

**Principles
of
Measurement
(International)
For Works
of
Construction**

JUNE 1979

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Foreword

The use of bills of quantities is a well-established means of enabling the financial control and management of building works. The key to the success of the use of bills of quantities is a clear understanding by all parties to the contract of what is included, or excluded, in the measurement. It is this that gives rise to the requirement for clearly defined standard methods of measurement.

Since these principles of measurement were first issued in 1979, many countries have developed their own more detailed standard methods. A recent survey of its international membership carried out for the RICS Construction Faculty by the Building Cost Information Service (BCIS) identified that 14 of the 32 responding countries had their own method of measurement. However, the Principles of Measurement (International) (POMI) were still being used in about half of the countries and are still widely used on international contracts.

There has been a trend in the UK and elsewhere to move away from measurement-based procurement, passing the responsibility for measuring the building work down the supply chain to the contractor or sub-contractor. However, research commissioned by the Construction Faculty showed that where bills of quantities were not provided as part of the procurement process, 95% of contractors would undertake their own measurement, with the majority of this carried out in accordance with the current Standard Method of Measurement (SMM).

There is no doubt that the proliferation of procurement practices will continue. However, in circumstances in which there is a degree of design certainty before the contractor is appointed, measurement-based procurement will still be appropriate. Furthermore, where design decisions are being passed down the supply chain, measurement should be undertaken at the level at which the design is carried out, in order to remove the need for duplication.

It is in the interests of the industry as a whole, including its clients, that measurement is carried out consistently. There is therefore a continued need for standard methods of measurement and, by implication, a continued need for measurement skills.

These principles require a detailed specification and tender drawings to be provided. RICS recognises that circumstances vary from country to country, and from contract to contract, and that the principles therefore need to be flexible in order to accommodate variations in practice and techniques.

Any comments on the principles should be sent to the RICS Construction Faculty, at 12 Great George Street, Parliament Square, London, SW1P 3AD. The principles are also available in French, German and Arabic.

RICS is grateful to the original authors: Michael Rainbird, Alan Charter, James Diebel, Derek Lawrence and Michael Pagulatos.

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Chairman
RICS Construction Faculty
December 2003

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SECTION GP - GENERAL PRINCIPLES

GP1 Principles of measurement

Principles of measurement

- GP1.1 These principles of measurement provide a uniform basis for measuring bills of quantities for works of construction. More detailed information than is required by this document may measurement be given to define the precise nature of work or the circumstances under which it is to be carried out.
- GP1.2 Amendments to these principles of measurement for use in a particular locality or adopted for work not envisaged by this document shall be stated; an appendix is provided for such amendments to be recorded.
- GP1.3 These principles of measurement may be applied equally to the measurement of proposed works and of completed works.

GP2 Bills of quantities

Bills of quantities

- GP2.1 The objects of bills of quantities are:
1. To assist in the accurate preparation of tenders, by providing for measurement of quantities on a uniform basis
 2. To provide a basis for the financial control of a project, in accordance with the conditions of contract.
- GP2.2 Bills of quantities shall describe and represent the works to be carried out; work which cannot be measured accurately shall be described as approximate or given in bills of approximate quantities.
- GP2.3 Conditions of contract, drawings and specifications shall be provided with the bills of quantities.
- GP2.4 The section headings and classifications do not impose restrictions upon the format and presentation of bills of quantities.

GP3 Measurement

Measurement

- GP3.1 Work shall be measured net as fixed in position and each measurement shall be taken to the nearest 10 millimetres; this principle shall not apply to dimensions stated in descriptions.
- GP3.2 Unless otherwise stated, no deduction shall be made from items required to be measured by area for voids of less than 1.00 m².
- GP3.3 Minimum deductions of voids shall refer only to voids within the edges of measured areas; voids which are at the edges of measured areas shall always be deducted, irrespective of size.
- GP3.4 These principles of measurement may be used with other units of measurement but the particular amendments shall be stated.
- GP3.5 Notwithstanding these principles of measurement, a separate minor building or structure may be enumerated.

GP4 Items to be fully inclusive

Items to be fully inclusive

- GP4.1 Unless otherwise stated, all items shall be fully inclusive of all that is necessary to fulfill the Items to be fully liabilities and obligations arising out of the contract and shall include:
1. Labour and all associated costs
 2. Materials, goods and all associated costs
 3. Provision of plant
 4. Temporary works
 5. Establishment charges, overheads and profit.

GP5 Description of items

Description of items

- GP5.1 Items which are required to be enumerated. or for which an item is required, shall be fully described.
- GP5.2 Items which are to be measured by length or depth shall state the cross-sectional size and shape, girth or ranges of girths or such other information as may be appropriate; for items of pipework it shall be stated whether the diameter is internal or external.
- GP5.3 Items which are to be measured by area shall state the thickness or such other information as may be appropriate.
- GP5.4 Items which are to be measured by weight shall state the material thickness and unit weight if appropriate (for example, ductwork).

	Description of items (continued)
GP5.5 Notwithstanding these principles of measurement, proprietary items may be measured in a manner appropriate to the manufacturer's tariff or customary practice.	
GPS.6 The description of items in bills of quantities may refer to other documents or drawings and any reference to such information shall be understood to fulfill any requirement of these principles of measurement; alternatively, reference may be made to published information.	
GP6 Work to be executed by a specialist nominated by the employer	
GP6.1 Unless otherwise required by the conditions of contract, work which is required to be executed by a specialist nominated by the employer shall be given as a sum; such sum shall be exclusive of contractor's profit and in each case an item shall be given for the addition of profit.	Work to be executed by a specialist nominated by the employer
GP6.2 An item shall be given in each case for assistance by the contractor, which shall include: <ol style="list-style-type: none"> 1. Use of contractor's administrative arrangements 2. Use of constructional plant 3. Use of contractor's facilities 4. Use of temporary works 5. Space for specialist's offices and stores 6. Clearing away rubbish 7. Scaffolding required by the specialist, giving particulars 8. Unloading, distributing, hoisting and placing in position items of plant, machinery or the like, giving particulars. 	
GP7 Goods, materials or services to be provided by a merchant or tradesman nominated by the employer	
GP7.1 Unless otherwise required by the conditions of contract, goods, materials or services which are required to be provided by a merchant or tradesman nominated by the employer shall be given as a sum; such sum shall be exclusive of contractor's profit and in each case an item shall be given for the addition of profit.	Goods, materials or services to be provided by a merchant or tradesman nominated by the employer
GP7.2 Fixing goods and materials shall be given in accordance with the relevant clauses in these principles of measurement; fixing shall be understood to include unloading, storing, distributing and hoisting the, goods and materials. Particulars shall be given of any requirements for the contractor to arrange for delivery or pay any costs of conveying goods or materials.	
GP8 Work to be executed by a government or public authority	
GP8.1 Unless otherwise required by the conditions of contract, work which may only be carried out or by a government or public authority shall be given as a sum; such sum shall be exclusive of contractor's profit and in each case an item shall be given for the addition of profit.	Work to be executed by a government or public authority
GP8.2 An item shall be given in each case for assistance by the contractor as described in clause GP6.2.	
GP9 Dayworks	
GP9.1 The cost of labour in dayworks shall be given as a sum; alternatively, a schedule of the different categories of labour may be given containing a provisional quantity of hours for each category.	Dayworks
GP9.2 The cost of labour included in a sum or schedule shall include wages, bonuses and all allowances paid to operatives directly engaged on dayworks (including those operating mechanical plant and transport) in accordance with the appropriate employment agreement or, where no such agreement exists, the actual payments made to the work people concerned.	
GP9.3 The cost of materials in dayworks shall be given as a sum; alternatively, 3 schedule may be given containing a provisional quantity of different materials.	
GP9.4 The cost of materials included in a sum or schedule shall be the net invoiced price, including delivery to site.	
GP9.5 The cost of constructional plant employed exclusively in dayworks shall be given as a sum; alternatively, a schedule of the different categories of plant may be given containing a provisional quantity of hours, or such other period of time as may be appropriate, for each category.	
GP9.6 The cost of constructional plant included in a sum or schedule shall include fuel, consumable stores, repairs, maintenance and insurance of plant.	
GP9.7 An item shall be given for the addition of establishment charges. overheads and profit to each of the sums or schedules of labour, materials or plant.	

**Dayworks
(continued)**

- GP9.8 Establishment charges, overheads and profit shall include:
1. Costs related to the employment of labour
 2. Costs related to the storage of materials, including handling and waste in storage
 3. Contractor's administrative arrangements
 4. Constructional plant, except plant employed exclusively on dayworks
 5. Contractor's facilities
 6. Temporary works
 7. Sundry items.

GP10 Contingencies

- GP 10.1 Unless otherwise required by the conditions of contract, contingencies shall be given as a sum; no item shall be given for the addition of profit.

SECTION A - GENERAL REQUIREMENTS

A1 Conditions of contract

**Conditions of
contract**

- A1.1 A schedule of the clause headings shall be set out in the bills of quantities.
- A1.2 Where there is an appendix to the conditions of contract requiring insertions to be made, a schedule of the insertions shall be set out in the bills of quantities.

A2 Specification

Specification

- A2.1 Where the specification contains clauses related to any of the following General Requirements, the bills of quantities shall make reference to the appropriate clauses.

A3 Restrictions

Restrictions

- A3.1 Particulars shall be given of any restrictions, which shall include:
1. Access to and possession or use of the site
 2. Limitations of working space
 3. Limitations of working hours
 4. The maintenance of existing services on, under or over the site
 5. The execution or completion of the work in any specific order, sections or phases
 6. Items of a like nature.

A4 Contractor's administrative arrangements

**Contractor's
administrative
arrangements**

- A4.1 An item shall be given for contractor's administrative arrangements, which shall include:
1. Site administration
 2. Supervision
 3. Security
 4. Safety, health and welfare of workpeople
 5. Transport of workpeople.

A5 Constructional plant

Constructional plant

- A5.1 An item shall be given for constructional plant, which shall include:
1. Small plant and tools
 2. Scaffolding
 3. Cranes and lifting plant
 4. Site transport
 5. Plant required for specific trades.

A6 Employer's facilities

Employer's facilities

- A6.1 Particulars shall be given of any facilities required for the employer or the employer's representatives, which shall include:
1. Temporary accommodation (for example, offices, laboratories, living accommodation), including heating, cooling, lighting, furnishing, attendance or related facilities
 2. Telephones, including costs of calls; alternatively, the cost of calls may be given as a sum
 3. Vehicles
 4. Attendance of staff (for example, drivers, laboratory assistants)
 5. Equipment (for example, surveyor laboratory equipment)
 6. Special requirements for programmes or progress charts
 7. Any other facilities (for example, progress photographs, signboards).

A 7 Contractor's facilities

- A 7.1 An item shall be given for facilities required by the contractor, which shall include:
1. Accommodation and buildings, including offices, laboratories, compounds, stores, messrooms and living accommodation
 2. Temporary fencing, including hoardings, screens, roofs and guardrails
 3. Temporary roads, including hardstandings and crossings
 4. Water for the works; particulars shall be given if water will be supplied to the contractor
 5. Lighting and power for the works; particulars shall be given if current will be supplied to the contractor
 6. Temporary telephones.
- A7.2 Particulars shall be given where the nature or extent of the facilities is not at the discretion of the contractor.

Contractor's facilities

A8 Temporary works

- A8.1 An item shall be given for temporary works, which shall include:
1. Traffic diversion
 2. Access roads
 3. Bridges
 4. Cofferdams
 5. Pumping
 6. De-watering
 7. Compressed air for tunnelling.
- A8.2 Particulars shall be given where the nature or extent of the temporary works is not at the discretion of the contractor.

Temporary works

A9 Sundry items

- A9.1 An item shall be given for sundry items, which shall include:
1. Testing of materials
 2. Testing of the works
 3. Protecting the works from inclement weather
 4. Removing rubbish, protective casings and coverings and cleaning the works at completion
 5. Traffic regulations
 6. Maintenance of public and private roads '
 7. Drying the works
 8. Control of noise and pollution
 9. All statutory obligations
- A9.2 Particulars shall be given where the nature or extent of the sundry items is not at the discretion of the contractor.

Sundry items

SECTION B - SITE WORK

B1 Site exploration generally

- B1.1 Keeping records of site observations, site tests and laboratory tests shall be given as an item.
- B1.2 Samples, site observations, site tests, a oratory tests an analyses shall be given as an item,
- B1.3 Providing reports shall be given as an item.

Site exploration generally

B2 Trial holes

- B2.1 Excavating trial holes shall be measured by depth, taken along the centre line, stating the number and the maximum depth below commencing level.
- B2.2 Earthwork support which is not at the discretion of the contractor shall be measured by depth.

Trial holes

B3 Boreholes (including pumping test wells)

- B3.1 Driving boreholes shall be measured by depth, taken along the centre line, stating the number and the maximum depth below commencing level; raking boreholes shall be so described.
- B3.2 Lining which is not at the discretion of the contractor shall be measured by depth.
- B3.3 Cap pings shall be enumerated.

Boreholes (including pumping test wells)

	B4	Site preparation
Site preparation	B4.1	Removing isolated trees shall be enumerated.
	B4.2	Removing hedges shall be measured by length.
	B4.3	Site clearance, which shall include removing vegetation, undergrowth, bushes, hedges, trees or the like, shall be measured by area.
	B5	Demolitions and alterations
Demolitions and alterations	B5.1	The location of each item shall be given. Unless otherwise stated, old materials shall be understood to become the property of the contractor and shall be cleared away; old materials required to remain the property of the employer shall be so described.
	B5.2	Removing individual fittings, fixtures, engineering installations or the like from an existing structure shall each be given as an item.
	B5.3	Demolishing individual structures (or part thereof) shall each be given as an item; alternatively, demolishing all structures on a site may be given as an item.
	B5.4	Cutting openings in existing structures and alterations to existing structures shall each be given as an item; making good all work damaged shall be understood to be included.
	B5.5	Temporary screens and roofs shall be given as an item.
	B6	Shoring
Shoring	B6.1	Shoring incidental to demolitions and alterations, together with clearing away and making good all work damaged, shall be understood to be included.
	B6.2	Shoring (other than that incidental to demolitions and alterations) shall be given as an item, stating the location; clearing away and making good all work damaged shall be understood to be included.
	B6.3	Particulars shall be given where the design of the shoring is not at the discretion of the contractor.
	B6.4	Shoring which is required by the specification to be left in position shall be so described.
	B7	Underpinning
Underpinning	B7.1	Work in underpinning shall be given under an appropriate heading, stating the location.
	B7.2	Unless otherwise stated, work shall be measured in accordance with the appropriate sections of this document.
	B7.3	Temporary support shall be given as an item; particulars shall be given where the design of the temporary support is not at the discretion of the contractor.
	B7.4	Excavation shall be measured by volume, taken to the outside line of the projecting foundations or to the outside line of the new foundations (whichever is the greater), classified as follows: <ol style="list-style-type: none"> 1. Excavation in preliminary trenches down to the base of the existing foundations 2. Excavation below the base of the existing foundations.
	B7.5	Cutting away projecting foundations shall be measured by length.
	B8	Earthworks generally
Earthworks generally	B8.1	Any information available concerning the nature of the ground and strata shall be provided with the bills of quantities.
	B8.2	The quantities for excavation, dredging or tunnelling shall be understood to be the bulk before excavation, and no allowance shall be made for any working space or subsequent variation in bulk; existing voids shall be deducted.
	B8.3	Multiple handling of materials and transporting about the site shall be understood to be included; multiple handling which is required by the specification shall be so described in the item of disposal.
	B8.4	Earthwork support shall be given as an item.
	B8.5	Excavation in rock shall be so described; alternatively, it may be measured as extra over excavation (that is,

	the volume of rock shall be measured but no deduction shall be made from the volume of excavation in which the rock occurs).	Earthworks generally (continued)
B8.6	For the purposes of measurement rock is defined as any material met with which is of such size or position that, in the opinion of the employer's representative, it can only be removed by means of wedges, special plant or explosives.	
B9	Excavation	
B9.1	Unless otherwise stated, excavation shall be measured by volume as the void which is to be occupied by the permanent construction, or vertically above any part of the permanent construction, classified as follows: <ol style="list-style-type: none"> 1. Oversite excavation to remove top soil, stating the average depth 2. Excavation to reduce levels 3. Excavation in cuttings 4. Basement excavation 5. Trench excavation to receive foundations, which shall include pile caps and ground beams 6. Pit excavation to receive foundation bases, stating the number 7. Excavation for diaphragm walls, stating the width of the permanent construction and the type of support fluid. 	Excavation
B9.2	Excavation of trenches for service pipes, drain pipes, cables or the like shall each be measured by length, stating the average depth; disposal and filling shall be understood to be included.	
B9.3	For excavation in tunnelling see clause B24.	
B10	Dredging	
B10.1	Dredging shall be measured by volume, stating the location and limits; unless otherwise stated, measurement shall be understood to be taken from soundings.	Dredging
B11	Disposal	
B11.1	Disposal of material arising from excavation, dredging or tunnelling shall be measured by volume as equal to the volume of excavation, dredging or tunnelling and each shall be classified as follows: <ol style="list-style-type: none"> 1. Backfilled into excavation 2. Backfilled in making up levels 3. Backfilled oversite to make up levels, giving details of special contouring, embankments or the like 4. Removed, which shall include providing a suitable tip. 	Disposal
B12	Filling	
B12.1	Filling material (other than that arising from excavation, dredging or tunnelling) shall be measured by volume as equal to the void to be filled, classified as follows: <ol style="list-style-type: none"> 1. Filled into excavation 2. Filled in making up levels 3. Filled oversite to make up levels, giving details of special contouring, embankments or the like. 	Filling
B13	Piling generally	
B13.1	For the purposes of measurement, driven piling shall include timber, precast concrete or metal piles.	Piling generally
B13.2	Other piling systems (for example, preformed casing with concrete filling) shall be measured in accordance with the principles for driven piling or bored piling as may be appropriate.	
B13.3	Unless otherwise stated, reinforcement shall be measured in accordance with Section C.	
B14	Driven piling	
B14.1	Supplying piles shall be measured by length, stating the number; reinforcement shall be given separately.	Driven piling
B14.2	Heads and shoes shall be enumerated.	
B14.3	Driving piles shall be measured by length, taken from the pile point in contact with the ground when pitched to the pile point when driven, stating the number; driving piles on rake shall be so described.	
B14.4	Cutting off tops of piles and connections for lengthening piles shall be enumerated.	

	B15	Bored piling
Bored piling	B15.1	Boring for piles shall be measured by length, taken from the formation level of the ground to the bottom of the pile hole, stating the number; the measurement shall include for blind boring when the pile top is to be below the formation level of the ground.
	B15.2	Boring through rock shall be measured by length as extra over boring for piles (that is, the length of boring through rock shall be measured but no deduction shall be made from the total length of boring).
	B15.3	Linings for piles shall be measured by length.
	B15.4	Disposal of material arising from boring shall be measured in accordance with clause B11.
	B15.5	Concrete filling shall be measured by volume.
	B15.6	Cutting off tops of piles and forming enlarged bases shall be enumerated.
	B16	Sheet piling
Sheet piling	B16.1	The measurements for sheet piling shall be taken along the centre line.
	B16.2	Supplying sheet piling shall be measured by area, taken as the area when in final position.
	B16.3	Corner piles or the like shall be measured by length.
	B16.4	Driving sheet piling shall be measured by area, taken from the formation level of the ground to the bottom edge of the sheet piling when driven; strutting and waling and withdrawing sheet piling shall be understood to be included.
	B16.5	Cutting sheet piling shall be measured by length.
	B16.6	Sheet piling which is required by the specification to be left in position shall be so described.
	B17	Performance designed piling
	B17.1	Performance designed piles shall be enumerated; reinforcement and disposal of material arising from boring shall be understood to be included.
	B17.2	Details shall be given when the pile top is to be below the formation level of the ground.
	B18	Testing piling
Testing piling	B18.1	Testing piling, which shall include trial piles and testing working piles, shall be given as an item.
	B19	Underground drainage
Underground drainage	B19.1	Drain pipes shall be measured by length, taken along the centre line over all fittings; drain pipes within inspection chambers or the like shall be so described and shall be understood to include fixings and supports.
	B19.2	Drain fittings in the length (for example, bends, junctions) shall be enumerated, grouped together for each size of pipe and described as 'fittings'.
	B19.3	Drain accessories (for example, gullies, traps) shall be enumerated; concrete surrounds and additional excavation shall be understood to be included.
	B19.4	Concrete beds and coverings for drain pipes shall each be measured by length, stating the diameter of the pipe; surrounds to vertical pipes shall be so described and shall be understood to include formwork.
	B19.5	Inspection chambers or the like shall be enumerated; alternatively, they may be measured in accordance with the relevant sections of this document and given under an appropriate heading.
	B19.6	Connections to existing drains shall be enumerated, subject to clause GP8.
	B20	Paving and surfacing
Paving and surfacing	B20.1	Paving and surfacing shall be measured by area.
	B20.2	Expansion joints and water stops shall be measured by length.

B20.3	Channels, curbs, edgings or the like shall be measured by length; curved work shall be so described.	Paving and surfacing (continued)
B21	Fencing	
B21.1	Fencing, which shall include posts and supports in the length, shall be measured by length; excavating pits, disposal and filling shall be understood to be included.	Fencing
B21.2	Special posts (for example, gate posts, straining posts) shall be enumerated; excavating pits, disposal and filling shall be understood to be included.	
B21.3	Gates, barriers or the like shall be enumerated.	
B21.4	Finishes shall be measured in accordance with Section J.	
B22	Landscaping	
B22.1	Cultivating and fertilising ground shall be measured by area.	Landscaping
B22.2	Soiling, seeding and turfing shall be measured by area.	
B22.3	Hedges shall be measured by length.	
B22.4	Trees and shrubs shall be enumerated.	
B23	Railway work	
B23.1	Track, guard rails and conductor rails shall each be measured by length, taken along the centre line over all fittings; curved work shall be so described.	Railway work
B23.2	Sleepers and chairs shall be enumerated.	
B23.3	Switches and crossings shall be enumerated, classified as follows: <ul style="list-style-type: none"> 1. Switches and turnouts 2. Diamond crossings 3. Single slip crossings 4. Double slip crossings 5. Other switches and crossings. 	
B23.4	Ballast shall be measured by volume, without deduction for track, classified as follows: <ul style="list-style-type: none"> 1. Bottom ballast, placed before the track is laid 2. Top ballast, placed after the track is laid. 	
B23.5	Concrete track foundations shall be measured by length, except that overwidth foundations for switches and crossings shall be measured by area; reinforcement and shuttering shall be understood to be included.	
B23.6	Bitumen filler to complete rail assemblies shall be measured by length.	
B23.7	Buffer stops, wheel stops or the like shall be enumerated.	
B23.8	Signalling installations shall be measured in accordance with Section L or Section R.	
B24	Tunnel excavation	
B24.1	Excavation shall be measured by volume as the void which is to be occupied, including the volume of permanent linings, grouped as may be appropriate to identify different lengths and classified as follows: <ul style="list-style-type: none"> 1. Straight tunnels 2. Straight shafts 3. Curved tunnels 4. Curved shafts 5. Tapered tunnels 6. Tapered shafts 7. Other cavities, which shall include transitions, breakaways and intersections between shafts and tunnels. 	Tunnel excavation
B24.2	Forward probing shall be measured by length, stating the number of probes.	
B24.3	For disposal see clause B11.	

	B25	Tunnel linings
Tunnel linings	B25.1	Poured concrete linings shall be measured by area, stating whether spray or cast concrete, classified as follows: <ol style="list-style-type: none"> 1. lining 2. Secondary lining.
	B25.2	Preformed segmental tunnel linings shall be enumerated.
	B26	Tunnel support and stabilisation
Tunnel support and stabilisation	B26.1	Timber supports shall be measured by volume.
	B26.2	Sprayed concrete supports and reinforcement shall be measured by area.
	B26.3	Rock bolts shall be measured by length.
	B26.4	Face packers shall be enumerated.
	B26.5	Metal arch supports shall be measured by weight.
	B26.6	Injection of grout materials shall be measured by weight.
SECTION C - CONCRETE WORK		
	C1	Generally
Generally	C1.1	Reinforced poured concrete and plain poured concrete shall each be so described.
	C1.2	Poured concrete required by the specification to be placed, compacted, cured or otherwise treated in a particular manner shall be so described.
	C1.3	No deduction shall be made for voids less than 1.00 m ³ , nor for the volume of any reinforcement or structural metal enclosed in the concrete, except that voids caused by boxed or tubular structural metalwork shall always be deducted.
	C1.4	Unless otherwise described, horizontal surfaces of concrete shall be understood to be tamped.
	C2	Poured concrete
Poured concrete	C2.1	Unless otherwise stated, poured concrete shall be measured by volume, classified as follows: <ol style="list-style-type: none"> 1. Foundations, which shall include combined or isolated bases 2. Pile caps, which shall include ground beams 3. Blinding 4. Beds, which shall include roads and footpaths, stating the thickness 5. Suspended slabs, which shall include floors, landings, roofs or the like, stating the thickness 6. Walls, which shall include attached columns, stating the thickness 7. Columns, which shall include casing to metal stanchions 8. Beams (measured below the slab), which shall include lintels and casing to metal beams 9. Staircases, which shall include steps and strings 10. Diaphragm walls 11. Other classifications (for example, tunnel linings, bridge abutments) as may be appropriate.
	C2.2	Poured concrete suspended slabs of special construction, including floors, landings, roofs or the like, shall be measured by area; coffered and troughed slabs shall be so described, giving details of solid margins or the like.
	C2.3	Where an item is required to be measured by volume and the thickness stated, then items of differing thickness may be grouped together, provided that the range of the different thicknesses is stated.
	C3	Reinforcement
Reinforcement	C3.1	The weight of bar reinforcement shall be the net weight without addition for rolling margin, supports, spacers or tying wire.
	C3.2	Bar reinforcement shall be measured by weight, stating the diameter; bars of differing diameters shall be given separately.
	C3.3	Fabric reinforcement shall be measured by area, without addition for laps.

C3.4	Reinforcement shall be given as an item where the detailed design work is the responsibility of the contractor.	Reinforcement (continued)
C4	Shuttering	
C4.1	Unless otherwise stated, shuttering shall be measured by area, taken as the net area in contact with the finished face of concrete, classified as follows: <ol style="list-style-type: none"> 1. Soffits; shuttering to soffits of special construction shall be so described 2. Sloping soffits, which shall include soffits of staircases 3. Sloping upper surfaces, which shall include surfaces more than 15° from horizontal 4. Sides of foundations, which shall include bases, pile caps and ground beams 5. Sides of walls, which shall include attached columns 6. Returns to walls, which shall include ends, projections and reveals of openings or recesses 7. Sides and soffits of beams, which shall include lintels and breaks in soffits; isolated beams shall be so described 8. Sides and soffits of sloping beams, which shall include lintels and breaks in soffits; isolated beams shall be so described 9. Sides of columns 10. Staircases, which shall include treads, risers and strings but exclude soffits 11. Other classifications (for example, tunnel linings, bridges, bridge abutments) as may be appropriate. 	Shuttering
C4.2	Shuttering to edges, which shall include face of curb or upstand or break in upper surface of floor, shall be measured by length; items of differing height may be grouped together, provided that the range of different heights is stated.	
C4.3	Grooves, which shall include throats, rebates, chamfers or the like, 2500 mm ² sectional area or over shall be measured by length; grooves less than 2500 mm ² sectional area shall be understood to be included.	
C4.4	Shuttering may be enumerated where it is more appropriate to do so (for example, decorative features).	
C4.5	Shuttering which is required by the specification to be left in position shall be so described.	
C4.6	Shuttering to curved, conical and spherical surfaces shall each be so described.	
C4.7	Shuttering to provide a special finish shall be so described.	
C4.8	Unless otherwise stated, if the volume of concrete has not been deducted, shuttering to the faces of a void shall be understood to be included.	
C5	Precast concrete	
C5.1	Moulds for precast units shall be understood to be included.	Precast concrete
C5.2	Reinforcement shall be measured in accordance with clause C3 and given under an appropriate heading; alternatively, it may be described in the item.	
C5.3	Floor slabs, partition slabs or the like shall be measured by area. .'	
C5.4	Lintels, sills, duct covers or the like shall be measured by length; alternatively, duct covers may be measured by area.	
C5.5	Structural units (for example, beams, stanchions, tunnel rings) shall be enumerated.	
C5.6	Padstones, cappings or the like shall be enumerated.	
C6	Prestressed concrete	
C6.1	Prestressed concrete work shall be given under an appropriate heading.	Prestressed concrete
C6.2	Prestressed concrete shall be measured by volume, classified in accordance with clause C2.	
C6.3	Reinforcement shall be measured in accordance with clause C3; supporting steel wires or cables shall be measured by weight.	
C6.4	Shuttering shall be measured in accordance with clause C4, stating whether to pre-tensioned or post-tensioned members.	
C7	Sundries	
C7.1	Surfaces finished to falls or cross-falls shall be measured by area.	Sundries

Sundries (continued)	C7.2	Surface finishes shall be measured by area, except that tamped finishes shall be understood to be included.
	C7.3	Expansion material or the like shall be measured by area.
	C7.4	Designed joints, water stops, cast-in channels or the like shall be measured by length.
	C7.5	Forming sinkings, channels or the like shall be measured by length and, where appropriate, the item may include additional excavation, hardcore, shuttering and concrete; alternatively, they may be enumerated.
	C7.6	Fixings, ties, inserts or the like shall be enumerated; alternatively, they may be measured by area.
	C7.7	Mortices, holes or the like shall be understood to be included.

SECTION D - MASONRY

D1 Generally

Generally	D1.1	Sloping, battering and curved work shall each be so described.
	D1.2	Reinforced masonry shall be so described.

D2 Walls and piers

Walls and piers	D2.1	Walls and piers shall be measured by area, classified as follows: <ul style="list-style-type: none"> 1. Walls; integral piers shall be measured as walls of combined pier and wall thickness 2. Walls built against other construction 3. Cavity walls measured as a composite item, including skins and cavity; alternatively, the skins and cavity may each be measured by area. Closing cavity walls at ends or around openings shall be understood to be included 4. Isolated piers.
	D2.2	Faced or fair faced work shall each be so described; alternatively, it may be measured as extra over walls, stating whether faced or fair faced on one or both sides (that is, the area of faced or fair faced work shall be measured but no deduction shall be made from the area of walling on which the faced or fair faced work occurs).

D3 Sills, etc.

Sills, etc.	D3.1	Sills, copings, oversailing or receding courses or the like shall be measured by length.
	D3.2	Arches shall be measured by length.

D4 Reinforcement

Reinforcement	D4.1	Reinforcement shall be measured in accordance with clause C3; alternatively, fabric reinforcement may be measured by length.
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D5 Sundries

Sundries	D5.1	Concrete filling to cavities shall be measured by area.
	D5.2	Expansion joints or the like shall be measured by length.
	D5.3	Air bricks or the like shall be enumerated.

SECTION E - METALWORK

E1 Generally

Generally	E1.1	The weight of metalwork shall be the net weight, without addition for rolling margin or welding material and without deduction for holes, splay cuts, notches or the like.
	E1.2	Welded, riveted or bolted work shall each be so described.

E2 Structural metalwork

Structural metalwork	E2.1	Unless otherwise stated, structural metalwork shall be measured by weight, classified as follows: <ul style="list-style-type: none"> 1. Grillages 2. Beams 3. Stanchions
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4. Portal frames, stating the number
5. Roof trusses, stating the number
6. Support steelwork, which shall include sheeting rails, braces, struts or the like
7. Other classifications, as may be appropriate.

**Structural
metalwork
(continued)**

- E2.2 Fittings (for example, caps, brackets) shall be given as an item.
- E2.3 Fixings (for example, bolts, distance pieces, rivets) shall be given as an item.
- E2.4 Wedging and grouting bases or the like shall be enumerated.
- E2.5 Holding down bolts or the like shall be enumerated; temporary boxes and grouting shall be understood to be included.
- E2.6 Protective treatment shall be given as an item.

E3 Non-structural metalwork

- E3.1 Floor plates, duct covers, sheet metal coverings and linings or the like shall be measured by area.
- E3.2 Bearers, balustrades, handrails (except where included with a staircase), frames or the like shall be measured by length.
- E3.3 Matwell frames, cat ladders, gates, staircases or the like shall be enumerated.

**Non-structural
metalwork**

SECTION F - WOODWORK

F1 Generally

- F1.1 Timber which is sawn (that is, not milled) and timber which is finished (that is, milled) shall each be so described.
- F1.2 Descriptions of timber members shall state whether the sizes are basic (that is, before machining) or finished (that is, milled, within permitted deviations).

Generally

F2 Structural timbers

- F2.1 Structural timbers shall be measured by length, classified as follows:
1. Floors and flat roofs
 2. Pitched roofs
 3. Walls
 4. Kerbs, bearers or the like
 5. Cleats, sprockets or the like.
- F2.2 Strutting and bridging between joists shall be measured by length, taken overall the joists.

Structural timbers

F3 Boarding and flooring

- F3.1 Unless otherwise stated, boarding and flooring shall be measured by area, without addition for joints or laps, classified as follows:
1. Floors, which shall include landings
 2. Walls, which shall include returns, reveals of openings or recesses and attached and unattached columns
 3. Ceilings, which shall include attached and unattached beams and soffits of staircases
 4. Roofs, which shall include tops and cheeks of dormers and sides and bottoms of gutters, stating whether flat, sloping or vertical; furring pieces and bearers shall be understood to be included.
- F3.2 Eaves and verge boards, which shall include fascias, barge boards or the like, shall be measured by length.
- F3.3 Fillets and rolls shall be measured by length.

**Boarding and
flooring**

F4 Grounds and battens

- F4.1 Open-spaced grounds and battens shall be measured by area, taken overall.
- F4.2 Individual grounds and battens shall be measured by length.

Grounds and battens

F5 Framework

- F5.1 Framework shall be measured by area, taken overall; alternatively, it may be measured by length.

Framework

	F6	Finishings and fittings
Finishings and fittings	F6.1	Finishings shall be measured by length, classified as follows: <ul style="list-style-type: none"> 1. Cover fillets, which shall include architraves, skirtings or the like 2. Beads, which shall include stops or the like 3. Edgings, which shall include window boards, nosings or the like.
	F6.2	Unless otherwise stated, fittings shall be measured by length, classified as follows: <ul style="list-style-type: none"> 1. Work tops, which shall include seats or the like 2. Handrails or balustrades.
	F6.3	Shelving shall be measured by area; alternatively, it may be measured by length.
	F6.4	Backboards or the like shall be enumerated.
	F6.5	Built-up members shall be so described.
	F6.6	Plastic coverings or the like shall be described with the item on which they occur, stating whether on one or more faces; alternatively, they may be measured separately by area.
	F6.7	Sheet linings shall be measured by area, classified as follows: <ul style="list-style-type: none"> 1. Walls, which shall include returns, reveals of openings or recesses and attached and unattached columns 2. Ceilings, which shall include attached and unattached beams and soffits of staircases.
	F7	Composite items
Composite items	F7.1	Unless otherwise stated, composite items (which shall mean items which might be fabricated off-site whether or not they are fabricated off-site) shall be enumerated; all metal work or the like shall be understood to be included.
	F7.2	Any associated work (for example, decorations) shall be measured in accordance with the relevant sections of this document.
	F8	Sundry items
Sundry items	F8.1	Finished surfaces on sawn items shall be measured by length.
	F9	Metalwork
Metalwork	F9.1	Metalwork items associated with woodwork shall be enumerated; alternatively, waterbars or the like may be measured by length.
	F10	Ironmongery
Ironmongery	F10.1	Units or sets of ironmongery shall be enumerated.
SECTION G - THERMAL AND MOISTURE PROTECTION		
	G1	Generally
Generally	G1.1	Work shall be measured flat without addition for laps or seams.
	G1.2	Curved, spherical and conical work shall each be so described.
	G2	Coverings and linings
Coverings and linings	G2.1	Unless otherwise stated, roofing, tanking, waterproof coverings, linings or the like shall be measured by area, classified as follows: <ul style="list-style-type: none"> 1. Flat coverings 2. Sloping coverings 3. Vertical coverings.
	G2.2	Eaves, ridges, skirtings, fascias, flashings, aprons or the like shall be measured by length; alternatively, skirtings, fascias or the like to composite roofing may be measured by area.
	G2.3	Roof lights, ventilators, soaker collars, special roofing sheets or the like shall be enumerated; alternatively, special roofing sheets may be measured as extra over roofing (that is, the special roofing sheets shall be measured but no deduction shall be made from the roofing in which the special sheeting occurs).

G3	Damp-proof courses	
G3.1	Damp-proof courses shall be measured by length; alternatively, they may be measured by area.	Damp-proof courses
G4	Insulation	
G4.1	Insulation shall be measured by area; alternatively, it may be described with items of composite roofing.	Insulation
SECTION H - DOORS AND WINDOWS		
H1	Doors	
H1.1	Doors shall be enumerated.	Doors
H1.2	Jambs, heads, sills, mullions, transoms or the like shall be measured by length; alternatively, frame and lining sets may be enumerated.	
H2	Windows	
H2.1	Windows, skylights or the like, together with their frames, shall be enumerated; sub-frames of a different material shall be separately enumerated or may be measured by length.	Windows
H3	Screens	
H3.1	Screens, borrowed lights, curtain walling or the like shall be measured by area; alternatively, they may be enumerated.	Screens
H3.2	Doors and frames within a screen shall be enumerated.	
H4	Ironmongery	
H4.1	Units or sets of ironmongery shall be enumerated.	Ironmongery
H5	Glass	
H5.1	Unless otherwise stated, glass shall be measured by area; panes of irregular shape shall be measured as the smallest rectangle from which such irregular shape can be cut.	Glass
H5.2	Sealed factory-glazed units shall be enumerated.	
H5.3	Glass louvres shall be enumerated; alternatively, they may be measured by length, stating the number.	
H5.4	Glass panes of special shape or with decorative treatment shall be enumerated.	
H6	Patent glazing	
H6.1	Patent glazing shall be measured by area, classified as follows: 1. Roofs 2. Skylights, which shall include lantern lights 3. Vertical surfaces.	Patent glazing
H6.2	Opening portions shall be enumerated.	
SECTION J - FINISHES		
J1	Generally	
J1.1	Work shall be measured flat without addition for laps or seams; finishes on corrugated or ornamental surfaces shall each be so described.	Generally
J1.2	Curved, spherical and conical work shall each be so described.	
J1.3	Internal and external work shall each be so described.	

	J2	Backgrounds
Backgrounds	J2.1	Backgrounds shall be measured by area; backgrounds for floor, wall or ceiling finishes shall each be so described.
	J2.2	Poured backgrounds (for example, screeds) shall each be given separately, stating the surface finish.
	J2.3	Pre-formed backgrounds (for example, plasterboard, expanded metal lathing) shall each be given separately.
	J3	Finishings
Finishings	J3.1	Unless otherwise stated, finishing shall be measured by area, classified as follows: <ol style="list-style-type: none"> 1. Floors, which shall include landings 2. Walls, which shall include returns, reveals of openings or recesses and attached and unattached columns 3. Ceilings, which shall include attached and unattached beams and soffits of staircases 4. Staircases, which shall include treads, risers and edges of landings but exclude soffits.
	J3.2	Skirtings, bands, strings, coverings to kerbs, mouldings, coves, channels or the like shall be measured by length.
	J4	Sundries
Sundries	J4.1	Non-slip inserts, dividing strips, metal angle beads, lathing at junction of differing backgrounds or the like shall be measured by length; alternatively, they may be described with the items in which they occur.
	J5	Suspended ceilings
Suspended ceilings	J5.1	Suspended ceilings shall be measured by area, classified as follows: <ol style="list-style-type: none"> 1. Ceilings stating the drop 2. Sides and soffits of beams or upstands.
	J6	Decorations
Decorations	J6.1	Decorations on different surfaces shall each be given separately.
	J6.2	Details shall be given of any special method of application (for example, spraying).
	J6.3	Unless otherwise stated, decorations shall be measured by area, classified as follows: <ol style="list-style-type: none"> 1. Floors, which shall include landings 2. Walls, which shall include returns, reveals of openings or recesses and attached and unattached columns 3. Ceilings, which shall include attached and unattached beams and soffits of staircases 4. Staircases, which shall include treads, risers, strings and edges of landings but exclude soffits 5. Cornices 6. General surfaces, which shall include doors, close-type fencing or the like; glazed general surfaces (measured flat over glass) shall be so described 7. Isolated general surfaces, which shall include door frames, linings, sub-frames of a differing material to the window, skirtings, rails, architraves, bars, posts, balusters or the like 8. Windows (measured flat over glass, frames, mullions, transoms and architraves), which shall include glazed partitions or the like, but exclude sub-frames of a differing material to the window; edges of sashes shall be understood to be included 9. Radiators, measured over the area of heating surface 10. Gutters, measured inside and out 11. Large pipes (that is, pipes with an internal diameter exceeding 60mm), including trunking or the like, unless measured as incidental work; hangers, supports or the like (except common supports to services) shall be understood to be included 12. Structural metalwork, which shall include roof trusses.
	J6.4	Decoration on small pipes (that is, pipes with an internal diameter of 60mm or less) unless measured as incidental work, shall be measured by length; hangers, supports or the like (except common supports to services) shall be understood to be included.
	J6.5	Decoration on gratings, rainwater heads or the like shall each be enumerated separately, irrespective of size.

J7 Signwriting

J7.1 Signwriting letters or the like shall be enumerated.

Signwriting

SECTION K - ACCESSORIES

K1 Generally

K1.1 For the purposes of identification, accessories to be measured in accordance with the principles in this section shall be defined as those being specially manufactured or proprietary items not included in other sections.

Generally

K1.2 Unless otherwise stated, accessories shall be enumerated.

K2 Partitions

K2.1 Partitions shall be measured by length, taken over all doors and glazed units.

Partitions

K2.2 Doors and glazed units shall be enumerated, stating the partition in which they occur.

K2.3 Cubicles or the like shall be enumerated.

SECTION L - EQUIPMENT

L1 Generally

L1.1 For the purposes of identification, equipment to be measured in accordance with the principles in this section shall be defined as specialist equipment related solely to the function of a building or department (for example. food preparation or service equipment, laboratory equipment, stage equipment).

Generally

L1.2 Each category of equipment shall be given as an item; alternatively, individual items of equipment may be enumerated.

SECTION M - FURNISHINGS

M1 Generally

M1.1 For the purposes of identification, furnishings to be measured in accordance with the principles in this section shall be defined as loose furniture, fittings or the like related to the occupation and use of a building or department (for example, rugs, curtains, artwork, ashtrays, furnishing accessories).

Generally

M1.2 Each category of furnishing shall be given as an item; alternatively, individual items of furnishing may be enumerated or measured by length, as may be appropriate.

M2 Curtain track

M2.1 Curtain track shall be measured by length; hooks, gliders, stops or the like shall be understood to be included.

Curtain track

SECTION N - SPECIAL CONSTRUCTION

N1 Generally

N1.1 For the purposes of identification, special construction to be measured in accordance with the principles in this section shall be defined as either enclosures of a specialist construction (for example. air supported or geodetic structures, prefabricated buildings) or installations of a specialist nature (for example, radiation protection).

Generally

N2 Enclosures

N2.1 Enclosures shall be enumerated; work within the enclosure, not being part of the enclosure construction, shall be measured in accordance with the relevant sections of this document.

Enclosures

N3 Installations

Installations

N3.1 Installations shall each be given as an item; alternatively, they may be measured in accordance with the relevant sections of this document.

SECTION P - CONVEYING SYSTEMS

P1 Generally

Generally

P1.1 Lifts, hoists, conveyors, escalators or the like shall be enumerated.

P2 Sundries

Sundries

P2.1 An item shall be given for each of the following:

1. Supports, which shall include fixings, anchors, insulating blocks and anti-vibration devices
2. Identification, which shall include plates, discs, labels, charts and colour coding
3. Testing and commissioning, which shall include operating completed installations and providing fuel and power
4. Tools and spares, which shall include loose keys and consumable stores
5. Documents, which shall include drawings, operating instructions and maintenance manuals.

P3 Work incidental to conveying systems

Work incidental to conveying systems

P3.1 An item shall be given for incidental work, which shall include:

1. Co-ordination with other engineering installations
2. Cutting or forming holes, mortices, chases or the like and making good finishings
3. Building in or cutting and pinning brackets or the like and making good finishings.

P3.2 Protective painting and decorative painting shall each be given as an item for each system and shall include:

1. Removing protective coating or wrapping
2. Cleaning and polishing exposed surfaces.

P3.3 Other incidental work shall be measured in accordance with the relevant sections of this document and grouped under an appropriate heading.

SECTION Q - MECHANICAL ENGINEERING INSTALLATIONS

Q1 Generally

Generally

Q1.1 Installations shall be classified by function and given separately under an appropriate heading.

Q1.2 Installations shall be measured in accordance with the relevant clauses in this section; alternatively, they may be enumerated on a locational basis (for example, cold water installation to ground floor).

Q2 Pipework and gutterwork

Pipework and gutterwork

Q2.1 Pipes and gutters shall be measured by length, taken along the centre line over all fittings.

Q2.2 Fittings to small pipes (that is, pipes with an internal diameter of 60mm or less) shall be understood to be included. Fittings (except joints in the running length) to large pipes (that is, pipes with an internal diameter exceeding 60mm) and to gutters shall be enumerated, grouped together for each size of pipe or gutter and described as 'fittings'.

Q2.3 Valves, traps, expansion compensators or the like shall be enumerated; sleeve~, cover-plates or the like shall be understood to be included.

Q3	Ductwork	
Q3.1	Rectangular ductwork shall be measured by weight, based upon the area calculated as the length, taken along the centre line over all fittings, times the net girth of nominal dimensions. Blank ends shall be added to the area for weighting but no deduction shall be made for intersections or openings; extra weight for seams, stiffeners, supports, fixings or the like shall be understood to be included.	Ductwork
Q3.2	Circular, oval and flexible ductwork shall be measured by length, taken along the centre line over all fittings.	
Q3.3	Fittings to rectangular ductwork shall be understood to be included; fittings to circular and oval ductwork (excluding test holes and covers) shall be enumerated, grouped together for each size of duct and described as 'fittings'.	
Q3.4	Dampers, grilles, flexible connectors or the like shall be enumerated.	
Q4	Equipment	
Q4.1	Sanitary fittings, tanks, fans, pumps, hoods, air-handling units or the like shall be enumerated.	Equipment
Q4.2	Continuous convectors or the like shall be measured by length.	
Q4.3	Heated or ventilated ceilings or the like shall be measured by area.	
Q5	Automatic controls	
Q5.1	Sensing or activating devices (for example, thermostats, humidistats, motorised valves), control panels, air compressors and receivers or the like shall be enumerated.	Automatic controls
Q5.2	Wiring, pneumatic tubing, isolators, starters, relays or the like associated with automatic controls shall be understood to be included.	
Q5.3	Alternatively, automatic control systems shall be given as an item for each installation but equipment common to more than one system shall be enumerated.	
Q6	Connections to supply mains	
Q6.1	Connections to supply mains shall be enumerated, subject to clause GP8.	Connections to supply mains
Q7	Insulation, including linings and protective coverings	
Q7.1	Insulation to pipework shall be measured by length, taken along the centre line over all fittings.	Insulation, including linings and protective coverings
Q7.2	Insulation to rectangular ductwork shall be measured by area, calculated as described in clause Q3; additional insulation to flanges or the like shall be understood to be included.	
Q7.3	Insulation to circular, oval and flexible ductwork shall be measured by length, taken along the centre line over all fittings.	
Q7.4	Insulation boxes around accessories shall be enumerated.	
Q7.5	Insulation to equipment shall be enumerated.	
Q8	Sundries	
Q8.1	Sundries shall be measured in accordance with clause P2.	Sundries
Q9	Work incidental to mechanical engineering installations	
Q9.1	Work incidental to mechanical engineering installations shall be measured in accordance electrical engineering with clause P3.	Work incidental to mechanical engineering installations

SECTION R - ELECTRICAL ENGINEERING INSTALLATIONS

R1 Generally

Generally

- R1.1 Installations and auxiliary installations shall be classified by function and given separately under an appropriate heading.
- R1.2 Installations shall be measured in accordance with the relevant clauses in this section; alternatively, they may be enumerated on a locational basis (for example, lighting installation to ground floor).
- R1.3 The references herein to 'cable' shall be understood to include tape, bus-bar trunking or the like.
- R1.4 The references herein to 'conduit' shall be understood to include trunking, cable tray, ducting or the like.

R2 Main circuits

Main circuits

- R2.1 For the purposes of measurement, 'main' is defined as the 'incoming supply to the main distribution board within a building or complex'.
- R2.2 Cable shall be measured by length.
- R2.3 Conduit shall be measured by length.

R3 Sub-main circuits

Sub-main circuits

- R3.1 For the purposes of measurement, 'sub-main' is defined as the 'supply from the main distribution board to a sub-main distribution board'.
- R3.2 Cable and conduit to individual sub-main circuits shall be enumerated and separately identified as may be appropriate; alternatively, sub-main circuits may be measured in accordance with clause R2.

R4 Final sub-circuits and auxiliary installations

Final sub-circuits and auxiliary installations

- R4.1 Cable and conduit to termination points shall be enumerated, classified as follows:
1. Lighting points
 2. Lighting switch points, stating whether one-way, two-way or intermediate
 3. General purpose socket outlets; multi-gang socket outlets or the like shall count as one point
 4. Equipment points, stating type of equipment or the electrical rating; contactors, starters or the like shall be measured separately as equipment points
 5. Auxiliary installation points (for example, bell push, telephone outlet).

R5 Accessories

Accessories

- R5.1 Ceiling roses and pendants, lighting switches, socket outlets, bell pushes or the like shall be enumerated.

R6 Control gear

Control gear

- R6.1 Switchgear, distribution gear, contactors, starters, composite switchboards or the like shall be enumerated.

R7 Equipment

Equipment

- R7.1 Transformers, generators, standby power cubicles, luminaries, external lighting columns, clocks, loudspeakers, bells or the like shall be enumerated.
- R7.2 Controls, which shall include accessories and interconnecting cables, shall be measured in accordance with the relevant clauses in this section; alternatively, they may be included with the items of equipment.

R8 Connections to supply mains

R8.1 Connections to supply mains shall be enumerated, subject to clause GP8.

**Connections to
supply mains**

R9 Sundries

R9.1 Sundries shall be measured in accordance with clause P2.

Sundries

R10 Work incidental to electrical engineering installations

R10.1 Work incidental to electrical engineering installations shall be measured in accordance with clause P3.

**Work incidental to
electrical engineering
installations**

APPENDIX

Amendments to principles of measurement (see clause GP1.2)