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Transport Infrastructure Ireland

## TII Publications



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

**CC-RMP-02700**  
January 2019

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

<b>Activity</b>	<i>Construction &amp; Commissioning (CC)</i>	<b>Document Set</b>	<i>Standards</i>
<b>Stream</b>	<i>Requirements for Measuring and Pricing (RMP)</i>	<b>Publication Date</b>	<i>January 2019</i>
<b>Document Number</b>	<i>02700</i>	<b>Historical Reference</b>	<b>Series MM 2700</b>

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## TII Publications



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<b>Stream:</b>	Requirements for Measuring and Pricing (RMP)
<b>TII Publication Title:</b>	Requirements for Measuring and Pricing of Watermains, Utilities and Accommodation Works
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**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

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**Page No:** 2, 6

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**Section No:** 5, 8, 27, 23-31

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**Amendment Details:**

Section 5 - Item coverage has been amended for Watermains to include the following new items;

- excavation of hard material (CC-RMP-0600 paragraph 23)
- pipes including cutting, laying, jointing and bedding;
- re-instatement of paved areas (CC-RMP-0070 paragraph 36);
- laying watermains in a working environment where other pipes and ducts are also being constructed for other utility providers.

Section 27 - Typographical errors amended. Heading now states 'thrust blocks' instead of 'chambers'.

Section 28-31- New measurement item created for 'Marker Posts'.

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# 1. Watermains, Utilities and Accommodation Works

## Watermains

- | <b>Units</b>         | <b>1</b>                                                                                                                                  | The units of measurement shall be:<br>(i) watermains ..... linear meter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |                |   |              |    |                                |     |                                |    |                                                                                                |                                                                                                                                           |   |                          |                           |                                            |                                  |    |                                                            |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|---|--------------|----|--------------------------------|-----|--------------------------------|----|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------|---------------------------|--------------------------------------------|----------------------------------|----|------------------------------------------------------------|
| <b>Measurement</b>   | <b>2</b>                                                                                                                                  | The measurement of watermains shall be the length along their centrelines and shall include lengths occupied by fittings and valves and hydrants.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                |   |              |    |                                |     |                                |    |                                                                                                |                                                                                                                                           |   |                          |                           |                                            |                                  |    |                                                            |
|                      | <b>3</b>                                                                                                                                  | The depth of watermain pipes shall be the vertical distance between the invert and the following:<br>(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;<br>(b) where the invert of the pipe is at or above the existing ground level - Earthworks Outline;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |                |   |              |    |                                |     |                                |    |                                                                                                |                                                                                                                                           |   |                          |                           |                                            |                                  |    |                                                            |
| <b>Itemisation</b>   | <b>4</b>                                                                                                                                  | Separate items shall be provided for watermains in accordance with Section 3 of CC-RMP-00010, paragraphs 3 and 4 and the following:<br><br><table border="0" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;"><b>Group</b></th> <th style="text-align: left;"><b>Feature</b></th> </tr> </thead> <tbody> <tr> <td>I</td> <td>1 Watermains</td> </tr> <tr> <td>II</td> <td>1 Different internal diameters</td> </tr> <tr> <td>III</td> <td>1 Different types of watermain</td> </tr> <tr> <td rowspan="2">IV</td> <td>1 Depths not exceeding 2 metres. The average depth to invert to be stated to the nearest 25mm.</td> </tr> <tr> <td>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</td> </tr> <tr> <td rowspan="4">V</td> <td>1 Construction in trench</td> </tr> <tr> <td>2 Construction in heading</td> </tr> <tr> <td>3 Construction by jacking or thrust boring</td> </tr> <tr> <td>4 Suspended on discrete supports</td> </tr> <tr> <td>VI</td> <td>1 In side slopes of cuttings or side slopes of embankments</td> </tr> </tbody> </table> <p>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.</p> | <b>Group</b> | <b>Feature</b> | 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 |
| <b>Group</b>         | <b>Feature</b>                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                |   |              |    |                                |     |                                |    |                                                                                                |                                                                                                                                           |   |                          |                           |                                            |                                  |    |                                                            |
| 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                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                |   |              |    |                                |     |                                |    |                                                                                                |                                                                                                                                           |   |                          |                           |                                            |                                  |    |                                                            |
| <b>Watermains</b>    | <b>5</b>                                                                                                                                  | The items for watermains shall in accordance with the Preambles to Bill of Quantities General Directions include for:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |                |   |              |    |                                |     |                                |    |                                                                                                |                                                                                                                                           |   |                          |                           |                                            |                                  |    |                                                            |
| <b>Item Coverage</b> |                                                                                                                                           | (a) excavation of acceptable material (CC-RMP-00600 paragraphs 17 and 18);<br>(b) excavation of unacceptable material (CC-RMP-00600 paragraph 19);<br>(c) excavation of hard material (CC-RMP-0600 paragraph 23);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                |   |              |    |                                |     |                                |    |                                                                                                |                                                                                                                                           |   |                          |                           |                                            |                                  |    |                                                            |

- (d) temporary trench support;
- (e) hangers, stools and discrete supports;
- (f) bedding, haunching and surrounding;
- (g) formwork (CC-RMP-01700 paragraph 14);
- (h) warning mesh;
- (i) movement joints to beds, surrounds and the like;
- (j) backfilling and compaction;
- (k) disposal of material (CC-RMP-00600 paragraph 39);
- (l) placing and compacting pipe bedding material and surround material;
- (m) testing of water mains including provision of water testing equipment, certification;
- (n) provision, supply and transportation for all water necessary for testing, cleaning, swabbing and chlorination of water main
- (o) attendance of Water Service Authority personnel while the connections to the mains are being made;
- (p) liaison and coordination of works with Water Service Authority;
- (q) reinstatement of unpaved areas;
- (r) protective coating for pipes and fittings;
- (s) cleaning, swabbing and chlorination of water main;
- (t) surveys and recordings;
- (u) pipes including cutting, laying, jointing and bedding;
- (v) re-instatement of paved areas (CC-RMP-0070 paragraph 36);
- (w) laying watermains in a working environment where other pipes and ducts are also being constructed for other utility providers.

**Connections**

<b>Units</b>	<b>6</b>	The unit of measurement for connections shall be: (i) connection to existing watermain ..... number.														
<b>Measurement</b>	<b>7</b>	Connections shall only be separately measured for connection to existing watermains.														
<b>Itemisation</b>	<b>8</b>	Separate items shall be provided for connections 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;"><b>Group</b></th> <th style="text-align: left;"><b>Feature</b></th> </tr> </thead> <tbody> <tr> <td>I</td> <td>1 Connection to existing watermain</td> </tr> <tr> <td></td> <td>2 Connection to existing chamber</td> </tr> <tr> <td>II</td> <td>1 Different internal diameters</td> </tr> <tr> <td>III</td> <td>1 Different types of watermain</td> </tr> <tr> <td>IV</td> <td>1 Depths to invert not exceeding 2 metres</td> </tr> <tr> <td></td> <td>2 Depths to invert exceeding 2 metres but not exceeding 4 metres and so on in steps of 2 metres.</td> </tr> </tbody> </table>	<b>Group</b>	<b>Feature</b>	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.
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I	1 Connection to existing watermain															
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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.															
<b>Connections to Existing Watermains</b>	<b>9</b>	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:

<b>Group</b>	<b>Feature</b>
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



<b>Pipe Fittings</b>	<b>13</b>	The items for chambers shall in accordance with the Preambles to Bill of Quantities General Directions include for:																																								
<b>Item Coverage</b>		<ul style="list-style-type: none"> <li>(a) preparation of surfaces</li> <li>(b) installation of fittings</li> <li>(c) locating existing watermains and fittings;</li> <li>(d) cleaning;</li> <li>(e) seals;</li> <li>(f) controlling existing flows.</li> </ul>																																								
<b>Valves and Penstocks</b>																																										
<b>Units</b>	<b>14</b>	The unit of measurement shall be:																																								
		(i) Valves and penstocks ..... number.																																								
<b>Measurement</b>	<b>15</b>	The measurement shall be of the complete valve including any associated washers, nuts, bolts etc.																																								
<b>Itemisation</b>	<b>16</b>	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="width: 100%;"> <thead> <tr> <th style="text-align: left;"><b>Group</b></th> <th style="text-align: left;"><b>Feature</b></th> </tr> </thead> <tbody> <tr> <td>I</td> <td>1 Pipe material</td> </tr> <tr> <td>II</td> <td>1 Bends</td> </tr> <tr> <td></td> <td>2 Gate valves – hand operated</td> </tr> <tr> <td></td> <td>3 Gate valves – power operated</td> </tr> <tr> <td></td> <td>4 Non-return valves</td> </tr> <tr> <td></td> <td>5 Butterfly valves – hand operated</td> </tr> <tr> <td></td> <td>6 Butterfly valves – power operated</td> </tr> <tr> <td></td> <td>7 Air valves</td> </tr> <tr> <td></td> <td>8 Pressure reducing valve</td> </tr> <tr> <td>III</td> <td>1 Nominal bore: not exceeding 200mm</td> </tr> <tr> <td></td> <td>2 Nominal bore: 200 – 300mm</td> </tr> <tr> <td></td> <td>3 Nominal bore: 300 – 600mm</td> </tr> <tr> <td></td> <td>4 Nominal bore: 600 – 900mm</td> </tr> <tr> <td></td> <td>5 Nominal bore: 900 – 1200mm</td> </tr> <tr> <td></td> <td>6 Nominal bore: 1200 – 1500mm</td> </tr> <tr> <td></td> <td>7 Nominal bore: 1500 – 1800mm</td> </tr> <tr> <td></td> <td>8 Nominal bore: exceeding 1800mm</td> </tr> <tr> <td>IV</td> <td>1 Fittings without puddle flanges</td> </tr> <tr> <td></td> <td>2 Fittings with puddle flanges</td> </tr> </tbody> </table>	<b>Group</b>	<b>Feature</b>	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
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<b>Valves and Penstocks</b>	<b>17</b>	The items for chambers shall in accordance with the Preambles to Bill of Quantities General Directions include for:																																								
<b>Item Coverage</b>		<ul style="list-style-type: none"> <li>(a) preparation of surfaces</li> <li>(b) installation of valves</li> <li>(c) locating existing watermains and fittings;</li> <li>(d) cleaning;</li> <li>(e) seals;</li> </ul>																																								

(f) controlling existing flows.

**Chambers**

**Units**

**18** The unit of measurement shall be:

(i) chambers ..... number.

**Measurement**

**19** The measurement shall be of the complete chamber.

**20** Depths of chambers shall be the distance between the top surface of the cover and the uppermost surface of the base slab. Where no base slab is required the depth shall be taken to the bottom of the excavation.

**Itemisation**

**21** 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 Chambers
- II 1 Specified design groups
  - 2 Particular designs stated in the Contract
- III 1 Depths not exceeding 1 metre
  - 2 Depths exceeding 1 metre but not exceeding 2 metres and so on in steps of 1 metre
- IV 1 Different types of covers or gratings

**Chambers**

**22** 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 bases, walls, roof and cover slabs, landing slabs and hinged gratings, shafts, surrounds and corbelling for cover;
- (e) fittings, benching, building in pipes and watermain connections;
- (f) cleaning;
- (g) steps, safety chains, ladders, handholds and the like;
- (h) covers, frames, seating, bedding and haunching;
- (i) cover keys;
- (j) concrete (CC-RMP-01700 paragraphs 4 and 9);
- (k) formwork (CC-RMP-01700 paragraph 14);
- (l) reinforcement (CC-RMP-01700 paragraph 25);
- (m) backfilling and compaction;
- (n) disposal of material (CC-RMP-00600 paragraph 39);
- (o) filling;
- (p) notices;
- (q) sealants (CC-RMP-02300 paragraph 10);
- (r) brickwork (CC-RMP-02400 paragraph 4);

- (s) re-laying existing watermains disturbed;
- (t) controlling existing flows;
- (u) plastering and finishes.

**Thrust Blocks**

<b>Units</b>	<b>23</b>	The unit of measurement shall be: (i) thrust blocks ..... number.													
<b>Measurement</b>	<b>24</b>	The measurement shall be of the complete thrust block.													
	<b>25</b>	The volumes used for classification of thrust blocks shall exclude the volumes occupied by the pipes.													
<b>Itemisation</b>	<b>26</b>	Separate items shall be provided for chambers 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;"><b>Group</b></th> <th style="text-align: left;"><b>Feature</b></th> </tr> </thead> <tbody> <tr> <td>I</td> <td>1 Thrust Block</td> </tr> <tr> <td rowspan="8">II</td> <td>1 Volume: not exceeding 0.1m<sup>3</sup></td> </tr> <tr> <td>2 Volume: 0.1 – 0.2m<sup>3</sup></td> </tr> <tr> <td>3 Volume: 0.2 – 0.5m<sup>3</sup></td> </tr> <tr> <td>4 Volume: 0.5 – 1m<sup>3</sup></td> </tr> <tr> <td>5 Volume: 1 – 2m<sup>3</sup></td> </tr> <tr> <td>6 Volume: 2 – 4m<sup>3</sup></td> </tr> <tr> <td>7 Volume: 4 – 6m<sup>3</sup></td> </tr> <tr> <td>8 Volume: stated exceeding 6m<sup>3</sup></td> </tr> </tbody> </table>	<b>Group</b>	<b>Feature</b>	I	1 Thrust Block	II	1 Volume: not exceeding 0.1m <sup>3</sup>	2 Volume: 0.1 – 0.2m <sup>3</sup>	3 Volume: 0.2 – 0.5m <sup>3</sup>	4 Volume: 0.5 – 1m <sup>3</sup>	5 Volume: 1 – 2m <sup>3</sup>	6 Volume: 2 – 4m <sup>3</sup>	7 Volume: 4 – 6m <sup>3</sup>	8 Volume: stated exceeding 6m <sup>3</sup>
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<b>Thrust Blocks</b>	<b>27</b>	The items for chambers shall in accordance with the Preambles to Bill of Quantities General Directions include for:													
<b>Item Coverage</b>		<ul style="list-style-type: none"> <li>(a) excavation of acceptable material (CC-RMP-00600 paragraphs 17 and 18);</li> <li>(b) excavation of unacceptable material (CC-RMP-00600 paragraph 19);</li> <li>(c) locating existing watermains and fittings;</li> <li>(d) construction of thrust block;</li> <li>(e) fittings, benchings, building in pipes and any pipe fixings required;</li> <li>(f) concrete (CC-RMP-01700 paragraphs 4 and 9);</li> <li>(g) formwork (CC-RMP-01700 paragraph 14);</li> <li>(h) reinforcement (CC-RMP-01700 paragraph 25);</li> <li>(i) backfilling and compaction;</li> <li>(j) disposal of material (CC-RMP-00600 paragraph 39);</li> <li>(k) filling;</li> <li>(l) keeping excavations free from water.</li> </ul>													

**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.

**Marker Posts:**

- Units** **28** The unit of measurement shall be:
- (i) Marker posts.....number
- Measurement** **29** The measurement shall be of the complete marker post and plate.
- Itemization** **30** Separate items shall be provided for Marker Posts in accordance with Section 3 of CC-RMP-00010, paragraphs 3 and 4 and the following:
- Group Feature
- I 1 Marker post
- II 1 Function
- Marker Posts** **31** The Items for the marker posts shall be 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 concrete foundations;
  - (e) concrete (CC-ORMP-01700 paragraphs 4 and 9);
  - (f) formwork (CC-ORMP-01700 paragraph 14);
  - (g) reinforcement (CC-ORMP-01700 paragraph 25);
  - (h) backfilling and compaction;
  - (i) disposal of material (CC-ORMP-00600 paragraph 39);
  - (j) filling;
  - (k) keeping excavations free from water;
  - (l) supply and installation of marker post.

## **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





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