



Bonneagar Iompair Éireann
Transport Infrastructure Ireland

TII Publications



Requirements for Measuring and Pricing of Watermains, Utilities and Accommodation Works

CC-RMP-02700
February 2017

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).

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.

TII Publication Title	<i>Requirements for Measuring and Pricing of Watermains, Utilities and Accommodation Works</i>
TII Publication Number	<i>CC-RMP-02700</i>

Activity	<i>Construction & Commissioning (CC)</i>	Document Set	<i>Standards</i>
Stream	<i>Requirements for Measuring and Pricing (RMP)</i>	Publication Date	<i>February 2017</i>
Document Number	<i>02700</i>	Historical Reference	Series MM 2700

TII Publications Website

This document is part of the TII publications system all of which is available free of charge at <http://www.tiipublications.ie>. For more information on the TII Publications system or to access further TII Publications documentation, please refer to the TII Publications website.

TII Authorisation and Contact Details

This document has been authorised by the Director of Professional Services, Transport Infrastructure Ireland. For any further guidance on the TII Publications system, please contact the following:

Contact: Standards and Research Section, Transport Infrastructure Ireland
 Postal Address: Parkgate Business Centre, Parkgate Street, Dublin 8, D08 DK10
 Telephone: +353 1 646 3600
 Email: infoPUBS@tii.ie

**Updates to TII Publications resulting in changes to
Requirements for Measuring and Pricing of Watermains, Utilities and Accommodation Works
CC-RMP-02700**

Date: April 2017

Page No: 2

Section No: 8

Amendment Details:

Minor corrections to itemisation for Connections for clarification.

TII Publications



Activity:	Construction & Commissioning (CC)
Stream:	Requirements for Measuring and Pricing (RMP)
TII Publication Title:	Requirements for Measuring and Pricing of Watermains, Utilities and Accommodation Works
TII Publication Number:	CC-RMP-02700
Publication Date:	February 2017
Set:	Standards

Contents

1. Watermains, Utilities and Accommodation Works.....	1
2. References.....	7

1. Watermains, Utilities and Accommodation Works

Watermains

- Units** **1** The units of measurement shall be:
- (i) watermains linear meter
- Measurement** **2** The measurement of watermains shall be the length along their centrelines and shall include lengths occupied by fittings and valves and hydrants.
- 3** The depth of watermain pipes shall be the vertical distance between the invert and the following:
- (a) where the invert of the pipe is below the existing ground level - the existing ground level except that where the Earthworks Outline is below the existing ground level the measurement shall be taken to the Earthworks Outline;
- (b) where the invert of the pipe is at or above the existing ground level - Earthworks Outline;
- Itemisation** **4** Separate items shall be provided for watermains in accordance with Section 3 of CC-RMP-00010, paragraphs 3 and 4 and the following:

Group	Feature
I	1 Watermains
II	1 Different internal diameters
III	1 Different types of watermain
IV	1 Depths not exceeding 2 metres. The average depth to invert to be stated to the nearest 25mm.
	2 Depths exceeding 2 metres but not exceeding 4 metres and so on in steps of 2 metres. The average depth to be stated to the nearest 25mm
V	1 Construction in trench
	2 Construction in heading
	3 Construction by jacking or thrust boring
	4 Suspended on discrete supports
VI	1 In side slopes of cuttings or side slopes of embankments

Note: For each item which includes Group IV Feature 1 or 2, an associated item shall be provided for adjustment of the rate for each 25mm of difference in excess of 150mm where the average depth to invert calculated from site measurement varies from that stated in the Bill of Quantities. The forgoing shall apply to both increases and decreases of average in excess of 150mm, and will result in either a positive or negative adjustment of the rate.

- Watermains** **5** The items for watermains shall in accordance with the Preambles to Bill of Quantities General Directions include for:
- Item Coverage**
- (a) excavation of acceptable material (CC-RMP-00600 paragraphs 17 and 18);
- (b) excavation of unacceptable material (CC-RMP-00600 paragraph 19);
- (c) temporary trench support;

- (d) hangers, stools and discrete supports;
- (e) bedding, haunching and surrounding;
- (f) formwork (CC-RMP-01700 paragraph 14);
- (g) warning mesh;
- (h) movement joints to beds, surrounds and the like;
- (i) backfilling and compaction;
- (j) disposal of material (CC-RMP-00600 paragraph 39);
- (k) placing and compacting pipe bedding material and surround material;
- (l) testing of water mains including provision of water testing equipment, certification;
- (m) provision, supply and transportation for all water necessary for testing, cleaning, swabbing and chlorination of water main
- (n) attendance of Water Service Authority personnel while the connections to the mains are being made;
- (o) liaison and coordination of works with Water Service Authority;
- (p) reinstatement of unpaved areas;
- (q) protective coating for pipes and fittings;
- (r) cleaning, swabbing and chlorination of water main;
- (s) surveys and recordings.

Connections

Units

6

The unit of measurement for connections shall be:

- (i) connection to existing watermain number.

Measurement

7

Connections shall only be separately measured for connection to existing watermains.

Itemisation

8

Separate items shall be provided for connections in accordance with Section 3 of CC-RMP-00010, paragraphs 3 and 4 and the following:

Group Feature

- | | | |
|-----|---|--|
| I | 1 | Connection to existing watermain |
| | 2 | Connection to existing chamber |
| II | 1 | Different internal diameters |
| III | 1 | Different types of watermain |
| IV | 1 | Depths to invert not exceeding 2 metres |
| | 2 | Depths to invert exceeding 2 metres but not exceeding 4 metres and so on in steps of 2 metres. |

Connections to Existing Watermains

9

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

Item Coverage

- (a) excavation of acceptable material (CC-RMP-00600 paragraphs 17 and 18);
- (b) excavation of unacceptable material (CC-RMP-00600 paragraph 19);
- (c) locating existing pipe or chamber;

- (d) backfilling and compaction;
- (e) disposal of material (CC-RMP-00600 paragraph 39);
- (f) making entry into chambers, concrete benching and channels, and making good the benching, channels and walls;
- (g) pipes, fittings and saddles;
- (h) bedding, haunching and surrounding material;
- (i) formwork (CC-RMP-01700 paragraph 14);
- (j) sealing off disused ends;
- (k) re-laying existing watermains disturbed;
- (l) controlling existing flows.

Pipe Fittings

- Units** **10** The unit of measurement shall be:
 - (i) fittings number.
- Measurement** **11** The measurement shall be of the complete fitting including any associated washers, nuts bolts, etc.
- Itemisation** **12** Separate items shall be provided for fittings in accordance with Section 3 of CC-RMP-00010, paragraphs 3 and 4 and the following:

Group	Feature
I	1 Bends
	2 Junctions and branches
	3 Tapers
	4 Double collars
	5 Adaptors
	6 Glands
	7 Bellmouths
	8 Straight Specials
II	1 Nominal bore : not exceeding 200mm
	2 Nominal bore : 200 – 300mm
	3 Nominal bore : 300 – 600mm
	4 Nominal bore : 600 – 900mm
	5 Nominal bore : 900 – 1200mm
	6 Nominal bore : 1200 – 1500mm
	7 Nominal bore : 1500 – 1800mm
	8 Nominal bore : exceeding 1800mm
III	1 Provided by the Employer
IV	1 At the place of fabrication or manufacture
V	1 Until completion of the Works
	2 After completion of the Works

- Pipe Fittings** **13** The items for chambers shall in accordance with the Preambles to Bill of Quantities General Directions include for:

- Item Coverage**
 - (a) preparation of surfaces
 - (b) installation of fittings
 - (c) locating existing watermains and fittings;

- (d) cleaning;
- (e) seals;
- (f) controlling existing flows.

Valves and Penstocks

Units	14	The unit of measurement shall be: (i) Valves and penstocks number.																									
Measurement	15	The measurement shall be of the complete valve including any associated washers, nuts, bolts etc.																									
Itemisation	16	Separate items shall be provided for valves and penstocks in accordance with Section 3 of CC-RMP-00010, paragraphs 3 and 4 and the following: <table border="0" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;">Group</th> <th style="text-align: left;">Feature</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>1 Pipe material</td> </tr> <tr> <td rowspan="8">II</td> <td>1 Bends</td> </tr> <tr> <td>2 Gate valves – hand operated</td> </tr> <tr> <td>3 Gate valves – power operated</td> </tr> <tr> <td>4 Non-return valves</td> </tr> <tr> <td>5 Butterfly valves – hand operated</td> </tr> <tr> <td>6 Butterfly valves – power operated</td> </tr> <tr> <td>7 Air valves</td> </tr> <tr> <td>8 Pressure reducing valve</td> </tr> <tr> <td rowspan="8">III</td> <td>1 Nominal bore : not exceeding 200mm</td> </tr> <tr> <td>2 Nominal bore : 200 – 300mm</td> </tr> <tr> <td>3 Nominal bore : 300 – 600mm</td> </tr> <tr> <td>4 Nominal bore : 600 – 900mm</td> </tr> <tr> <td>5 Nominal bore : 900 – 1200mm</td> </tr> <tr> <td>6 Nominal bore : 1200 – 1500mm</td> </tr> <tr> <td>7 Nominal bore : 1500 – 1800mm</td> </tr> <tr> <td>8 Nominal bore : exceeding 1800mm</td> </tr> <tr> <td rowspan="2">IV</td> <td>1 Fittings without puddle flanges</td> </tr> <tr> <td>2 Fittings with puddle flanges</td> </tr> </tbody> </table>	Group	Feature	I	1 Pipe material	II	1 Bends	2 Gate valves – hand operated	3 Gate valves – power operated	4 Non-return valves	5 Butterfly valves – hand operated	6 Butterfly valves – power operated	7 Air valves	8 Pressure reducing valve	III	1 Nominal bore : not exceeding 200mm	2 Nominal bore : 200 – 300mm	3 Nominal bore : 300 – 600mm	4 Nominal bore : 600 – 900mm	5 Nominal bore : 900 – 1200mm	6 Nominal bore : 1200 – 1500mm	7 Nominal bore : 1500 – 1800mm	8 Nominal bore : exceeding 1800mm	IV	1 Fittings without puddle flanges	2 Fittings with puddle flanges
Group	Feature																										
I	1 Pipe material																										
II	1 Bends																										
	2 Gate valves – hand operated																										
	3 Gate valves – power operated																										
	4 Non-return valves																										
	5 Butterfly valves – hand operated																										
	6 Butterfly valves – power operated																										
	7 Air valves																										
	8 Pressure reducing valve																										
III	1 Nominal bore : not exceeding 200mm																										
	2 Nominal bore : 200 – 300mm																										
	3 Nominal bore : 300 – 600mm																										
	4 Nominal bore : 600 – 900mm																										
	5 Nominal bore : 900 – 1200mm																										
	6 Nominal bore : 1200 – 1500mm																										
	7 Nominal bore : 1500 – 1800mm																										
	8 Nominal bore : exceeding 1800mm																										
IV	1 Fittings without puddle flanges																										
	2 Fittings with puddle flanges																										
Valves and Penstocks	17	The items for chambers shall in accordance with the Preambles to Bill of Quantities General Directions include for: <table border="0" style="margin-left: 20px;"> <tr> <td>(a) preparation of surfaces</td> </tr> <tr> <td>(b) installation of valves</td> </tr> <tr> <td>(c) locating existing watermains and fittings;</td> </tr> <tr> <td>(d) cleaning;</td> </tr> <tr> <td>(e) seals;</td> </tr> <tr> <td>(f) controlling existing flows.</td> </tr> </table>	(a) preparation of surfaces	(b) installation of valves	(c) locating existing watermains and fittings;	(d) cleaning;	(e) seals;	(f) controlling existing flows.																			
(a) preparation of surfaces																											
(b) installation of valves																											
(c) locating existing watermains and fittings;																											
(d) cleaning;																											
(e) seals;																											
(f) controlling existing flows.																											
Item Coverage																											

(t) controlling existing flows;

(u) plastering and finishes.

Thrust Blocks

Units

23 The unit of measurement shall be:

(i) thrust blocks number.

Measurement

24 The measurement shall be of the complete thrust block.

25 The volumes used for classification of thrust blocks shall exclude the volumes occupied by the pipes.

Itemisation

26 Separate items shall be provided for chambers in accordance with Section 3 of CC-RMP-00010, paragraphs 3 and 4 and the following:

Group Feature

I	1	Thrust Block
II	1	Volume : not exceeding 0.1m ³
	2	Volume : 0.1 – 0.2m ³
	3	Volume : 0.2 – 0.5m ³
	4	Volume : 0.5 – 1m ³
	5	Volume : 1 – 2m ³
	6	Volume : 2 – 4m ³
	7	Volume : 4 – 6m ³
	8	Volume : stated exceeding 6m ³

Chambers

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

Item Coverage

- (a) excavation of acceptable material (CC-RMP-00600 paragraphs 17 and 18);
- (b) excavation of unacceptable material (CC-RMP-00600 paragraph 19);
- (c) locating existing watermains and fittings;
- (d) construction of thrust block;
- (e) fittings, benchings, building in pipes and any pipe fixings required;
- (f) concrete (CC-RMP-01700 paragraphs 4 and 9);
- (g) formwork (CC-RMP-01700 paragraph 14);
- (h) reinforcement (CC-RMP-01700 paragraph 25);
- (i) backfilling and compaction;
- (j) disposal of material (CC-RMP-00600 paragraph 39);
- (k) filling;
- (l) keeping excavations free from water.

Utilities (other than Watermains) and Accommodation Works


The method of measurement for Works for the owners of utilities (other than Watermains) and accommodation works shall be in accordance with the various Requirements for Measuring and Pricing (RMP) documents within TII Publications.

2. References

2.1 TII Publications (Standards) References

CC-RMP-00010	Introduction to the Requirements for Measuring and Pricing
CC-RMP-00600	Requirements for Measuring and Pricing of Earthworks
CC-RMP-01700	Requirements for Measuring and Pricing of Structural Concrete
CC-RMP-02300	Requirements for Measuring and Pricing of Bridge Expansion Joints and Sealing of Gaps
CC-RMP-02400	Requirements for Measuring and Pricing of Brickwork, Blockwork and Stonework



 Ionad Ghnó Gheata na Páirce,
Stráid Gheata na Páirce,
Baile Átha Cliath 8, D08 DK10, Éire

 www.tii.ie

 +353 (01) 646 3600

 Parkgate Business Centre,
Parkgate Street,
Dublin 8, D08 DK10, Ireland

 info@tii.ie

 +353 (01) 646 3601