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ARM4:a Working Guide:Section A:General Rules

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ARM4 – A Working Guide - Section A - General Rules

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Foreword.

This paper is a companion to Section A – General Rules of the Agreed Rules of Measurement 4th Edition (2009) and is provided as a guide to help better understanding of ARM4 and to clarify its contents. It is hoped that it may remove some of the disagreements which can arise on construction projects due to differences of interpretation.

The paper follows the ARM sequence, stating the rules first and following these with notes and commentaries on the various provisions. Some items contained within the ARM are self-explanatory, and therefore require no further comment. Explanations are generally by text and, where appropriate, by illustration. While this paper attempts to clarify and explain various items in the ARM: it does not seek to override the ARM or any of its provisions.

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 and extent of the required work. These Agreed Rules of Measurement shall apply equally to both proposed and executed works.

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

Commentary

The rules contained in the ARM cover the vast majority of building works. In certain instances, however, *‘in order to define the precise nature and extent of the proposed work, it will be necessary to give, in descriptions or elsewhere, certain supplementary information including any limits on tolerances, method, sequence, etc. imposed by the designer.’* (RICS and BEC, 1988) Any departure from the rules of ARM must be clearly set out in the Bill of Quantities (BQ) (Davidson and Hambleton, 2006)

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.

Commentary

Apart from the General Rules and the Preliminaries sections, ARM4 is set out in tabular format across the width of two pages. Tables regulate how the various works are to be measured and described. The tables are set out in three distinct sections: information required; category tables, and what might be referred to as supplementary rules.

Information Required

Preliminary rules are set out at the start of each section along the top of the left hand pages of ARM4. The purpose of these rules is to set out the information which should be given at the start of each work section to locate and define the work. The Information Required section generally enables surveyors to compose concise specification headings which refer to the various types of work set out in the subsequent Category Tables. In many cases, certain particulars may be given in preamble clauses in a separate section of the Bill or at the start of the particular Bill element or work section. On other occasions, particulars set out in the Information Required section will not apply to the particular project, and in these situations, may be ignored. For example when measuring in-situ concrete, there may be no limitations required on the pouring, compacting, curing or waterproofing of the concrete, alternatively these particulars, where required, may be cross referenced to particular preamble or specification clauses.

The Information Requirements section applies to all subsequent rules until superseded by another set.

In many instance the information required section calls for location drawings. These are usually identified in the Preliminaries section of the Bill, or are provided on further drawings which form part of the tender documentation which accompanies the Bill.

Classification Tables

The Classification Tables are on the left hand pages of ARM4. These contain four category columns and identify the units under which the work must be measured.

The Category 1 column lists descriptive features commonly encountered in building works and often defines a material's location or function. Categories 2, 3, and 4 list further sub-groups into which the main items are divided. Category 2 often identifies the size, thickness or cross sectional area classification ranges of the particular work items. Category 3 may identify additional cost significant characteristics necessary to complete a precise description, while Category 4 identifies further complicating factors which would also give rise to additional cost implications.

For example, Category 1 relating to brickwork classifies work as either: 'Walls in trenches; Walls; Isolated columns; Isolated casings, or Chimneys.' Category 2 rule requires different wall thicknesses to be measured separately. Category 3 is blank and therefore requires no further descriptive input. Category 4, however, identifies five instances in which the work must be separately measured: curved work; work tapering on one face; work tapering on both faces; work built against other work, and work bonded to other work, giving details.

Supplementary Rules

These rules are set out on the right hand pages of ARM4. They comprise Measurement Rules, Measurement Scope and Deemed to be Included items

The *Measurement Rules* set out when work shall be measured and the method by which quantities are computed.

The *Measurement Scope* defines the extent and limits of the work represented by a word or expression used in the rules and in a bill of quantities.

The *Deemed to be Included* section draws attention to particular incidental work which shall be deemed to be included in the appropriate items in a bill of quantities. Such works 'shall neither be measured separately nor included in descriptions'. Note, however, that 'Where there are specific requirements for such work, they shall be stated.'

An example of composing a block wall description and the applicable measurement rules is set out in Appendix A below.

Figure 1 below illustrates how the Tables are used.

Title of Work Section					Title of Work Section		
Information Required							
Category	Category	Category	Category	Unit	Measurement	Measurement	Deemed to be
1	2	3	4		Rules	Scope	Included
1	5	8	12	16	M1	S1	D1
2		9	13		M2	S2	
3	6	10	14	17		S3	D2
4	7	11	15	18	M3	S4	D3

Fig 1 ARM Tabular Rules. Adapted from Kiely and Kelly (2003)

Items in zone 1 are sub-categorised where required by zones 5 and 8 and state the applicable supplementary information in zone 12. They are measured in the units stated in zone 16 and are subject to the additional rules, scope and coverage matters indicated in zones M1, S1 and D1.

Items in zone 2 are sub-categorised where required by zones 5 and 9 and state the applicable supplementary information in zone 13. They are measured in the units stated in zone 16 and are subject to the additional rules, scope and coverage matters indicated in zones M2, S2 and D1.

Items in zone 3 are sub-categorised where required by zones 6 and *either* 10 or 11 and state the applicable supplementary information in zone 14. They are measured in the units stated in zone 17 and are subject to the additional rules, scope and coverage matters indicated in zones M2, S3 and D2.

Items in zone 4 are sub-categorised where required by zones 7 and either 10 or 11 and state the applicable supplementary information in zone 15. They are measured in the units stated in zone 18 and are subject to the additional rules, scope and coverage matters indicated in zones M3, S4 and D3.

It should be noted that the tabular rules will not cover every eventuality. Davidson and Hambleton (2006) comment that where an employer requires spare carpet tiles, raised floor panels or suspended ceiling tiles, for example, that the surveyor must adapt the rules appropriately to cater for such instances. They add that where the requirements of ARM are not complied with in the Bill that this would constitute a Bill error.

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.

Commentary

These definitions require no further commentary.

4 Bills of Quantities

Bills of Quantities shall fully describe and accurately represent the quantity and quality of the work to be carried out. Work which cannot be measured shall be given as a Provisional Sum. Work of which the extent is not known shall be described as Provisional or given in a Bill of Approximate Quantities.

Commentary

Rule A4 sets out the primary function of a Bill of Quantities, the key words being *fully* and *accurately*. Where the required drawn and specification information is not available it will be necessary to insert Provisional Sums (See Section 10 below) and/or provisional/approximate quantities. Approximate quantities are appropriate where the work can be described in accordance with the rules, but the quantity of the work required cannot be accurately determined. The tenderer must make allowance for their effect when pricing the relevant preliminaries and programming the contract works. Work which is the subject of approximate quantities is remeasured as executed and the appropriate adjustments effected in accordance with the Contract.

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

m² square metre

m³ cubic metre

nr number

t tonne

kg kilogramme

hr hour

l litre

Commentary

Measured items are deemed to be supply and fix unless otherwise stated. Dimensions are net as fixed in position and are taken off and entered in the dimension column to two decimal places i.e. the nearest 10mm (5mm and over are regarded as 10mm and less than 5mm are disregarded). For example, if the length of a skirting is 5,994mm this item would be entered as 5.99m in the dimensions column. If however the length is 5,995mm it would be entered as 6.00m. When taking off dimensions figured dimensions should always be used in preference to scaled dimensions. Dimensions contained within descriptions, on the other hand, are *always* given in millimetres.

It is sometimes necessary to deduct for voids or openings in the main area or volume. Whether deductions are to be taken for openings depends on the particular measurement rules set out in relevant work sections. Openings or 'wants', at the boundaries of the work are *always* deducted irrespective of size.



Figure 2 Openings and Wants

Kiely and Kelly (2003) explain that where voids occur near the boundary of the work that the resulting narrow widths are measured as part of the overall area even if these appear to fall into other width categories. This is illustrated in Fig 3.

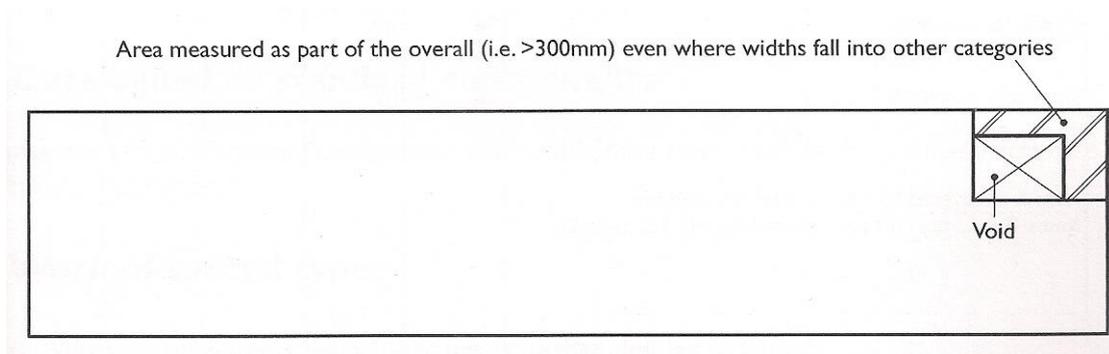


Figure 3 Narrow widths caused by voids (Source: Kiely and Kelly, 2003)

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 any linear items of work on which they occur.

Notwithstanding the provisions in these Rules for labours to be enumerated, such labours may be given in the description of any enumerated item of work on which they occur.

Commentary

Dimensional descriptions should include sufficient dimensions to identify the shape of the object. Where items are enumerated descriptions typically contain three dimensions; linear items typically contain two - identifying the cross sectional dimensions, and superficial items typically contain one dimension indicating its thickness or depth.

Measured work is deemed to include:

‘Labour and all costs in connection therewith’, which covers all things necessary for the installation and manufacture of the work items.

‘Materials, goods and all costs in connection therewith’, which includes the supply of all materials associated with the work items.

‘Assembling, fitting and fixing materials and goods in position’, which caters for the physical installation of the work items.

‘Plant and all costs in connection therewith’, which covers the tools and plant items associated with carrying out the work.

‘Waste of materials’, covers the wastage which needs to be incorporated into the estimator’s rates.

‘All cutting’, relates to cutting of material other than curved or diagonal cutting.

‘Establishment charges, overhead charges and profit’, relates to the contractor’s apportionment of indirect costs and margins to cover the contract. (Kiely and Kelly, 2003)

7 Detailed Descriptions

The requirements of these Rules for ‘detailed descriptions’ shall be deemed to have been complied with if referenced drawn information is provided which indicates fully the items to be described.

Reference to a standard specification or a precise reference to a catalogue item may be given in an item description instead of the descriptive requirements of these Rules or a Component Detail.

Commentary

Drawings may be produced for ‘composite items’, which are manufactured off site. Such work may be billed as a single item which may incorporate a number of individual components which otherwise would be measured separately. Such drawings, or descriptions, however, must *fully* describe the various components of the particular item. It should be noted that where a **Bill** description conflicts with a

drawing that the drawn information will take priority. If a discrepancy is found in a Bill item it must be adjusted in accordance with the drawing or executed work.

8 Drawn Information

Drawn information where required to be provided for the full implementation of 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.

c Bill Diagrams

To be drawn information which may be provided with the Bills of Quantities to aid the description of the item. Information by way of dimensions or detail may be indicated, alternatively, such information shall be included in the relevant description that accompanies the bill diagram.

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.

Commentary

Location drawings include the site location plan indicating the position of the site, ideally relating this to a town plan or other context. General arrangement drawings are also to be provided; these typically comprise the individual floor plans, elevations and principal sections through the building.

Component drawings are fabrication or workshop drawings which detail the necessary parts of the item to allow construction and/or production.

Bill Diagrams should fully define or describe the work necessary to construct the item and as such can be simply referenced in the bill description. For example, a Bill Diagram might show the formwork profile to a complicated in-situ concrete beam.

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 which 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.

Commentary

This provision requires no further commentary.

10 Provisional or Prime Cost Sums

Provisional or Prime Cost Sums shall be defined as follows unless otherwise provided in the Conditions of Contract:

- a. The term 'Provisional Sum' is defined as a sum provided for work or for costs which cannot be entirely foreseen, defined or detailed at the time the tendering documents are issued.
- b. The term 'Prime Cost Sum' is defined as a sum provided for work or services to be executed by a nominated sub-contractor or for materials or goods to be obtained from a nominated supplier.

Any provision for contingencies shall be given as a Provisional Sum.

Commentary

Provisional sums are budgets covering the cost of particular aspects of the design that remain to be finalised at the time the Bills of Quantities are sent out to the tendering contractors. They are also used to provide contingency sums to cover situations where additional unforeseen work is required. Provisional Sums are adjustable in final accounts, and if the cost of the work exceeds the amount provided, the excess will be added to the contract sum. Provisional sums, therefore, should be sufficient to cover the likely cost of such work if over-runs are to be avoided.

Provisional sums are often used to cover the cost of remedial work, such as removing and replacing decayed timber where the extent of work cannot be accurately established before it is opened up. Ideally such work should be measured provisionally. Provisional quantities are, in effect, quantified provisional sums. They are considered to be a more effective alternative to provisional sums, and are widely used in substructure and repair works, for example, catering for soft spots, breaking out rock or hacking off and re-plastering areas of defective plaster.

A guiding principle underpinning Bills of Quantities on lump sum contracts, is the need for the design to be comprehensively developed at the time of tender, thereby avoiding the need for extensive provisional sums. In this regard, it should be noted that the public works contracts are intended to be used without prime cost or provisional sums.

Provisional sums may be appropriate where clients prioritise rapid, fast-track design programmes over cost certainty thereby allowing design teams to finalise non critical details during the construction phase. They may also be appropriate on developments where the identity of the end user is not known, or where their requirements have not been fully formulated. Likewise they may be used cover various contingency events.

Keane (2001) commenting on provisional sums under the RIAI Form of Contract states:

If the work which is the subject of the provisional sum can be carried out by the Contractor, the actual cost will be determined in accordance with the provisions of Clause 13, which is the clause which deals with the ascertainment of prices for variations. If, however, the work required the nomination of a Sub-Contractor or Supplier, then the rules governing Prime Cost Sums in Clause 19 shall be used to assess the cost. A reduction in the Contract Sum after final measurement due to the omission in whole or part of any provisional sums will not entitle the Contractor to the 10% allowance on credit as far as that particular item is concerned, as directed by Clause 14(b).

This commentary reveals that provisional sums include an overheads and profit element consistent with the Bill rates for the measured works.

ARM4 does not distinguish between defined and undefined Provisional Sums and is silent on the matter of whether the contractor must take programming and preliminaries pricing into account when tendering for works containing Provisional Sums. It is considered beneficial, therefore to provide available relevant information setting out the scope and the extent of the Provisional Sum in order that the contractor can better assess their programme implications and effects on preliminaries' costs.

Prime cost sums (PC sums) are sums included in Bills of Quantities to cover works by specialist sub-contractors and/or to procure materials from specialist suppliers. Such specialists are chosen (nominated) by the Architect/Employer's Representative but are employed by the main contractor. PC sums have been widely used to appoint sub-contractors to carry out mechanical and electrical work, windows and curtain walling, and specialist finishes. They are also used to obtain goods, such as ironmongery and sanitary fittings from nominated suppliers.

Work executed by a Statutory Authority, Public Undertaking or Public or Private Utility Providers shall be so described and given as a Provisional Sum. An item shall be given for any profit required by the

Contractor. An item shall be given for other charges required by the Contractor associated with the employment of each utility provider.

The PC Sum is the amount of money the employer pays the main contractor who, in turn, must then pay the nominated subcontractor. Note that the former arrangement allowing the Contractor a prompt payment discount of 5% (one nineteenth) has been removed the 2012 Edition of the RIAI Standard Form of Contract. The Contractor, however, is entitled to price profit and special attendance on nominated subcontract work.

Prime Cost Sums are considered in more detail under Section B of this Guide

11 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.

Commentary

This section identifies three particular situations which must be separately measured. Where a project involves both new-build and renovations, the work in the existing buildings is typically contained in a separate bill following after the new build. Work outside the boundary of the site typically deals with pavement crossovers and/or connections to existing services. These items are usually billed immediately after the corresponding 'standard' work item.

Where particular forms of construction are not covered within the ARM, it is recommended that the rules of measurement adopted should be stated in measurement preambles in connection with these works.

Concluding Remarks

ARM4 sets out the rules and information required to describe and measure building work. These rules are agreed between the professional bodies representing contracting organisations and quantity surveyors and are considered to provide sufficient detail to enable contractors to accurately price the various items of building work. The information required and categorisation details are regarded as the minimum requirements to achieve this objective. Descriptions which do not provide full information or

depart from the measurement rules should be specifically brought to the attention of the contractor and be described as being not in accordance with the ARM.

Additional information may be required where necessary, and this may arise in situations where 'standard' descriptions do not adequately identify the true character of the work or accurately describe the conditions under which the work is to be carried out. For example, contractor designed work. Surveyors may also provide additional information to explain or clarify particular measurement procedures they have used, to provide additional descriptive detail, or to distinguish between various functions of like items. They may also employ this approach to avoid situations where the interpretation of the rules may be ambiguous. It is suggested, however, that the rule to provide additional information is not intended to require incidentals which have negligible cost implications to be separately measured.

It is worthwhile noting that the UK method of measurement, *SMM7*, does not allow, except in the case of composite items, the aggregation of a number of measured items which are otherwise required to separately. ARM4 is silent on this matter. Davidson and Hambleton (2006), in the *SMM7 Measurement Code* however, support the argument that two items that normally should be measured separately could be lumped together where a preamble clause in the Bill contains the relevant qualification. They comment that: '*it has always been held that any of the rules of SMM7 can be amended, adapted, amalgamated, omitted, etc. provided the specific departures from the rules of SMM7 are clearly stated somewhere in the tender document.*'

It is clear that the rules cannot cover every eventuality and that professional judgement will be required in situations where the rules do not fit the particular circumstances. Nevertheless it is recommended that departures from the rules should be kept to the absolute minimum in order to preserve a consistent approach to description and to avoid the risk of introducing unclear or ambiguous approaches which may result in potentially costly disputes.

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APPENDIX A

An Example of Composing a Blockwork Description and its Associated Measurement Rules

Information Required

The Information Required requirements of Section G, Brickwork and Blockwork stipulates that the following information is given.

- Kind, quality and size of bricks and blocks;
- Type of bond;
- Composition and mix of mortar;
- Surface finish;
- Type of pointing;
- Composition and mix of mortar if different from that in the body of the work, and
- Purpose made bricks or blocks.

The 'Information Required' section enables a concise material specification heading to be composed. Where any of the above characteristics change a new heading will be drafted, for example, different strength blocks, are kept separate as are solids from hollow blocks.

For example a specification heading may read:

Blockwork; solid; IS 20 Type A5; size 440 x 215 x 100mm; stretcher bond; in gauged mortar (1:1:6); finished fair-face one side with bucket handle pointing as the work proceeds;

Category 1

Blockwork in this Category is classified as:

1. Walls in trenches;
2. Walls;
3. Isolated columns;
4. Isolated casings, and
5. Chimneys.

Walls are being measured in this example.

Category 2

This category requires the thicknesses of the walls to be stated. In this example 100mm thick walls are being measured.

Category 3

This column is blank. Therefore no further information is required.

Category 4

Category 4 requires any of the following conditions, if applicable, to be measured.

- Curved work.
- Tapering work where one face is tapering.
- Tapering work where two faces are tapering.
- Built against other work
- Bonded to other work giving details.

None of these conditions are taken to apply in this example

Unit

The unit column on the right hand side of left page identifies that the walls are to be measured in m².

Therefore, a sample completed block wall bill description might read:

Blockwork; solid; IS 20 Type A5; size 440 x 215 x 100mm; stretcher bond; in gauged mortar (1:1:6); finished fair-face one side with bucket handle pointing as the work proceeds;

Walls

100mm thick

100 m²

Measurement Rules

There are six general rules in the brickwork and blockwork section,

1. Brickwork and blockwork shall be measured on the centre line of the material unless otherwise stated
2. No deductions shall be made for voids not exceeding 0.50 m² in area.

3. Work required to be built overhand shall be so described.
4. Glass blockwork shall be measured in accordance with the rules of this section.
5. Bedding the perimeter of glass blockwork in material different from the general mortar shall be given in metres stating the width and the bedding material.
6. Building against other work and bonding to other work shall be measured where the other work is existing or is of a differing material.

Within the wall zone there are additional rules particular to the individual items being measured. For example when measuring walls no deductions are made for:

- Flues with a void not exceeding 0.25 m²,
- Lintels and the like.

Measurement scope

The measurement scope column defines what is meant by the terms used in categories 1, 2 and 3. For example the definition of walls includes skins of cavity walls (in other methods of measurement these are separately measured). Walls are defined as having plan dimensions where the length to thickness ratio exceeds 4:1. So, for example, 750mm long x 215mm thick constitutes a column while 1250 mm long x 215mm thick is a wall.

Deemed to be included

The deemed to be included column is crucially important. Work which is “deemed to be included” shall neither be measured separately nor included in the descriptions. Estimators must therefore be fully aware of these items and allow for them in pricing the work. When pricing block walls an estimator must allow for:

- Rough and fair cutting;
- Fair vertical internal and external angles;
- Raking out joints to form key;
- Returns, ends, angles and the like;
- Labour in eaves filling;
- Centering, and
- Building in ends.