



Bonneagar Iompair Éireann
Transport Infrastructure Ireland

TII Publications



Method of Measurement for Road Works Series MM 2800 - Trenchless Installation of Road Drainage and Service Ducts

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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inside cover pages, the documents contain the same information as previously within the NRA or RPA systems, including historical references such as those contained within NRA DMRB and NRA MCDRW.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

TII Publication Title	<i>Method of Measurement for Road Works Series MM 2800 - Trenchless Installation of Road Drainage and Service Ducts</i>
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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NRA MCDRW prior to the launch of TII Publications, the NRA document reference used previously is listed above under 'historical reference'. The TII Publication Number also shown above now supersedes this historical reference. All historical references within this document are deemed to be replaced by the TII Publication Number. For the equivalent TII Publication Number for all other historical references contained within this document, please refer to the TII Publications website.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 2800: Trenchless Installation of Road Drainage & Service Ducts

- Scope**
- 1 This Series applies to the installation by trenchless techniques of road drains, service ducts, sleeves and culverts of internal diameters 900mm or less. The method of installation will be selected by the Tenderer to meet the requirements of Appendix 28/1 of the Specification Series.
 - 2 This Series covers the Trenchless or Minimum Dig installation and the associated Temporary Works. All other items of permanent works shall be measured under Series 500. For purposes of this measurement the launch and reception pits are considered Temporary Works.

- Definitions**
- 3 Words and expressions to which meanings are assigned in the Specification and Drawings referred to in the Conditions of Contract have the same meanings in the Method of Measurement.
 - 4 Where the ground level has been subjected to treatment, under the Contract, in respect of ground improvement, mine workings, swallow holes and the like, for the purposes of Trenchless Techniques, Existing Ground level shall be the level of the ground before any work under the contract has been carried out.

Establishment and Removal of Plant

- Units**
- 5 The units of measurement for establishment and removal of plant shall be:
 Establishment and removal of plant.....item.
- Measurement**
- 6 The establishment and removal of plant shall be measured once only to each pipe run. Any additional establishment and removal to suit the Contractor’s method of working shall not be measured.
- Itemisation**
- 7 Separate items shall be provided for plant in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Pipe run reference
II	1 Establishment and removal of plant

- Establishment and Removal of Plant**
- 8 The items for the establishment of trenchless installation and plant shall in accordance with the Preambles to Bill of Quantities General Directions include for:
 - a) bringing plant and equipment to the site of the pipe run;
- Item Coverage**

- b) setting up plant and equipment at each pipe run;
- c) dismantling and removing plant and equipment on completion of the pipe run;
- d) construction of launch and reception pits and all reinstatement;
- e) thrust and winch blocks and their removal on completion of the pipe run;
- f) site preparation and access arrangements;
- g) lead-in trenches and their reinstatement;
- h) ground stabilisation treatment;
- i) dealing with existing flows;
- j) construction and reinstatement of launch and reception eyes;
- k) alteration and reinstatement of existing chambers used as launch and reception pits;
- l) protection of existing or completed pipes in chambers;
- m) replacing acceptable material rendered unacceptable;
- n) taking precautions to avoid damage to property, structures, drains, services, pavements, instrumentation and the like, including monitoring;
- o) excavation of acceptable material (as Series 600 paragraphs 17 and 18);
- p) excavation of unacceptable material (as Series 600 paragraph 19);
- q) excavation of hard material (as Series 600 paragraph 23);
- r) excavations in contaminated land and disposal of all contaminated materials including clothing, wash water and any other materials to a licensed site;
- s) disposal of material (as Series 600 paragraph 39);
- t) establishment and supply of water.

Drain and service ducts

Units

9 The unit of measurement for pipe runs shall be:

- i) pipe run reference linear metre.

Measurement

10 The measurement of a pipe run shall be the lengths measured along the centre line of the pipe between any of the following:

- a) the internal faces of permanent chambers;
- b) the external faces of headwalls;
- c) the position of termination shown in the Contract.

- Itemisation
- 11** The measurement of service ducts shall be for the complete construction irrespective of the number of ducts contained within any one bore. Where more than one duct is laid in a bore then the number of ducts shall be stated in the item description.
- 12** Separate items shall be included for each pipe run in accordance with Chapter II paragraphs 3 and 4 and the following:

Group	Feature
I	1 Pipe run reference
II	1 Drain
	2 Service ducts
	3 Lining
III	1 New Installation
	2 On-line Replacement
	3 Minimum Dig
	4 Rehabilitation
IV	1 Internal diameter
V	1 Existing internal diameter (Rehabilitation only)

Drains and service ducts

- Item Coverage
- 13** The items for pipe runs 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 of hard material (as Series 600 paragraph 23);
 - d) supply and installation of pipes;
 - e) cutting and jointing of pipes and fittings, including packers;
 - f) building in pipes to chambers, headwalls and outfall works including reshaping inverts and benching;
 - g) disposal of material (as Series 600 paragraph 39);
 - h) cleaning, clearing obstructions and testing including all CCTV surveys and inspections;
 - i) recording, staking and labelling;
 - j) in the case of ducts, fixing draw ropes, removable stoppers, marker blocks and posts;

- k) pipe schedules and records in accordance with Appendix 28/1;
- l) measures for reduction of friction, including lubricants and their disposal;
- m) protective system (as Series 1900 paragraph 4);
- n) sleeves;
- o) support and drilling fluid and disposal;
- p) surveys and monitoring in accordance with Appendix 28/1;
- q) grouting including packers and fixings;
- r) breakout and reinstatement of start and end headings at existing chambers;
- s) ground stabilisation treatment;
- t) dealing with existing flows;
- u) cleaning existing sewers of debris, silt, obstructions and other material including disposal;
- v) standing time waiting for deformed pipes to normalise;
- w) taking precautions to avoid damage to property, structures, drains, services, pavements, instrumentation and the like, including monitoring;
- x) excavations in contaminated land and disposal of all contaminated materials including clothing, wash water and any other materials to a licensed site;
- y) photographs;
- z) delivery of samples for testing.

Lateral connections to pipes to be replaced by on-line replacement

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|-------------|----|---|
| Units | 14 | The unit of measurement for lateral connections shall be:

Lateral connection reference..... number. |
| Measurement | 15 | The depth of lateral connection shall be the vertical measurement between the invert of the lateral pipe and the Existing Ground Level except where the Earthworks Outline is below the Existing Ground Level the measurement shall be taken to the Earthworks Outline. |
| Itemisation | 16 | Separate items shall be included for lateral connections in accordance with the following: |

Group	Feature
I	1 Lateral connection reference
II	1 Drain

	2	Service ducts
III	1	Different Internal Diameters of lateral pipes
IV	1	Different Internal Diameters of main pipe run
V	1	Depth to invert not exceeding 2 metres
	2	Depth to invert exceeding 2 metres but not exceeding 3 metres and so on in steps of 1 metre

Lateral connections

17 The items for lateral connections 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 of hard material (as Series 600 paragraph 23);
- d) locating and making entry;
- e) breaking up beds, haunches and surrounds;
- f) disconnection from existing pipe to be replaced;
- g) dealing with existing flows;
- h) backfilling and compaction;
- i) disposal of material (as Series 600 paragraph 39);
- j) pipes, fittings and saddles;
- k) bedding, haunching and surrounding;
- l) relaying or replacing existing pipes disturbed or broken;
- m) excavations in contaminated land and disposal of all contaminated materials including clothing, wash water and any other materials to a licensed site;
- n) sealing off disused ends;
- o) relaying or replacing existing pipes disturbed or broken, including cutting, jointing and fittings;
- p) cleaning, clearing obstructions and testing including all CCTV surveys and inspections;
- q) photographs;
- r) testing.



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