

ARM4 SUPPLEMENT 1

Amendments to Agreed Rules of Measurement
to incorporate the Public Works Contracts' Requirements
ISSUE 2



ARM 4

Supplement 1 Issue 2

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Agreed Rules of Measurement 4, Supplement 1 Issue 2

The Agreed Rules of Measurement 4, Supplement 1, Issue 2 has been prepared by a joint committee established by Construction Industry Federation and Society of Chartered Surveyors Ireland, as follows:

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The Joint Committee will continue in existence to review the operation of ARM 4, Supplement 1 and to consider any observations made by users within the industry.

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ARM4, Supplement 1

Supplement 1 is published for use in conjunction with ARM4 when Bills of Quantities are prepared for projects on which the Employer has selected one of the suite of Public Works Conditions of Contract published by the Office of Government Procurement of the Department of Public Expenditure and Reform.

The contents of Supplement 1 vary the Rules of ARM4. Any conflict between ARM4 and Supplement 1 shall be resolved in favour of the contents of Supplement 1 where the Contract states that Supplement 1 has been used in the preparation of the Bill of Quantities.

Section A, General Rules, and Section B, Preliminaries, are printed in full. Users are advised to make themselves aware of ARM4 text that is omitted from the ARM4 Supplement 1.

Where, in other Sections, there are different Rules applicable for the Public Works Conditions of Contract, only pages that differ from ARM4 and their facing pages are included in Supplement 1.

The bottom right corner of each page in Supplement 1 is cross referenced to the ARM4 page, or pages, that are being replaced.

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General Rules

1 Introduction

These Agreed Rules of Measurement provide a uniform basis for measuring building work and embody the essentials of good practice. More detailed information than is required by this document shall be given where necessary in order to define the precise nature of the required work. These Agreed Rules of Measurement shall apply equally to both proposed and executed works *except where otherwise stated herein*.

Rules of measurement adopted for forms of construction not covered in this document shall be stated.

2 Application of Tabulated Rules

The Agreed Rules of Measurement are set out in Sections. The Rules of this Section shall govern the application of the Rules of all other Sections.

The Rules, with the exception of those in this and the Preliminaries Section, are set out in tabular format across the width of two pages. The application of the tabular format is set out below.

The 'Information Required' and 'General Rules' requirements shall each apply to all subsequent Rules within the Work Section they appear in until superseded by another set.

Horizontal lines (stepped in some cases) divide the pairs of Work Section pages into mutually exclusive zones to which different Rules apply. Where the horizontal line across a column is dashed, the Rules of the zones immediately above and below it may apply as alternatives.

No more than one requirement from each of the Category 1, 2, and 3 columns can be applied in one description. As many requirements, if any, of the Category 4 column as are applicable to the item of work shall be selected from the Category 4 column.

Where the symbol '(nr)' is given in a Category column, the number shall be stated in the item description (as well as giving the Unit quantity separately).

Work which is 'Deemed to be included' shall neither be measured separately nor included in descriptions. Where there are specific requirements for such work, they shall be stated.

In some instances, the Rules require the work listed to be measured as 'extra over' other items. The facility of measuring work as 'extra over' other work may be adopted in other cases, if desired.

3 Definitions

The term 'existing' means existing before the current contract. It does not refer to earlier processes in the same contract.

The term 'roadway' is used herein in the normal sense of carriageway, whether public or private. It does not apply to temporary roadways provided by the Contractor at his own discretion for his own use, nor to site roadways under his control. A pedestrian footpath alongside the carriageway is part of the road for this purpose.

4 Bills of Quantities

Bills of Quantities shall fully describe and accurately represent the quantity and quality of the work called for in the Works Requirements.

5 Measurement

Unless the term metre used in these Rules is preceded by the words 'square' or 'cubic' it shall be deemed to be linear.

Work shall be measured net as fixed in position and each measurement shall be taken to the nearest 10mm (i.e. 5mm and over shall be regarded as 10mm and less than 5mm shall be disregarded). This Rule shall not apply to any dimensions stated in descriptions.

Where minimum deductions of voids are dealt with in this document they shall refer only to voids which are within the boundaries of measured areas. Voids which are at the

boundaries of measured areas shall always be the subject of deduction irrespective of size.

Where classification is given in this document as being between two limiting dimensions then the interpretation shall be as exceeding the first dimension but not exceeding the second.

The following symbols have been used to denote either a range or a limiting dimension for descriptive purposes:

- < means 'less than'
- ≤ means 'less than or equal to but not exceeding'
- > means 'exceeding'

The following abbreviations have been used:

mm	millimetre
m	metre
m ²	square metre
m ³	cubic metre
nr	number
t	tonne
kg	kilogramme
hr	hour
l	litre

6 Descriptions

The order of stating dimensions shall be consistent and generally in the sequence of length, width and height. Where that sequence is not appropriate or where ambiguity could arise, the dimensions shall be specifically identified.

Unless otherwise specifically required by these Rules, the following shall be deemed to be included with all items:

- a Labour and all costs in connection therewith.
- b Materials, goods and all costs in connection therewith.
- c Assembling, fitting and fixing materials and goods in position.
- d Plant and all costs in connection therewith.
- e Waste of materials.
- f All cutting.
- g Establishment charges, overhead charges and profit.

Junctions between straight and curved work shall in all cases be deemed to be included in the work in which they occur.

Where the term 'like items' is used, a detailed description of the item shall be given.

Notwithstanding the provisions in these Rules for labours to be given as linear items, such labours may be given in the description of work on which they occur that are to be measured in linear metres.

Notwithstanding the provisions in these Rules for labours to be enumerated, such labours may be given in the description of items of work on which they occur that are to be measured as a number.

7 Detailed Descriptions

The requirements of these Rules for 'detailed descriptions' shall be deemed to have been complied with if referenced drawn information included in the Works Requirements is provided that indicates fully the items to be described.

Reference to a Standard specification (EN, IS, etc) that is adequate to identify the material or process required, subject to the requirement to consider equivalents, may be given in an item description instead of the descriptive requirements of these Rules or a Component Detail.

8 Drawn Information

Drawn information taken from the Works Requirements where such information is required to be provided for compliance with these Rules is defined as follows:

a Location Drawings

- (i) Site/Block Plan: To locate the outline and position of the building site in relation to town plan or other wider context and to locate the position of the building in relation to general layout of site and means of access.
- (ii) Plans, Section and Elevations: To show the position occupied by the various spaces in the building and the

general construction and location of the principal elements.

b Component Details

To show all the information necessary for the pricing of the component.

Location Drawings and any other drawings referred to in the Work Sections shall be issued to tenderers. All other drawings used in the preparation of the Bill of Quantities shall be available for inspection by tenderers.

9 Quantities

Where the unit of billing is the metre, quantities shall be billed to the nearest whole unit. Fractions of a unit less than half shall be disregarded and all other fractions shall be regarded as a whole unit.

Where the unit of billing is the tonne, quantities shall be billed to the nearest two places of decimals.

Where the application of the foregoing would cause an entire item to be eliminated, such item shall be included in the Bill of Quantities as one whole unit, or in the case of items measured by the tonne, shall be billed as 0.01 tonne.

Where the project consists of identical units (e.g. a housing scheme) and the quantities for a unit are entered in a Bill of Quantities that is subsequently 'timesed' by the number of units in the project, the item may be billed to two places of decimals or may be enumerated.

10 Reserved Sum

The term 'Reserved Sum' means a sum determined by the Employer that is to be included in the Bill of Quantities until Contract award in respect of work or services to be provided by a Reserved Specialist or a Standing Conciliator.

11 Contract Sum for Novated Work

The term 'Contract Sum for Novated Work' is defined as a sum to be provided for work or services to be executed by a Novated

Specialist who has been selected by the Employer and whose confirmed contract price for the work required is known prior to the submission of tenders.

12 Work in Special Conditions

Alterations and other work in existing buildings shall be so described. Handling materials and getting them in or out of such buildings shall be deemed to be included with the items. Labours on existing work shall be so described.

Work outside the boundary of the site shall be so described.

Work carried out in or under water shall be so described stating whether canal, river or sea water and (where applicable) the mean spring levels of high and low water.

Preliminaries

1 Preliminary Particulars

1.1 Project, parties and consultants

The following shall be given:-

The name, nature and location of the project.

A general description of the works.

The names and addresses of the Employer and of the Consultants, stating their respective roles.

1.2 Description of site

Information to indicate the boundaries of the site, the means of access and the position of the works shall be given. Attention shall be drawn to any adjacent or abutting buildings. Where the Employer retains the risk associated with utilities, details of the utilities shall be given. Information to facilitate visiting the site shall be given.

1.3 Drawings and other documents

A list shall be given in the Bill of Quantities of the drawings and other documents from which the Bill of Quantities has been prepared. The list shall identify those issued to tenderers. Drawings and documents not forming part of the Works Requirements shall be identified as such.

Addresses where drawings and other documents not issued to tenderers may be inspected, by appointment or otherwise, shall be given.

2 Contract

Items shall be given in each case for the requirements of the following:-

2.1 Form, type and conditions of contract

Particulars of the version and edition of the Public Works Condition of Contract to be used and a schedule of the clause headings shall be given as an item. Where amendments to the Conditions of Contract have been approved for the project by the Government Contracts Committee (Construction), details of the amendments shall be given in full.

Where Schedule Part 1 of the Conditions of Contract requires or

allows the Employer to make an entry, an item for each such entry shall be given in the Bill of Quantities showing the text entered in the Schedule to allow for its pricing. Where the facility to price the implications of a particular entry are provided elsewhere in the Bill of Quantities, attention shall be drawn to this fact.

Details shall be given as to whether mechanism PV1 or PV2 of the Public Works Contracts is to apply. Where PV2 applies, details of the relevant PV2 appendices' entries shall be set out in the Bill of Quantities.

2.2 Public Works Contract for Building and Civil Engineering Works designed by the Employer

Items shall be given for each of the following when they are not Compensation Events in Schedule Part 1 Section K items 18-21:-

- a) An item of archaeological interest or human remains is found on the Site, and it was unforeseeable
- b) The Contractor encounters unforeseeable ground conditions (not resulting from weather) or man-made obstructions in the ground, other than Utilities
- c) The Contractor encounters unforeseeable Utilities in the ground on the Site
- d) Owners of Utilities on Site do not relocate or disconnect Utilities as stated in the Works Requirements, when the Contractor has complied with their procedures and the procedures in the Contract, and the failure is unforeseeable

- 2.3 The risk of quantities will remain with the Employer under Schedule part 1K Event 17 only where such a risk is not affected by another risk that has been passed to the Contractor elsewhere under Schedule part 1K. For example, where the risk of unforeseeable ground conditions under Schedule part 1K Event 19 is passed to the Contractor and where quantities of work required change as a consequence of unforeseeable ground conditions being encountered, then Event 19 shall take precedence over Event 17 to the extent that the change has arisen from the risk encountered.

2.4 Where an optional Compensation Event item has 'no' entered against it on Part 1, Schedule K, all costs associated with the Compensation Event shall be at the risk of the Contractor.

2.5 Contractor's liability

Items for the following shall be given unless included elsewhere in the Bill of Quantities in accordance with 2.1

- a) Contractor's liability for risk or injury to persons and property, for damage to the works and, where required for the project, professional indemnity insurance.
- b) Where the Employer requires the Contractor to effect insurance in respect of the Contractor's liability for any such risk, the relevant particulars shall be given.
- c) Where the Employer intends to relieve the Contractor of liability for any such risk, the relevant particulars shall be given.

2.6 Insurance liability of Employer

Where the cost of insuring any liability of the Employer is required to be included in the Contract Sum details of the liability shall be described in an Item.

2.7 Local Authorities fees and charges

Where the Works Requirements oblige the Contractor to pay local authority fees and charges for the benefit of the Employer such fee or charge shall be described and listed as separate items.

2.8 Obligations and restrictions imposed by the Employer

Items shall be given providing particulars of any obligations or restrictions to be imposed by the Employer in respect of the following, unless they are included elsewhere in the Bill of Quantities in accordance with 2.1.

- a) Access to and possession or use of the site.
- b) Limitations of working space.
- c) Limitations of working hours.
- d) Limitations on the operation of plant with respect to adjoining property.
- e) The use or disposal of any material found on the site.
- f) Hoardings, fences, screens, temporary roofs, temporary name boards and advertising rights.
- g) The maintenance and protection of existing services on,

under or over the site.

- h) The execution or completion of the work in any specific order or in sections or phases, including any coincidental work not at the discretion of the contractor.
- i) Maintenance of specific temperature and humidity levels.
- j) Temporary accommodation and facilities for the use of the Employer including heating, lighting, furnishing and attendance.
- k) Provision of connections to temporary voice and data communications systems for use of the Employer.
- l) Periodic usage and access charges on voice and data communications systems for use of the Employer and associated running costs.
- m) Provision of Project Supervisor Construction Stage services, by the Contractor under the Safety, Health & Welfare at Work (Construction) Regulations.
- n) Any other obligation or restriction.

3 Work by Specialist Works Contractors, Work by Utility Providers and Work by Others Engaged Directly by the Employer.

Items shall be given in each case for the requirements of the following:-

3.1 Work by Specialist Works Contractors

Work which is required to be carried out by a Reserved Specialist shall be given as a Reserved Sum. A description of the Specialist work shall be given.

Work which is required to be carried out by a Novated Specialist shall be given as a Contract Sum for Novated Work. A description of the Novated work shall be given along with the details of the tender accepted, including the identity of the novatee.

An item shall be given in association with each 'Reserved Sum' and each 'Contract Sum for Novated Work' for profit required by the Contractor on the Sum.

An item shall be given in association with each 'Reserved Sum' and each 'Contract Sum for Novated Work' for management, which shall include the contractor's management, risk acceptance and overhead

costs associated with the employment of each of the Specialists.

'Attendance' is the work to be executed or services to be provided by the Contractor by way of assistance to or facilitation of each Reserved Specialist and Novated Specialist.

'General attendances' are provided to all Reserved Specialists and Novated Specialists. 'Special attendances' are those which the Contractor may be required to provide in addition to general attendance for specific Reserved or Novated Specialists.

An item shall be given for each 'Reserved Sum' relating to Specialist Work and for each 'Contract Sum for Novated Work' in respect of the provision of 'general attendance'. General attendance shall be deemed to include the use of Contractor's temporary roads, hardstandings, standing scaffolding, standing power-operated hoisting plant, the provision of temporary lighting and water supplies, provision of space for the Reserved Specialist's and Novated Specialist's own offices and the storage of his plant and materials and for the use of the Contractor's messrooms, sanitary accommodation and welfare facilities.

Where special attendance is to be provided by the Contractor an item shall be provided for each such item of attendance and full information on the nature of the attendance required shall be stated in the description. In particular, where the following items of special attendance are to be provided, the requirements stated shall be compiled within the description of the attendance:

- a) Temporary access roads and hardstandings required with a description of traffic to be catered for, width of carriageway, extent of accessway to be provided and remedial works to be carried out to the trafficked areas.
- b) Weatherproof covered storage and accommodation – floor area to be provided together with details of any enhancements required such as minimum eaves heights, lighting levels, power supply requirements, heating, ventilation, water and drainage services and, where a requirement, site location.
- c) Power supplies giving the phase and maximum electrical loading to be allowed for – Specialists shall be deemed responsible for the provision of transformers and temporary distribution cabling unless otherwise stated in the description.

- d) Scaffolding – the area of elevation or the floor area to be scaffolded. Where access towers are to be provided the number, size and height of the towers shall be stated. The provision of scaffold boards and ladders and of all certification required for safe use shall be deemed to be included.
- e) Unloading, hoisting and distributing – the size and weight of the items and their destination in the work shall be described.
- f) Maintenance of specific temperature and humidity levels – the required temperatures and humidity levels shall be stated. The provision of plant and all necessary fuel/power supplies shall be deemed to be included. Any restrictions on the use of the permanent mechanical installation of the building shall be stated.

For all other special attendance items to be provided by the Contractor, the scope of the work required of the Contractor shall be detailed in the description.

In the case of all special attendance items the provision, maintenance and removal or any plant, equipment or work required and the reinstatement of any part of the Works disturbed shall be deemed to be included.

The provision of any special attendance not listed in the Bill of Quantities shall be deemed to be included in the Reserved Sum for the Reserved Specialist work or the Contract Sum for Novated Work for Novated Specialist work.

'Builders work' to be carried out by the Contractor in connection with work by Reserved Specialists shall be given in accordance with the appropriate requirements of these Rules.

3.2 Dispute Resolution

An item shall be given for the Contractor's costs associated with the Project Board where Clause 13.1 of the Conditions of Contract intended for use on the Contract provides for a Project Board.

Where applicable, an item shall be given stating the Reserved Sum for the Contractor's share of the costs associated with the Standing Conciliator's charge for making himself available to the project and for his monitoring of progress.

3.3 Work by Utility Providers

Work which is to be carried out by a Statutory Authority, Public Undertaking or Public or Private Utility Providers shall be so described and measured in accordance with the appropriate requirements of these Rules.

3.4 Work by others engaged directly by the Employer

A description of any work to be carried out on the site of the Works during the period prior to Substantial Completion by others directly engaged by the Employer shall be provided.

Obligations of the Contractor with respect to each item of such work and forebearances required of him in connection with its execution shall be listed. The list shall include any general and special attendances required of the Contractor.

4 General facilities and obligations

For convenience in pricing, items for the following shall be given:

- a) Supervision and co-ordination of the Works.
- b) Plant, tools and vehicles
 - i. Bringing to site, erecting and removing on completion
 - ii. Maintaining on site for the duration of the works.
- c) Scaffolding
 - i. Bringing to site, erecting and removing on completion
 - ii. Adjusting and maintaining on site for the duration of the works.
- d) Site administration including the provision and keeping of all statutory records.
- e) Security.
- f) Provision of clearly identifiable site perimeters and surroundings.
- g) Provisions for protection of the public from site operations and arrangements for protection of third parties and visitors to the site in accordance with all statutory requirements.
- h) Transport for work people.
- i) Protecting the works from inclement weather.
- j) Water for the works. Particulars shall be given if water will be supplied by the Employer.
- k) Temporary lighting and power for the works. Particulars shall be given if current will be supplied by the Employer.
- l) Temporary roads, hardstandings, crossings and similar items.
- m) Temporary accommodation for the use of the Contractor.
- n) Temporary storage areas including suitable and separate storage for dangerous materials or substances.
- o) Temporary telephones for the use of the Contractor.
- p) Traffic regulations.
- q) Welfare facilities for work people to be in compliance with the fourth schedule of the Safety Health and Welfare at Work (Construction) Regulations.
- r) Safety Health and Welfare at Work provisions including items for the following:-
 - i. The operation of the requirements of the SAFE PASS and CONSTRUCTION SKILLS CERTIFICATES SCHEMES
 - ii. Safety Officers and all safety supervisors, first aiders, inspectors and certifiers required
 - iii. Tests and certificates on plant and equipment
 - iv. Safety signs and signals
 - v. Provision of Personal Protective Clothing and Personal Protective Equipment
 - vi. Provision and maintenance of emergency routes and exits and designated personnel responsible for emergency procedures
 - vii. Energy distribution installations
 - viii. Temporary fire detection and fire fighting systems
 - ix. Maintenance of appropriate working conditions and work stations
 - x. Provision and maintenance of on-site traffic routes
 - xi. Provision of first aid equipment and first aid room as appropriate.
- s) Disbursements arising from the employment of work people.
- t) Maintenance of public and private roads.
- u) Removing rubbish, protective casings and coverings and clearing the works on completion.
- v) Compliance with waste management statutory requirements.
- w) Drying the works.
- x) Temporary fencing, hoardings, gates, doors, screens, fans, planked footways, guardrails, gantries, floor, stair, roof edge protection, and protection of openings, safety nets and similar items.
- y) Control of noise, pollution and compliance with statutory obligations.



z) Protection of the works.

Maintaining temporary works, adapting, clearing away and making good shall be deemed to be included with the items. Notices and fees to Statutory Authorities or Public or Private Utilities Providers or Undertakings related to the preceding items shall be deemed to be included with those items.

Excavation and Earthwork: Ground Investigation

INFORMATION REQUIRED

- ▶ Location, Drawings
- ▶ Methods, tests and reporting requirements
- ▶ Backfilling material other than that arising from the excavations
- ▶ Nature of contaminated or hazardous materials arising from excavations and requirements for disposal.

Any information that is provided as background information, rather than included in the Works Requirements, shall be identified as such.

CATEGORIES	1	2	3	4	Unit
1 Site exploration	1 observations 2 taking samples				item
	3 tests	1 site 2 laboratory			
2 Trial holes (nr)	4 excavating	3 maximum depth ≤ 2.00m > 2.00m in 2m stages		Stating thickness through: 1 concrete 2 macadam 3 like items stating material	m
3 Bore holes (nr)	5 driving 6 lining	4 maximum depth ≤ 4.00m >4.00 ≤ 8.00m > 8.00m		4 raking	
	7 capping	5 details stated			nr
4 Extra over items on which they occur	8 reinstating surface finish	6 details stated			
	9 handling and disposal of contaminated or hazardous materials	7 details stated			m ³

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
	1 Tests include the following: Stability, Acidity, Water Levels, Percolation and other similar	1 Preparing reports on observations, work methods and results
1 Measurement of Trial Holes shall have regard to overall depth only 2 Commencing level shall be stated in the description of Trial Hole excavation.		2 Earthwork support, disposal, backfill and other ground works required
3 Commencing level shall be stated in the description of Bore Hole excavation.		

Excavation and Earthwork: Excavation

INFORMATION REQUIRED

- ▶ Ground Investigation Reports indicating the nature of the ground
- ▶ The ground water level and date when established (pre-contract level)
- ▶ Ground water subject to periodic changes such as tidal effects
- ▶ Trial pits or bore holes stating their location
- ▶ Over or underground services known to be present
- ▶ Nature of contaminated or hazardous materials arising from excavations and requirements for disposal.
- ▶ Location Drawings which shall show existing features, buildings, services and the like, indicating those for retention
- ▶ Materials for filling and details of compaction
- ▶ Limitations on methods of execution

Any information that is provided as background information, rather than included in the Works Requirements, shall be identified as such.

CATEGORIES	1	2	3	4	Unit
1 Removing	1 trees 2 tree stumps	1 girths ≤ 0.45m > 0.45 ≤ 1.5m > 1.5 ≤ 3.0m > 3.0m; girth stated	1 filling material where not at Contractor's discretion	nr	
	3 hedges	m			
	4 site vegetation	m ²			
2 Preparation	5 lifting sods	2 method and depth stated			
3 Excavation	6 topsoil for preservation	3 average depth stated			
	7 reduce levels 8 basements 9 foundation trenches 10 isolated pits (nr) 11 pile caps (nr)	4 maximum depth ≤ 2.00m > 2.00m in 2 m stages			m ³
4 Extra on excavation items for	12 below ground water level				
	13 around existing services stating type	5 parallel to excavations			m
		6 crossing excavations			nr
	14 handling and disposal of contaminated or hazardous materials	7. details stated			m ³

D

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<p>1 Girths shall be measured at 1.00m over ground level</p>	<p>1 Trees \leq 0.45m girth occurring within a hedge are deemed to be included with the hedge</p> <p>2 Site vegetation includes bushes, undergrowth, scrub and trees \leq 0.45m girth</p>	<p>1 Grubbing up roots and disposal 2 Filling material where at Contractor's discretion</p>
<p>2 Lifting sods shall be measured only where required for preservation</p>	<p>3 Foundation trenches include associated pads and ground beams</p>	<p>3 Careful storage and maintenance for relaying</p>
<p>3 Quantities for all excavations items shall be taken as the bulk before excavation</p> <p>4 In all Excavation categories starting level shall be stated where $>$ 0.25m below existing grounds levels</p>		<p>4 Earthwork support 5 Interlocking steel piling where at Contractor's discretion 6 Compacting, levelling or grading bottoms of excavation</p>
<p>5 "Extra on Excavation" items shall be measured as the total volume irrespective of depth</p> <p>6 Measurement for work beside/around existing services shall be taken only where the existing services are to be retained or remain live</p> <p>7 Where ground investigation reports are not available a description of the ground and the pre-contract water level which has been assumed shall be stated</p> <p>8 Where the Employer is retaining the 'ground conditions' risks the ground water level shall be re-established at the time the various excavation works are carried out and the measurement of 'Extra on excavation items for being below ground water level' shall be adjusted accordingly</p>		

D

CATEGORIES	1	2	3	4	Unit
1 Extra on excavation items for	1 breaking up existing	1 rock			m ³
		2 concrete			
		3 reinforced concrete			
		4 brick, block, stonework			
		5 underground services, detailed description			m
		6 hard surfaces; detailed description			m ²
	2 being next to	7 existing buildings			
		8 existing roadways			
2 Working space	3 reduce levels	9 maximum depth ≤ 2.00m > 2.00m in 2m stages	1 backfilling with special materials, details stated		m ²
	4 basements				
	5 foundations				
	6 isolated pits (nr)				
	7 pile caps (nr)				
3 Disposal	8 water	10 surface			item
		11 ground			
		12 contaminated ground			
	9 topsoil	13 for preservation	2 specific locations (detailed description)		m ³
	10 excavated material	14 on site	3 specific handling (detailed description)		
		15 off site			
4 Filling; material stated	11 to excavations	16 av. thickness ≤ 250mm > 250mm	4 details of special sources, selection, treatment, handling		
	12 to make up levels				
5 Surface treatments	13 blinding filling				m ²
	14 trimming rock				

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<p>1 Descriptions for the breaking out of hard surfaces shall state the nature of same</p> <p>2 Excavation next to existing buildings or existing roadways is deemed to arise when the horizontal distance between the excavation and the existing building/roadway is less than the depth of excavation</p> <p>3 Extra over excavation for work next to existing buildings/roadways is taken as the area of the face of excavation measured from the starting level to the bottom of such excavations</p>	<p>1 Rock is defined as any material met with in excavation which is of such size or position that they can only be removed by means of wedges, special plant or explosives</p>	
<p>4 Working space shall only be measured where Formwork, Rendering, Tanking or Protective Walls are required to the face of construction below starting level of excavation but only where the face of excavation is $\leq 0.60\text{m}$ distant and subject is 5 to 6 below</p> <p>5 Working space shall be measured where the height of Formwork or Protective Walls below starting level of excavation is $> 1.00\text{m}$ or where the bottom of the Formwork or Protective Walls is $>1.00\text{m}$ below starting level of excavation</p> <p>6 Working space shall be measured full depth where Rendering or Tanking is required</p> <p>7 Designed interlocking steel piling shall be measured in accordance with Section E</p>	<p>2 Backfilling with special materials means material other than that arising from the excavation</p> <p>3 For the purpose of measurement, the height of working space shall be taken from the starting level of relevant excavation to the bottom of formwork, rendering, tanking, or protective walls</p>	<p>1 Additional earthwork support, disposal, backfill with excavated material, handling and disposal of dangerous materials and breaking up hard materials</p> <p>2 Additional ground or surface water disposal</p>
<p>8 Disposal of ground water shall only be measured where a corresponding item for excavation below ground water level is measured and where the Employer is retaining the 'ground conditions' risks, shall be adjusted accordingly if post contract water levels differ from the pre contract levels</p> <p>9 Quantities for the disposal of excavated materials shall be the bulk before excavation</p>	<p>4 Surface water is water on the surface of the site and the excavations</p>	<p>3 All excavated material including broken up hard material and the like</p>
<p>10 The volume of filling shall be taken as equal to the excavation void as measured</p>		<p>4 Levelling or grading to falls</p>
<p>11 Horizontal, vertical and sloping surfaces where required shall each be so described</p>	<p>5 Trimming to rock includes sides and bottoms</p>	<p>5 Compaction to filling and bottoms of excavations</p>

Excavation and Earthwork: Underpinning

INFORMATION REQUIRED

- ▶ Location and Survey Drawings
- ▶ Ground Investigation Reports
- ▶ Nature of contaminated or hazardous materials arising from excavations and requirements for disposal.
- ▶ Details of the Existing Structure to be Underpinned
- ▶ Underpinning Works, including ground preparation, soil stability, tests, concrete, reinforcement, brickwork, blockwork, and the like items
- ▶ Limitation on the extent of Underpinning operations to be carried out in a single section
- ▶ Limitation on method of execution

Any information that is provided as background information, rather than included in the Works Requirements, shall be identified as such.

CATEGORIES	1	2	3	4	Unit
1 Temporary support	1 to existing structures				item
2 Preparation	2 removing existing projecting foundation, dimensioned description	1 concrete 2 reinforced concrete 3 other, details stated	1 within existing building 2 access from one side 3 access from both sides		m
	3 surfaces of existing work to receive new supports	4 width stated			
3 Excavation	4 preliminary 5 under existing structure	5 maximum depths ≤ 2.00m > 2.00 in 2m stages			m ³
4 Working space					m ²
5 Underpinning	6 works required are to be fully described including reference to drawing	6 dimensioned description overall and for each component			m
	7 designed continuity connections on reinforcement bars	7 dimensioned description			nr
6 Filling	8 imported material				m ³

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<ol style="list-style-type: none"> 1 Excavation depths shall be taken below commencing level for each type 2 Excavating below ground water level and around existing services shall be measured in accordance with the Rules for excavation 3 Working space shall be measured from the commencing level of the preliminary excavation to the proposed bearing level of the new work 4 Where there is to be access from both sides the working space shall be measured both sides 5 Details of backfilling with material other than that arising from the excavation shall be stated 6 The volume of filling shall be that of the preliminary excavation 7 Where ground investigation reports are not available a description of the ground and the pre-contract water level which has been assumed shall be stated 8 Where the Employer is retaining the 'ground conditions' risks the ground water level shall be re-established at the time the various excavation works are carried out and the measurement of 'Extra on excavation items for being below ground water level' shall be adjusted accordingly 	<ol style="list-style-type: none"> 1 The width of the preliminary excavation shall be the sum of any projection of the retained foundation beyond the face of the wall plus any projection of the underpinning beyond the face of the retained foundation 2 The depth of preliminary excavation is that from the commencing level to the tip of the retained foundation except where the underpinning is to project beyond the retained foundation, in which case the depth shall be to the underside of the retained foundation 3 Excavation under existing structure is that from the underside of the existing foundation to the proposed bearing level of the new works 	<ol style="list-style-type: none"> 1 Earthwork support, backfill with excavated material, disposal of surplus and of water, breaking out hard materials and like items 2 Formwork at edges of work limits

Piling: Piles

INFORMATION REQUIRED

- ▶ Location drawings which show the trial pits or bore holes stating their location.
- ▶ Location drawings which shall show existing features, buildings, services and the like, indicating those for retention.
- ▶ Materials for filling and details of compaction.
- ▶ The general layout of piles
- ▶ The position of work within the site
- ▶ Over or underground services known to be present
- ▶ Ground Investigation Report indicating the nature of the ground.
- ▶ The ground water level and date when established (pre-contract level).
- ▶ High/Low Water Levels as appropriate for work to be carried out near watercourses, tidal areas or the like.
- ▶ Kind and quality of materials, sequence, bearing load, commencing levels and proposed bearing level.
- ▶ Limitation on methods of execution.
- ▶ Nature of contaminated or hazardous materials arising from excavations and requirements for disposal.

Any information that is provided as background information, rather than included in the Works Requirements, shall be identified as such.

CATEGORIES	1	2	3	4	Unit
1 General Rules					
2 Mobilise and demobilise	1 on site				item
	2 for each pile				nr
3 Bored cast in place concrete piles (nr) 4 Driven case in place concrete piles (nr)	3 diameter stated in mm	1 concreted length	1 preliminary 2 raking (inclination ratio stated) 3 contiguous bored		m
		2 depth bored or driven (to stated maximum)			
		3 boring into rock (stating depth)			nr
5 Preformed concrete piles (nr) 6 Preformed prestressed concrete piles (nr) 7 Preformed concrete sheet piles (nr) 8 Timber piles (nr)	4 cross section stated in m ²	4 driven depth			m
9 Isolated steel piles	5 mass stated in kg/m		4 preliminary 5 raking (inclination ratio stated)		

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<p>1 Materials of which piles are composed shall be stated in the descriptions</p> <p>2 Bored and driven depths shall be measured along the axes of piles from the commencing surface to the toe levels of bored piles, to the bottom of the casings of driven cast in place piles and to the bottom of toes of other driven piles</p> <p>3 For the purposes of measurement the pre and post-contract commencing level shall be the same</p> <p>4 Disposal of excavated material shall be measured in accordance with the rules of Section D</p>	<p>1 For each pile type measured items shall be given for the number of piles of each size and an item for the overall depth (bored or driven as appropriate) for each size. In the case of cast in place piles the concreted length shall also be given for each size</p>	
		<p>1 Mobilising and demolishing for each pile in an interlocking steel pile installation</p>
<p>5 The concreted lengths of cast in place piles shall be measured from the cut-off levels expressly required to the toe levels expressly required</p>	<p>2 Maximum depth is taken to mean a depth which is not exceeded by any pile included in the item</p> <p>3 Piles comprising a driven permanent steel casing which is filled with concrete shall be classed as 'driven cast in place concrete piles' where the piles are designed for the load to be carried on the concrete</p>	
<p>6 Boring into rock is only measured where specifically required</p>		
<p>7 The cross-section type, dimensions or diameter shall be stated in the description. Details of coatings, treatments driving heads and shoes are to be stated in the description</p>	<p>4 Length of piles is taken to mean the length expressly required to be supplied excluding extensions by including heads and shoes</p>	
<p>8 The mass per metre and cross-sectional dimensions shall be stated in the description</p> <p>9 Details of coatings and treatments shall be stated in the description</p>	<p>5 Length of piles is taken to mean the length expressly required to be supplied excluding extensions</p> <p>6 Piles comprising a driven permanent steel casing which is filled with concrete shall be classed as 'isolated steel piles' where the piles are designed for the load to be carried on the casing. Filling such piles shall be measured in accordance with the rules of Section F</p>	

Mechanical Installations: Generally

INFORMATION REQUIRED

- ▶ Location Drawings
- ▶ Detailed drawings indicating the nature of each installation and scope of work together with pipe and duct layouts, positions of components, plant and equipment
- ▶ Assembly and Component Details and details of connections to Electrical Equipment
- ▶ Kind and quality of materials, tests on materials and on final installations

CATEGORIES	1	2	3	4	Unit
1 General Rules					
2 Mains supply 3 Public mains	1 connections to mains 2 provision of mains supply	1 nature, type, and location of supply stated			item

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<p>1 Whether work is internal, external or in Plant Rooms shall be stated in the descriptions of the items</p> <p>2 Work shall be classified in the following types of installations:</p> <ul style="list-style-type: none"> a Hot & Cold Water Installation b Fire Fighting Installation c Heating Installation d Fuel Oil Installation e Fuel Gas Installation f Refrigeration Installation g Compressed Air Installation h Hydraulic Installation i Chemical Installation j Special Gas Installation k Medical Suction Installation l Pneumatic Installation m Vacuum Installation n Air Handling Installation o Other Installation, type stated <p>3 Builder's Work for all mechanical installations may be given under one heading</p>		<p>1 Fixing to backgrounds</p> <p>2 Plant and equipment connections to pipe and duct work</p> <p>3 Connections between pipes of the same size and material</p> <p>4 Connections between ducts of the same material</p>
<p>4 Public mains are those owned by a statutory authority, public undertaking or public or private utility providers</p>		

Electrical Installations: Generally

INFORMATION REQUIRED

- ▶ Location Drawings
- ▶ Detailed drawings indicating the nature of each installation and scope of work together with circuit diagrams, wiring layout, positions of components, controllers, equipment and positions of final consumer equipment
- ▶ Type and voltage of the main electricity supply stating the location of the main supply point
- ▶ Kind and quality of materials, tests, electrical voltage and the type and the final amperage/voltage of each circuit

CATEGORIES	1	2	3	4	Unit
1 General Rules					
2 Mains supply 3 Public mains	1 connections to mains 2 provision of mains supply		1 details of nature, type, and location of supply stated		item
4 Transport installations	3 lifts 4 escalators 5 like items		2 detailed description indicating type, size, speed, capacity, loading, height of shaft, floors served, testing and commissioning and electrical supply		nr

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<p>1 Whether work is internal or external shall be stated in the descriptions of the items</p> <p>2 Work shall be classified in the following types of installations:</p> <ul style="list-style-type: none"> a. Incoming Service b. Standby Equipment c. Mains Installation d. Power Installation e. Lighting Installation f. Heating Installation g. Telephone Installation h. Data Transmission Installation i. Clock Installation j. Sound Distribution Installation k. Security System Installation l. Lighting Protection Installation m. Transport Installation n. TV Installation o. Work associated with Mechanical Engineering Installations p. Other Installation, type stated <p>3 Builders' work for all electrical installations may be given under one heading</p>		<p>1 Fixing to backgrounds</p>
<p>4 Public mains are those owned by a statutory authority, public undertaking, or public or private utility providers</p>		

Drainage: Below ground

INFORMATION REQUIRED

- ▶ Location Drawings
- ▶ Ground investigation reports and details of ground water in accordance with Section D
- ▶ Over or underground services known to be present
- ▶ Nature of contaminated or hazardous materials arising from excavations and requirements for disposal.
- ▶ Starting level of excavations
- ▶ Kind and quality of materials
- ▶ Materials for filling and method of compaction if not at Contractor's discretion

Any information that is provided as background information, rather than included in the Works Requirements, shall be identified as such.

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CATEGORIES	1	2	3	4	Unit
1 Excavating trenches	1 pipes ≤250mm nominal diameter 2 pipes >250, ≤450mm nominal diameter 3 pipes >450mm nominal diameter 4 multiple pipes stating number and nominal diameter and pipes	1 average depth of trench in stages of 500mm	1 curved 2 below ground water level 3 unstable ground 4 backfilled with special materials, details stated		m
2 Extra over excavating trenches irrespective of depth	5 breaking up thickness stated	2 rock 3 concrete 4 reinforced concrete 5 brick, block, stonework			
	6 handling and disposal of contaminated or hazardous materials	6 detailed description			
	7 breaking up hard surfaces	7 detailed description	5 reinstating to match existing		
	8 next/alongside existing services	8 type of services stated	6 multiple pipes in trench		
	9 around existing services crossing excavations				nr
	10 next to existing roadways 11 next to existing buildings				m
	12 lifting sods for preservation	9 method and depth stated	7 re-laying sods		

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<p>1 Where the Employer is retaining the 'ground conditions' risks the ground water level shall be re-established at the time the various excavation works are carried out and it is described hereinafter as the post-contract water level</p> <p>2 Excavating trenches below ground water level shall be measured where the ground water level is above the bottom of the trench and shall be adjusted accordingly if the post contract water level differs from the pre-contract water level</p> <p>3 Backfilling with special materials occurs where selected or treated excavated materials, or imported materials, are specified</p> <p>4 Where ground investigation reports are not available, a description of the ground and the pre-contract water table which has been assumed shall be stated</p>	<p>1 Average depth of trench is the average depth between manholes</p> <p>2 Unstable ground includes running silt, running sand, and the like</p> <p>3 Rock is defined as any materials within the excavation which is of such size or position that it can be removed only by means of wedges, special plant or explosives</p> <p>4 Multiple pipes in trenches shall be measured where the new trench is for more than one pipe</p>	<p>1 Earthwork support</p> <p>2 Steel sheet piling at contractor's discretion</p> <p>3 Preparation of surfaces</p> <p>4 Disposal of excavated materials</p> <p>5 Backfilling with excavated materials</p> <p>6 Working space</p>
<p>5 Excavation next to existing buildings or existing roadways shall be deemed to arise when the horizontal distance between the centre line of the excavation and the existing building/roadway is less than the depth of the excavation</p> <p>6 Extra over items shall be measured as extra over the trenches category listed in Categories 2 column Rules 1-4</p> <p>7 Designed interlocking steel piling shall be measured in accordance with Section E</p>		

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CATEGORIES	1	2	3	4	Unit
1 Disposal	1 ground water 2 surface water				item
2 Beds 3 Beds and haunching	3 width and thickness of bed	1 nominal diameter of pipe 2 multiple pipes stating number and nominal diameter of pipes	1 designed joints, giving details		m
4 Beds and surrounds	4 width and thickness of bed and surround				
5 Vertical casings	5 thickness of surround				
6 Pipes	6 type, nominal diameter and method of jointing				
			2 short lengths ≤3.00m		nr
7 Extra over pipes on which they occur for	7 fittings, type stated	3 nominal diameter stated			
8 Pipe accessories	8 type stated	4 detailed description			

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<p>1 Where the Employer is retaining the 'ground conditions' risk, disposal of ground water shall be measured only when excavating below ground water level is also measured, and shall be adjusted accordingly if the post-contract water level differs from the pre-contract water level</p>	<p>1 Surface water is water on the surface of the site and the excavations</p>	
		<p>1 Beds, haunches, surrounds and casings are deemed to include formwork</p>
<p>2 Pipes shall be measured over all fittings and branches</p>		
	<p>2 Fittings include: bends junctions reducers adaptors ends and the like</p>	<p>2 Cutting and jointing pipes to fittings and providing everything necessary for jointing</p>
	<p>3 Pipe accessories include: A.J.'s gullies traps inspection/access fresh air inlets non-return flaps and the like</p>	<p>3 Accessories are deemed to include jointing pipes thereto and bedding in concrete</p>

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CATEGORIES	1	2	3	4	Unit	
1 Manholes 2 Soakaways 3 Cesspits 4 Inspection chambers 5 Waste treatment plants specific to the effluent from the site 6 Like items	1	detailed description stating internal dimensions and depth in stages of 500mm			nr	
	2	proprietary units	1 detailed description			
7 Extra over excavating irrespective of depth	3	breaking up 2 rock 3 concrete 4 reinforced concrete 5 brick, block, stonework			m ³	
			6	underground services, details stated		m
			7	hard surfaces; detailed description	1 reinstating to match existing	m ²
	4	handling and disposal of contaminated or hazardous materials	8 generally		m ³	
8 Sundries 9 Mains 10 Public mains	5	channels	9 detailed description		nr	
	6	benching				
	7	step irons				
	8	covers				
	9	intercepting traps				
	10	backdrop assemblies				
	11	like items				
	12	connections to mains	10 details of nature, type, and location of supply stated		item	
	13	provision of mains				
11 Testing and Commissioning	14	detailed description				

MEASUREMENT RULES	MEASUREMENT SCOPE	DEEMED TO BE INCLUDED
<ol style="list-style-type: none"> 1 Work to existing manholes shall be so described 2 Breaking up shall be measured as the overall dimension of the base by the thickness of the material 	<ol style="list-style-type: none"> 1 Depths of manholes, soakaways, cesspits, inspection chambers, waste water treatment plants and the like items is defined as cover level to invert level 2 Like items include: surface water attenuation tanks, petrol interceptors, etc. 	<ol style="list-style-type: none"> 1 Making good rendered finishes 2 Building in ends of pipes and the like 3 All work required for the construction of manholes, etc. unless specifically required elsewhere in this Section
<ol style="list-style-type: none"> 3 Public mains are those owned by a statutory authority, public undertaking, or public or private utility providers 		
		<ol style="list-style-type: none"> 4 Provision of water, fuel, gas, electricity and other supplies for testing and commissioning

Fittings: Fittings, Equipment and Furniture

INFORMATION REQUIRED

- ▶ Location Drawings
- ▶ Component drawings and details
- ▶ Nature of construction, components and source

CATEGORIES	1	2	3	4	Unit
1 Fittings	1 sanitary 2 signage 3 fireplace & health 4 special purpose, details stated	1 detailed description	1 fixing requirements where not at the Contractor's discretion 2 special storage or protection, details stated	nr	
				m	
2 Equipment	5 storage 6 play 7 domestic kitchen 8 catering 9 special purpose, details stated				
3 Furniture, furnishings, details stated	10 internal furnishings 11 curtains or blinds 12 site 13 special purpose, details stated 14 catering ranges 15 cupboards 16 built-in seating 17 Shelving 18 curtain tracks				
4 Rails or protective guards	19 rubbing rails or the like				
5 Sundries	20 fixing grounds				
	21 base pads			nr	
6 Fixing items supplied by the Employer	22 detailed description	2 method of fixing stated			

