

Measuring and Pricing for Bills of Quantities in light of revised DPER requirements

TII National Roads Conference 2016, The Mullingar Park Hotel, Mullingar
Wednesday 28 September 2016

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ARUP

Agenda

- Measurement in Contracts
- Irish Public Works Contracts | 2016 Amendments
- RMP and GMP | TII Publications (Standards)
- Closing remarks

Measurement in Contracts

Measurement in Contracts

“Measurement is the first step that leads to control and eventually to improvement. If you can’t measure something, you can’t understand it. If you can’t understand it, you can’t control it. If you can’t control it, you can’t improve it.”

H. James Harrington

International Performance Improvement Expert

Measurement in Contracts

- Industrial Revolution
 - Use of schedules to control cost and track budget
 - Bespoke Civils Contracts
 - Drafted by lawyers/barristers
 - Delivered by Engineers



Thames Tunnel

Measurement in Contracts

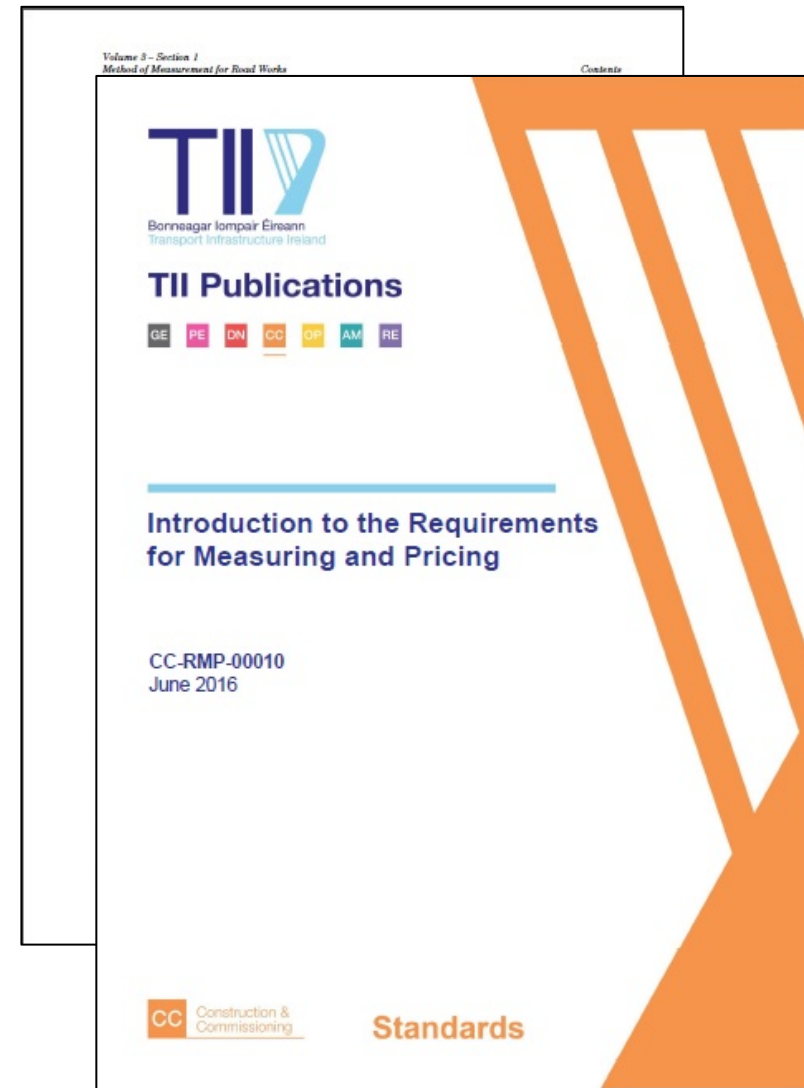


Alaskan Way Viaduct

- By mid-20th Century
 - Use of Standard Measurements around the world
 - Different approaches for different project types
 - Different Contract types emerged
 - The IEI led the industry in Ireland

Measurement in Contracts

- NRA Method of Measurement for Road Works (MMRW) issued in 2000
 - Based on UK MCHW
 - For use with IEI Form of Contract
 - Developed & expanded over time
 - Updated since 2007 for use with the GCCC PWC Forms
 - Part of TII Publications in 2016





Construction Procurement Reform

GCCC PWC Forms introduced in 2007

- PW-CF1 - Building Works designed by the Employer
- PW-CF2 - Building Works designed by the Contractor
- PW-CF3 - Civil Engineering Works designed by the Employer
- PW-CF4 - Civil Engineering Works designed by the Contractor
- PW-CF5 - Minor Building and Civil Engineering Works designed by the Employer



Construction Procurement Reform

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Measurement in Contracts

- Detailed Design prepared by the Employer's Representative
- Contract Documents compiled by the Employer's Representative, and including;
 - Works Requirements (Volume A) consisting of;
 - General Requirements for Contract;
 - Specification Appendices developed for Contract; and
 - Drawings defining the works
 - Form of Tender & Schedules (Volume B); and
 - Pricing Document (Volume C), including the Bill of Quantities

Measurement in Contracts

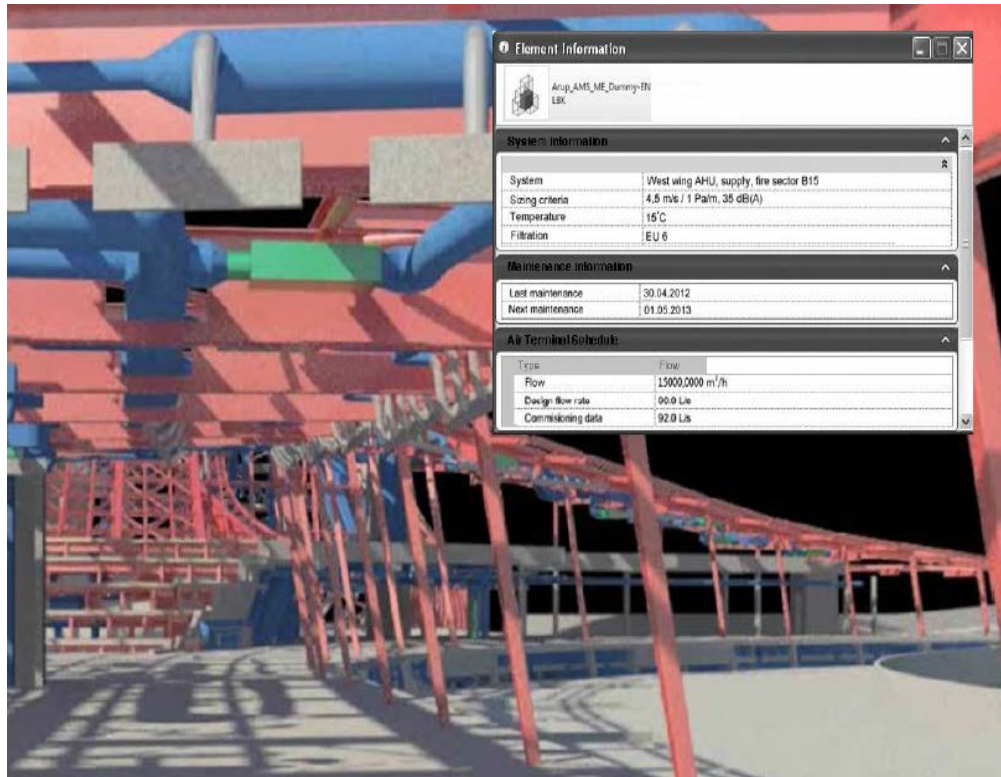
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 - **Pricing Document (Volume C), including the Bill of Quantities**

BIM and Infrastructure

- Implementation of Building Information Modelling (BIM) processes is advancing in infrastructure development
- BIM models, elements with geometric data (3D)
- Linking scheduling data to model elements (4D)



BIM and 5D Costing Analysis



- Linking of cost data to model elements (5D), allows for;
 - More automation in the production of BoQs
 - More accurate definition of model elements and thus BoQs
 - Better tracking of actual v planned spend

Irish Public Works Contracts | 2016 Amendments

Irish Public Works Contracts | 2016 Amendments

- Fixed price, lump-sum PWC contracts introduced in 2007
- GCCC considered experiences with Public Works Contracts (*between 2013 and the end of 2015*)
- 4 interim recommendations (June 2014);
 - Change to status of the Bill of Quantities
 - Direct engagement of key specialist works contractors
 - MEAT award for contracts above €2m
 - Overhaul the dispute resolution mechanisms in the contracts

<http://constructionprocurement.gov.ie/wp-content/uploads/Information-Sessions-Combined-Slides.pdf>

Irish Public Works Contracts | 2016 Amendments

- DPER Circular 01/16 revising the GCCC PWC Forms (Jan 2016)
 - The Pricing Document now a compensation event
 - Direct tendering for Specialists Works
 - Introduction of Dispute Management procedure
 - Introduction of a Standing Conciliator

<http://constructionprocurement.gov.ie/20-january-2016-publication-of-the-amended-public-works-contracts/>

Pricing Document – Summary of Intent



- Pricing Document for Employer Design is the Bill of Quantities;
 - Prepared to an approved method of measurement, as defined in the Contract
 - The only document included in the Pricing Document
 - Exclusive of any option to transfer risk of quantities

(Guidance Note GN 1.5.3 – The Pricing Document)

Pricing Document – TII Implementation (Works)



- Update of Preparation of the Bill of Quantities including;
 - Specific changes to remove re-measurement references
 - Thorough review of all parts of the Method of Measurement
 - Amendments of various minor discrepancies and inconsistencies
 - Compiler amendments to the published measure only allowed under Approved Departure from TII

Pricing Document – TII Implementation (Services)



- Scope of services in TII’s standard conditions of engagement for consultancy services should now include:
 - Preparation of a fully measured Bill of Quantities;
 - Sufficient scope for the development of the Bill of Quantities to be consistent with the Specification Appendices and Drawings; and
 - Sufficient timeframe for the full development of the Bill of Quantities to the required standard.

Specialists – Summary of Intent



- For Employer Design Contracts, Specialists may be procured separately, directly by the Contracting Authority, and in parallel with the Main Works Contract
- The Contractor shall enter a sub-contract for a Specialist Contract Sum, which will form part of the Contract Sum with the Contractor
- The Contractor will be entitled to tender, in their tender, a percentage addition for each Specialist which will form part of their Contract with the Employer

(Guidance Note GN 2.3.3 – Specialists and the Public Works Contract)

Specialists - TII Implementation



- Update of Preparation of the Bill of Quantities including;
 - Specific changes in the Preambles to cover pricing of items related to Specialists
- Addition of a Specialist Works item in the measurement of Preliminaries for;
 - Reserved sum
 - General attendances
 - Special attendances
 - Management
 - Contractor's profit

Dispute Management & Standing Conciliator – Summary of Intent



- Introduction of a dispute resolution process for the main GCCC PWC Forms, including meetings of the Project Board with the intent of reaching a resolution.
- In respect of a Standing Conciliator;
 - Appointment required where anticipated Contract Sum will be in excess of €10million;
 - Employer's option where anticipated Contract Sum will be less than €10million
- The intention behind the introduction of the Standing Conciliator is to encourage proper engagement between the Parties

(Guidance Note GN 3.1.1 – Dispute Resolution)

Dispute Management & Standing Conciliator – TII Implementation



- Addition of a Standing Conciliator item in the measurement of Preliminaries for Reserved sum.
- Item coverage text has been added to include;
 - establishing and maintaining knowledge of the parties, documentation and attendance at site regularly;
 - Chairing Project Board Meetings;
 - Reviewing a complete set of the contract documents;
 - Any other duties agreed by the parties

Implementation of PWC Changes by TII

- April 2016** • Update of Preparation of Bills of Quantities, including the Preamble to the Bill of Quantities
- June 2016** • NRA MCDRW forms part of TII Publications (Standards); and
• Change of ‘Method of Measurement’ to ‘Requirements for Measuring and Pricing (RMP)’
- October 2016** • Minor referencing and amendment changes to be part of a full suite of RMP and GMP updates

RMP and GMP | TII Publications (Standards)

TII Publications Website



TII Publications



HOME RECENT CHANGES WHO WE ARE SEARCH

Welcome to TII Publications

TII's online suite of Standards and Technical publications related to national road and light rail networks in Ireland

Please enter TII Publication title, number or historic reference **SEARCH**

Not sure? Try our [advanced search](#)

Outline of TII Publications

TII Publications is an online suite of technical documentation relating to national road and light rail schemes.

TII Publications are categorised as Standards or Technical. All documentation for implementation on National Road schemes is collectively referred to as TII Publications (Standards), and all other documentation within the system is collectively referred to as TII Publications (Technical).

All documentation on this site is available for free download. Visit [Who We Are](#) for information on the TII Publications system.

For further information on TII Publications, please refer to Introduction to the TII Publications System, [GE-INT-01029](#)

> Recent Changes

View a summary of recent changes to TII Publications

> Forward Look

Anticipated updates to TII Publications and estimated publication dates

> Departure from Standards [↗](#)

Dedicated website for application or management of Departures from Standards

> TII Library [↗](#)

Access other TII documents on the main TII website

<http://www.tiipublications.ie/>

- From “*Implementation and Use of TII Publications (Standards) Documentation (GE-POL-01030)*”

“TII Publications (Standards) is a collection of documentation (documents and drawings) that define **the standard to be complied with in respect of the design, construction or maintenance of National Roads schemes in Ireland.** TII Publications (Standards) documentation can be accessed through the online website (<http://www.tiipublications.ie/>), and includes **documentation containing mandatory requirements, guidance, advice and standard drawings.**”

Implementation Overview



TII Publications



- Effective date for TII Publications was 1 June 2016
- The previous NRA Standards website was removed on this date
- All references to NRA Standards became historical, i.e.
 - NRA DMRB and NRA MCDRW as manuals
 - NRA TD 19, NRA BD 2, NRA HD 20, etc. as Standards
 - Series 500, NG Series 500, MM Series 500, etc. as relevant to Contracts
- Amendments to requirements allowed with Approved Departure

Implementation Overview



TII Publications



- TII Publication Numbers are now used
- TII Publications (Standards) has replaced NRA Standards
- New ‘Collective’ references are also now in place, particularly for the Construction and Commission (CC) activity, e.g.;
 - Specification for Works (SPW)
 - Guidance on Specification for Works (GSW)
 - Requirements for Measuring and Pricing (RMP)
 - Guidance on Measuring and Pricing (GMP)
 - Standard Construction Details (SCD)

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7 'Pillar' Activities

General (GE)

Planning and Evaluation (PE)

Design (DN)

Construction and Commissioning (CC)

Operations (OP)

Asset Management and Maintenance (AM)

Research (RE)

Construction and Commissioning (CC)



Specification for Works (SPW)

Guidance on Specification for Works (GSW)

Requirements for Measuring and Pricing (RMP)

Guidance on Measuring and Pricing (GMP)

Standard Construction Details (SCD)

Pavement (PAV)

Construction Management (CMG)

Archaeology (ARC)

Environment (ENV)

Cost Management (CON)

Contract Documentation (CON)

Safety (STY)

Testing and Commissioning Management (TCM)

Construction and Commissioning (CC)

Previously Volume 1 of the
NRA MCDRW



Specification for Works (SPW)

Guidance on Specification for Works (GSW)

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Previously Volume 2 of the
NRA MCDRW



- Specification for Works (SPW)
- Guidance on Specification for Works (GSW)**
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- Guidance on Measuring and Pricing (GMP)
- Standard Construction Details (SCD)
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Construction and Commissioning (CC)

**Previously Volume 3.1 of
the NRA MCDRW**

- | | |
|---|---|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Specification for Works (SPW) | <input type="checkbox"/> Archaeology (ARC) |
| <input type="checkbox"/> Guidance on Specification for Works (GSW) | <input type="checkbox"/> Environment (ENV) |
| <input checked="" type="checkbox"/> Requirements for Measuring and Pricing (RMP) | <input type="checkbox"/> Cost Management (CON) |
| <input type="checkbox"/> Guidance on Measuring and Pricing (GMP) | <input type="checkbox"/> Contract Documentation (CON) |
| <input type="checkbox"/> Standard Construction Details (SCD) | <input type="checkbox"/> Safety (STY) |
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| <input type="checkbox"/> Construction Management (CMG) | |

Construction and Commissioning (CC)

Previously Volume 3.2 of
the NRA MCDRW



- Specification for Works (SPW)
- Guidance on Specification for Works (GSW)
- Requirements for Measuring and Pricing (RMP)
- Guidance on Measuring and Pricing (GMP)**
- Standard Construction Details (SCD)
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- Construction Management (CMG)



- Archaeology (ARC)
- Environment (ENV)
- Cost Management (CON)
- Contract Documentation (CON)
- Safety (STY)
- Testing and Commissioning Management (TCM)

Construction and Commissioning (CC)

Previously Volume 4 of the
NRA MCDRW

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| <input type="checkbox"/> Guidance on Specification for Works (GSW) | <input type="checkbox"/> Environment (ENV) |
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TII Publication Numbers

Example:

CC-SPW-00500

(CC for Construction and Commissioning)

(SPW for Specification for Works)

(Numeric Reference No.)

Historical References	TII Publication Numbers
Series 500	CC-SPW-00500
NG Series 500	CC-GSW-00500
MM Series 500	CC-RMP-00500
MMNG Series 500	CC-GMP-00500
RCD/500/20	CC-SCD-00520

Implementation for Contracts

- Amendments have been made to the key implementation documentation for Contracts (previously NRA MCDRW), including;

NRA MCDRW Ref	NRA MCDRW Title	TII Publication Number
Series 000	Specification	CC-SPW-00010
NG Series 000	Notes for Guidance to Specification	CC-GSW-00010
Vol 3, Part 1, Chapters I, II and III	Method of Measurement	CC-RMP-00010
Vol 3, Part 2, Chapters I, II and III	Notes for Guidance to Method of Measurement	CC-GMP-00010

- Amendment to the Preamble to the Bill of Quantities appears as follows;

Preambles to Bill of Quantities

- General Directions
- 1 The Requirements for Measuring and Pricing (RMP) in TII Publications (Standards) is published as a collective group of documents under the Construction and Commissioning activity within the TII Publications system. The Bill of Quantities has been prepared in accordance with the RMP.

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Implications for Users



TII Publications



- All relevant Contract documentation shall implement the new system since 1 June 2016
- However, reference to specific TII Publication Numbers for individual documentation does not need to be updated initially (although it can be)
- A check for conflicts with references within all updated Contract documentation should be undertaken

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- However, reference to specific TII Publication Numbers for individual documentation does not need to be updated initially (although it can be)
- **A check for conflicts with references within all updated Contract documentation should be undertaken**

Implications for Users

- From the start of 2017

All Contracts shall be updated to reflect the correct references to the TII Publications system, including all TII Publication Numbers.



Closing Remarks

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- Amendments have been introduced to the PWCs, covering;
 - The Pricing Document;
 - Specialists Works
 - Dispute Management (incl. Standing Conciliator)
- TII Publications has been introduced and the previous MMRW and guidance are now RMP and GMP
- The PWC amendments have been introduced to the RMP and GMP documentation
- The October 2016 Update to TII Publications will complete the updated suite of RMP and GMP documentation

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Thank You!



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