwork (as Series 1700 paragraph 14);
- (n) complying with wiring regulations and earthing (other than earth electrodes);
- (o) reinstatement of surfaces; (p) dowels and wedges;
- (q) anchor plates.

Site Records

Units **28** The unit of measurement shall be:
(i) site records item.

Itemisation **29** Separate items shall be provided for site records in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Site Records

Site Records **30** The items for site records shall in accordance with the Preambles to Bill of Quantities General Directions include for:

- Item Coverage
- (a) preparing site records and submitting to the Employer’s Representative;
 - (b) site measurements and surveying.

Stage 2 Commissioning of Cable

Units **31** The units of measurement shall be:
(i) Stage 2 commissioning of communications cable item.
(ii) Stage 2 commissioning of power cable item.

Measurement **32** The measurement shall be the number of Stage 2 commissionings accepted by the Employer’s Representative.

Itemisation **33** Separate items shall be provided for Stage 2 commissioning of communications cable and Stage 2 commissioning of power cable in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Stage 2 commissioning
II	1 Communications cable
	2 Power cable
III	1 Each section

Stage 2 Commissioning of Cable **34** The items for Stage 2 commissioning of communications cable and Stage 2 commissioning of power cable shall in accordance with the Preambles of Bill of Quantities General Directive include for:

Item Coverage

- (a) setting up equipment;
- (b) taking readings, measurement and observations of the performance of the cabling, recording and supplying 3 copies of the commissioning record to the Employer's Representative.



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