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*Guide to*

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*Elemental Cost Estimating &*

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*Analysis for Building Works*

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*2016*

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# CONTENTS

<b>Table of Contents</b>	<b>Page</b>
1. FOREWORD .....	2
2. INTRODUCTION .....	3
3. PURPOSE OF ELEMENTAL COST ESTIMATING .....	4
4. LIST OF SECTIONS, ELEMENTS AND COMPONENTS .....	9
5. DEFINITIONS .....	20
6. SALIENT FEATURES OF THIS GUIDE .....	23
7. SCHEDULE OF ELEMENTS / COMPONENTS .....	25
8. EXAMPLES .....	102
9. INDEX .....	109

# 1. FOREWORD

## **Foreword to the 2013 edition:**

“In 1998 the Association of South African Quantity Surveyors published the second edition of the “Guide to Elemental Cost Estimating & Analysis for Building Works”. An amended version was issued by the Africa Association of Quantity Surveyors during 2003. This guide replaces both

A committee comprising Patrick Waterson and Andrew Koen under the chairmanship of Martin Smith was established at the beginning of 2012 to examine whether there was a need to revise and possibly expand the 1998 and 2003 editions to accommodate changes that have taken place in the industry since those versions were published

The committee endeavoured to refine the principles established in the previous editions by incorporating international advances in the industry to better guide quantity surveyors active in Africa and further afield

Invaluable insight was gleaned, and is herewith acknowledged, from publications such as “RICS new rules of measurement: Order of cost estimating and elemental cost planning” (February 2009), “Measurement of Buildings by Area and Volume” (Canadian Institute of Quantity Surveyors), “UNIFORMAT II” published by the National Institute of Standards and Technology (NIST) and the American Society of Testing and Materials (ASTM) and “Uniformat” published by The Construction Specifications Institute (CSI) in the United States of America and Construction Specifications Canada (CSC)

The Services and Model Documentation Board of the Africa Association of Quantity Surveyors comprising Corné de Leeuw (chairman) (South Africa), Michael Frimpong (Ghana), Dan Kimoro (Kenya) and Segun Ajanlekoko (Nigeria) also provided input”

## **Foreword to the 2016 edition:**

It was always envisaged that the guide will be regularly adjusted in order to keep track with modern trends and changing construction preferences.

A committee comprising Patrick Waterson, Mauritz van Niekerk and James Hanley under the chairmanship of Martin Smith updated the guide. The Services and Model Documentation Board of the Africa Association of Quantity Surveyors comprising Corné de Leeuw (chairman) (South Africa), Rosemargaret Esubonteng (Ghana), Dan Kimoro (Kenya), Joseph Tango (Tanzania), Ian Oosthuysen (Namibia), Gedion Mukorombindo (Zambia) and Segun Ajanlekoko (Nigeria) again provided input

Changes were made to a few elements and components. New components were added where appropriate to make the guide more comprehensive and all encompassing

It is however important to note the change in Structural Frame and Roofs. Slabs, or portions thereof, receiving waterproofing are now included with Roof Construction. This change was deemed necessary to correct an anomaly in Roof Construction

**Martin Smith**  
**Chairman**  
**Construction Economics Committee**

**March 2016**

## 2. INTRODUCTION

The elemental method is an approach towards calculating the total estimated cost of construction projects. It considers the major elements of a building and, if properly implemented, provides a cost estimate based on an elemental breakdown of the building project

To achieve this goal the measurement and descriptions of building works for estimates should be consistent. By ensuring that different building projects are measured and described in the same manner, the data from one can be meaningfully applied to another. A lack of consistency makes it extremely difficult for the employer and project team to comprehend what is included in the cost estimate, cost limit or cost target, often casting doubt about the cost advice provided

The primary objective of this guide is to present a system which sets out principles and a model format for estimating which may be understood by all those involved in construction projects thereby aiding communication between the design team and the employer. It provides a structured basis for measuring building work and advances a consistent approach for dealing with other key cost components associated with a building project. It should also assist the quantity surveyor in providing effective and reliable cost advice. It is not the intention to explain alternative estimating methods, procurement methods or contract strategies

This guide is not intended to classify elements of major civil works. Buildings, however, are usually accompanied by roads, utilities, parking areas, and other non-building features. The building element "External works and services" is provided in order that users do not have to resort to multiple elemental classifications for what is primarily a building project

### 3. PURPOSE OF ELEMENTAL COST ESTIMATING

#### General

Elemental cost estimating and analysis is one of a number of alternative estimating methods. In any estimating method the fewer quantities which are measured the more difficult it is to price. During the design development stages of a development, at which time only minimal information is available, the measurement should be simplified as far as possible. A square metre estimate is easy to compile but to some extent less reliable whilst a detailed quantity take-off is more reliable but time consuming. The elemental method is a compromise between the relatively easy and quick square metre method and the more cumbersome and detailed quantity take-off

The primary purpose of an elemental cost analysis is to enable cost information to be collated and produced in a manner which can assist in the cost controlling of future building projects. A standard set of building elements and components are a prerequisite. Cost control is achieved by preparing an estimate of construction cost based on the information gleaned from this analysis in the very early stages of a development, when little or no design information is available

The need for an elemental classification is most apparent in the economic evaluation of building alternatives at the design stage. Cost estimates using a format based on a detailed measurement are time consuming, costly and inappropriate at the early design stages

By ensuring that elemental estimates are measured in the same manner the cost data can meaningfully be applied to other building projects. Using this guide ensures consistency in the economic evaluation of building projects over time and from project to project. The estimator is therefore urged not to deviate from the system proposed in this guide since only then will it be possible to use the derived data for comparative elemental estimating

The amount of detail to be measured for each element is related to the cost significance of the element in the particular design. Where sufficient information is available expensive items are to be measured in detail. Composite items are measured by combining or grouping together items to common forms of measurement

Unit rates are applied to each of the elemental quantities. The rates should be inclusive of all materials, labour and plant that are specifically required to construct the element and any subcontractors' preliminaries, design fees, contingency allowances and overheads and profit. Unit rates are to exclude main contractor's preliminaries and other allowances, such as development design team fees, other development costs, contingency allowances and escalation. These items are to be assessed separately and added to the estimate

When using unit rates from cost analyses and benchmark analyses, care should be taken to ensure that such rates have been adjusted to reflect prices current at the time the estimate is prepared (ie adjusted to remove allowances included for construction escalation), location and unique design features

Cost control is achieved by compiling an estimate based on the information contained in the analysis throughout the various development stages of a development. A major benefit of performing an economic analysis based on an elemental classification is the reduction in

time and costs for evaluating alternatives at the early design stage when economic analysis is most important in establishing the most efficient choices between building alternatives

## **Benefits of elemental cost estimating**

Some of the benefits from using this guide to structure estimates are the following:

1. 'Composite' elemental costs are used for early design estimates, thereby eliminating the time-consuming and costly exercise of identifying, quantifying and costing material and labour for each product
2. Elemental rates communicate the quality level of elements. Elemental estimates can therefore be initially prepared based on the anticipated quality level of a building project without knowing the specific products that make up the elements
3. Elemental estimates provide a more realistic distribution of costs for assigning design-to-cost targets for each discipline than do arbitrary percentage allocations that do not necessarily reflect program requirements or anticipated quality levels
4. Elemental costs can be monitored, element by element, from the programming phase through the final design phase, making it easier to document the "audit trail" required in quality management programs
5. Most design changes, even major ones, can be quickly evaluated at any phase, because the total cost of each element is usually proportional to its quantity, thus simplifying calculations. There is no need to quantify and price individual components or products that make up the element, a tedious, costly and lengthy exercise
6. Cost overruns are detected earlier because costs are monitored frequently, at each stage of design. This allows necessary corrective design changes to be made early, with little effect on the design schedule and minimum impact on the cost of design
7. Consistent, standardised reporting of costs from development to development facilitates the rapid preparation and analysis of estimates
8. Elemental unit rates that are generated in cost estimates are suitable for recycling in data banks and can be drawn upon to prepare estimated costs of future building projects
9. Cost risk analyses that quantify the probability and magnitude of cost overruns are easier to prepare as estimators will always be working with a consistent cost reporting format from the programming stage to the completion of construction documents. Every cost estimate could be presented with a risk analysis that shows the probability distribution associated with that estimate
10. Elemental breakdown of a development provides a standardised format for collecting and analysing historical data to use in estimating and budgeting future projects and a checklist for the cost estimating process
11. Facilitates communication amongst members of a project team regarding the scope of work and costs in each discipline
12. Provides a basis for systemised identification of product standards in relation to cost

## **Cost analysis parameters**

There are two primary reasons for using cost analysis parameters in evaluating estimates:

1. To analyse and monitor costs, element by element, as design progresses, to ensure that costs are within the allocated budget and within the range of the costs of comparable historical projects with similar quality levels
2. To identify the likely source of budget overruns as early as possible. This facilitates making revisions to plans and specifications that may be required to meet the budget with minimum impact on the design programme and design cost

## **Building projects comprising multiple floors / buildings**

Where a development comprises more than one building function within a building eg basement parking, retail podium, offices, etc it is recommended that a separate primary element section be prepared for each function and combined with specialist installations, equipment, tenant installations, alterations, external works and services, preliminaries, contingency allowances and escalation for the whole development in a single overall estimate for the development

Similarly where a development comprises more than one building a separate estimate of construction cost should be prepared for each building

## **Sections and elements**

### **Sections**

The elements are subdivided into the following sections:

Primary elements  
Specialist installations  
Equipment  
Tenant installations  
Alterations  
External works and services  
Preliminaries  
Contingency allowances  
Escalation, and  
Tax

### **Elements**

Elements are defined as major features, common to most buildings which usually perform a given function regardless of the design, specification, construction method or materials used, thus facilitating the use of information obtained from a building when estimating the cost of other similar buildings

In selecting and defining the elements the following principles were used:

1. Each element should have a significant influence on the cost of a building and a high frequency of occurrence

2. There should be consistency and simplicity in the definitions of elements. One of the primary purposes of a standard list of elements and components is to enable cost analyses to be made of completed projects
3. Wherever possible an element should be capable of measurement. Some of the elements, such as “Structural frame” are related primarily to the horizontal surfaces of the building, while others, such as “External facade”, are related primarily to the vertical surfaces. These elements can usually be quantified, even in the very early stages of a development, thus enabling a more accurate preliminary estimate to be made
4. Elements should apply to any building type
5. Elements separate building elements from building related external works and services
6. Elements should as far as is reasonable and practical relate to other international elemental classifications such as the UNIFORMAT II (USA) and those of the Canadian Institute of Quantity Surveyors (CIQS) and the Royal Institute of Chartered Surveyors (RICS-UK)



## 4. LIST OF SECTIONS, ELEMENTS AND COMPONENTS

<b>SECTION</b>	<b>ELEMENTS</b>	<b>COMPONENTS</b>
Primary elements	Substructure	Un-reinforced strip footings Reinforced strip footings Ground beams Column bases and pile caps Lift shaft bases Columns Brick and block walls Concrete walls Plinth finishes Rock, etc excavation Sundries
	Ground floor	Solid floors Insulation Suspended floors Steps Ramps Service ducts, trenches, etc Pits and bases Sub-surface drains Catch pits, sumps, etc Pumps
	Structural frame	Slabs Precast / composite decking systems Ramps Staircases and fire escapes Columns Beams Portal frames Space frames Steel frames Timber frames
	External facade	Brick and block walls Concrete walls Pre-fabricated composite walls Waterproofing, drainage, etc Cladding Finishes Curtain walls Shop fronts and similar glazed screens Windows Sun control Grilles, screens, louvres, etc Doors Special doors

<b>Roofs</b>	<b>Construction</b> <b>Coverings</b> <b>Glazed roofs</b> <b>Roof, lantern, skylights and openings</b> <b>Dormers, hatches, etc</b> <b>Waterproofing</b> <b>Insulation</b> <b>Trafficable surfaces</b> <b>Eaves</b> <b>Verges</b> <b>Rain water drainage</b> <b>Ventilators and cowls</b> <b>Chimneys</b>
<b>Internal divisions</b>	<b>Brick and block walls</b> <b>Concrete walls</b> <b>Shop fronts and similar glazed screens</b> <b>Borrowed lights</b> <b>Hatches and access doors</b> <b>Screens, etc</b> <b>Doors</b> <b>Special doors</b>
<b>Partitions</b>	<b>Office partitions</b> <b>Toilet partitions</b> <b>Doors</b>
<b>Floor finishes</b>	<b>Applied floor finishes</b> <b>Suspended floor finishes</b> <b>Raised access floors</b> <b>Stair and ramp floor finishes</b> <b>Skirtings, etc</b>
<b>Internal wall finishes</b>	<b>Finishes</b> <b>Rails, corner protectors, etc</b>
<b>Ceiling finishes</b>	<b>Slab soffit finishes</b> <b>Nailed-up ceilings</b> <b>Suspended ceilings</b> <b>Bulkheads</b> <b>Cornices, etc</b> <b>Access panels, trapdoors, grilles, etc.</b>
<b>Fittings</b>	<b>Built-in cupboards</b> <b>Cupboards fixed to walls</b> <b>Pigeon hole fittings, mail boxes, etc</b> <b>Room dividers</b> <b>White, chalk, etc boards</b> <b>Pinning, bulletin, etc boards</b> <b>Building directories</b> <b>Raised platforms</b>

	<ul style="list-style-type: none"> <li>Counters</li> <li>Kitchen floor and wall cupboards</li> <li>Worktops, benches, vanities, etc</li> <li>Shelving</li> <li>Seating benches</li> <li>Lockers</li> <li>Telephone enclosures</li> <li>Tables</li> <li>Lecterns, etc</li> <li>Miscellaneous</li> </ul>
Electrical installation	<ul style="list-style-type: none"> <li>Main switchboard, etc</li> <li>Circuit wiring</li> <li>Luminaires</li> <li>Emergency lighting</li> <li>Special light fittings</li> <li>Builder's work</li> <li>Profit and attendance</li> </ul>
Plumbing	<ul style="list-style-type: none"> <li>Sanitary fittings</li> <li>Pods</li> <li>Sanitary fitting sundries</li> <li>Plumbing</li> <li>Duct covers</li> <li>Cold water supplies</li> <li>Hot water supplies</li> <li>Steam and condensate distribution</li> <li>Geysers</li> <li>Boilers</li> <li>Solar heating</li> <li>Heat pumps</li> <li>Water storage tanks</li> <li>Booster pumps</li> <li>Grey water systems</li> <li>Builder's work</li> <li>Profit and attendance</li> </ul>
Fire protection	<ul style="list-style-type: none"> <li>Fire stops</li> <li>Fire resistant paint, etc</li> <li>Extinguishers</li> <li>Hose reels</li> <li>Hydrants, pedestals, etc.</li> <li>Water supply</li> <li>Water storage tanks</li> <li>Booster pumps</li> <li>Builder's work</li> <li>Profit and attendance</li> </ul>
Balustrading, handrails, etc	<ul style="list-style-type: none"> <li>Balustrade walls</li> <li>Parapet walls</li> <li>Steel handrails</li> <li>Timber handrails</li> </ul>

		<ul style="list-style-type: none"> <li>Steel balustrading</li> <li>Timber balustrading</li> <li>Glazed balustrading</li> </ul>
	Miscellaneous items	<ul style="list-style-type: none"> <li>Catwalks, ladders, etc</li> <li>Bollards</li> <li>Other</li> </ul>
Specialist installations	Special foundations	<ul style="list-style-type: none"> <li>Sheet piling</li> <li>Driven piles</li> <li>Cast in-situ piles</li> <li>Augured piles</li> <li>Vibro-compacted columns</li> <li>Establishment, etc</li> <li>Pile testing, etc</li> <li>Caissons</li> <li>Raft foundations</li> <li>Underpinning, etc</li> <li>Shoring</li> <li>Dewatering</li> <li>Builder's work</li> <li>Profit and attendance</li> </ul>
	Special fire protection systems	<ul style="list-style-type: none"> <li>Sprinklers</li> <li>Fire detection and alarm</li> <li>Building evacuation</li> <li>Foam generating</li> <li>Fire suppression</li> <li>Smoke ventilation / control</li> <li>Builder's work</li> <li>Profit and attendance</li> </ul>
	Conveyance systems	<ul style="list-style-type: none"> <li>Passenger lifts</li> <li>Freight lifts</li> <li>Car lifts</li> <li>Wheel chair lifts</li> <li>Hoists</li> <li>Dumbwaiters</li> <li>Pneumatic tubes</li> <li>Chutes</li> <li>Turntables</li> <li>Transportation systems</li> <li>Funiculars</li> <li>Escalators</li> <li>Travelators</li> <li>Conveyors</li> <li>Builder's work</li> <li>Profit and attendance</li> </ul>
	Air conditioning	<ul style="list-style-type: none"> <li>Energy supply</li> <li>Heat generating systems</li> </ul>

	Chillers Cooling towers, etc Piping and fittings, etc Supply and return air systems Ventilation and exhaust systems Steam, hot water, etc distribution Heat recovery equipment Air conditioning units Reverse-cycle, etc terminal heat pumps Self-contained air conditioners, etc Testing and balancing Other systems and equipment Builder's work Profit and attendance
<b>Ventilation</b>	Ventilation Builder's work Profit and attendance
<b>Heating and cooling</b>	Heat generating systems Cooling generating systems Builder's work Profit and attendance
<b>Special electrical systems</b>	Uninterrupted power supply Clean power supply Power factor correction Lightning and grounding protection Power generating Other special electrical systems Builder's work Profit and attendance
<b>Electronic systems</b>	Building management Voice data Television Other electronic systems Builder's work Profit and attendance
<b>Other services</b>	Gas installation Other services Builder's work Profit and attendance
<b>Communications and security</b>	Public address and music systems Inter-communication and paging systems Telephone systems Call systems Closed circuit television systems Local area network systems

		<p>Clock and programme systems  Fire alarm systems  Security and detection systems  Turnstiles  Builder's work  Profit and attendance</p>
	<b>Signage</b>	<p>Building signage  Signage pylons, towers, etc  Directional, identification, safety, etc  Flagpoles  Builder's work  Profit and attendance</p>
	<b>Artwork, furnishings, etc</b>	<p>Artwork  Cabinetry, etc  TV arms, brackets, etc.  Window treatment  Hospital curtain tracks, drip rails, etc  Floor mats, etc  Multiple seating  Interior landscaping  Interior seating benches, rubbish bins, etc  Builder's work  Profit and attendance</p>
	<b>Miscellaneous items</b>	<p>Fireplaces, etc  Saunas  Jacuzzis  Other  Builder's work  Profit and attendance</p>
<b>Equipment</b>	<b>Commercial</b>	<p>Security and vault  Teller and service  Registration  Checkroom  Trading  Commercial laundry and dry cleaning  Vending  Office  Builder's work  Profit and attendance</p>
	<b>Institutional</b>	<p>Ecclesiastical  Library  Theatre and stage  Instrumental  Audio-visual  Detention  Research  Medical</p>

		<b>Mortuary</b> <b>Builder's work</b> <b>Profit and attendance</b>
	<b>Vehicular</b>	<b>Vehicular service</b> <b>Parking control</b> <b>Loading dock</b> <b>Builder's work</b> <b>Profit and attendance</b>
	<b>Other</b>	<b>Maintenance</b> <b>Façade cleaning</b> <b>Solid waste handling</b> <b>Food storage service</b> <b>Domestic appliances</b> <b>Security</b> <b>Commercial kitchen</b> <b>Cold rooms</b> <b>Darkroom, etc</b> <b>Athletic, recreational, playground and therapeutic</b> <b>Planetarium</b> <b>Observatory</b> <b>Agricultural</b> <b>Builder's work</b> <b>Profit and attendance</b>
<b>Tenant installations</b>	<b>Tenant installations</b>	<b>Tenant installation allowances</b>
<b>Alterations</b>	<b>Alterations</b>	<b>Temporary barriers, screens, etc</b> <b>Removal of existing work</b> <b>Cutting through floors and ceilings</b> <b>Building up openings</b> <b>Preparatory work to existing surfaces</b> <b>Making good of finishes, etc</b> <b>Openings through existing walls, etc</b> <b>Cleaning existing surfaces</b> <b>Protective coatings to existing surfaces</b>
<b>External works and services</b>	<b>Demolitions</b>	<b>Buildings</b> <b>Relocation of buildings and utilities</b> <b>Breaking up and removing</b> <b>Taking down and removing</b> <b>Toxic / hazardous building materials and components</b>
	<b>Site clearance</b>	<b>Site clearing and grubbing</b> <b>Contaminated land</b> <b>Trees</b> <b>Hedges, fences, etc</b>
	<b>Earthworks</b>	<b>Grading and excavation</b>

	<ul style="list-style-type: none"> <li>Rock, etc excavation</li> <li>Filling</li> <li>Soil stabilisation</li> <li>Basement excavation</li> <li>Lateral support</li> <li>Dewatering</li> <li>Sundries</li> </ul>
Soil drainage	<ul style="list-style-type: none"> <li>Soil drains</li> <li>Laboratory and industrial liquid waste drainage</li> <li>Manholes, inspection chambers, etc</li> <li>Pump stations</li> <li>Waste water treatment plants</li> <li>Septic tanks, etc</li> </ul>
Sub-surface water drainage	<ul style="list-style-type: none"> <li>Sub-surface drains</li> <li>Catch pits, inspection chambers, sumps, etc</li> <li>Pumps, etc</li> </ul>
Storm water drainage	<ul style="list-style-type: none"> <li>Surface water channelling</li> <li>Piping</li> <li>Ditches and culverts</li> <li>Rain water harvesting</li> <li>Retention ponds</li> <li>Manholes, catch pits, inspection chambers, sumps, etc</li> <li>Pumps</li> </ul>
Water supply	<ul style="list-style-type: none"> <li>Potable incoming main</li> <li>Potable site reticulation</li> <li>Non-potable site reticulation</li> <li>Chilled water reticulation</li> <li>Steam and condensate distribution</li> <li>Storage tanks</li> <li>Well systems, boreholes, etc</li> </ul>
Fire service	<ul style="list-style-type: none"> <li>Incoming main</li> <li>Site reticulation</li> <li>Twin booster connections</li> <li>Hydrants, pedestals, etc</li> </ul>
Electrical installation	<ul style="list-style-type: none"> <li>Electrification</li> <li>Incoming main</li> <li>Site reticulation</li> <li>Site communications and security</li> <li>Substations and transformers</li> <li>Emergency power generating</li> <li>Photovoltaic / wind generation</li> <li>Fuel tanks</li> <li>Street, bollard, etc lighting</li> <li>Floodlighting</li> </ul>



	<ul style="list-style-type: none"> <li><b>Builder's work</b></li> <li><b>Profit and attendance</b></li> </ul>
<b>Gas and fuel</b>	<b>Storage and distribution</b>
<b>Connection fees, etc</b>	<ul style="list-style-type: none"> <li><b>Soil drainage</b></li> <li><b>Storm water drainage</b></li> <li><b>Water supply</b></li> <li><b>Fire service</b></li> <li><b>Electrical installation</b></li> <li><b>Gas and fuel</b></li> </ul>
<b>Boundary, screen, retaining walls, etc</b>	<ul style="list-style-type: none"> <li><b>Boundary walls</b></li> <li><b>Screen walls</b></li> <li><b>Retaining walls</b></li> <li><b>Terrace and perimeter walls</b></li> <li><b>Doors</b></li> <li><b>Gates</b></li> </ul>
<b>Fences and railings</b>	<ul style="list-style-type: none"> <li><b>Fences</b></li> <li><b>Railings</b></li> <li><b>Gates</b></li> </ul>
<b>Roads, paving, etc</b>	<ul style="list-style-type: none"> <li><b>Roads</b></li> <li><b>Parking areas</b></li> <li><b>Paving</b></li> <li><b>Steps and ramps</b></li> <li><b>Bridges</b></li> <li><b>Kerbs and gutters</b></li> <li><b>Bollards</b></li> <li><b>Rails and barriers</b></li> <li><b>Painted lines, markings and signage</b></li> </ul>
<b>Covered parking, walkways, etc</b>	<ul style="list-style-type: none"> <li><b>Covered parking</b></li> <li><b>Covered walkways</b></li> </ul>
<b>Decks, etc.</b>	<ul style="list-style-type: none"> <li><b>Timber</b></li> <li><b>Steel</b></li> </ul>
<b>Pergolas, canopies, etc</b>	<ul style="list-style-type: none"> <li><b>Pergolas</b></li> <li><b>Canopies</b></li> </ul>
<b>Minor construction work</b>	<b>Minor construction work</b>
<b>Pools, etc</b>	<ul style="list-style-type: none"> <li><b>Swimming pools, etc</b></li> <li><b>Decorative fountains and water courses</b></li> <li><b>Change rooms, etc</b></li> </ul>

	<b>Sports facilities</b>	<b>Playing fields</b> <b>Spectator seating, stands, etc</b> <b>Change rooms, etc</b>
	<b>Garden works</b>	<b>Landscaping</b> <b>Irrigation systems</b>
	<b>Miscellaneous items</b>	<b>Site / street furniture and equipment</b> <b>Other</b>
<b>Preliminaries</b>	<b>Preliminaries</b>	<b>Preliminaries</b>
<b>Contingency allowances</b>	<b>Price and detail development contingency</b> <b>Construction contingency</b>	<b>Price and detail development contingency</b> <b>Construction contingency</b>
<b>Escalation</b>	<b>Pre-tender Contract</b>	<b>Pre-tender Contract</b>
<b>Tax</b>	<b>Value added tax</b> <b>Sales tax</b>	<b>Value added tax</b> <b>Sales tax</b>

## **General allowances**

### **Preliminaries**

As it is a significant cost element in most construction projects it is recommended that the allowance for principal contractor's preliminaries be treated as a separate cost element and added as a percentage to the total cost of the estimate. Alternatively, it can be assessed as a lump sum. The allowance can be derived from analyses of past projects of a similar nature and construction period

Subcontractor's preliminaries are to be included in the unit rates applied to measured quantities

### **Contingency and escalation allowances**

Construction cost summaries should include mark-ups for:

#### **1. Risk and contingency allowances**

All building projects involve risk and uncertainty. The risk and uncertainty diminishes as the building project progresses. The costs of major scope changes are not included in this allowance. Major scope changes require additional funding or a change in programme requirements

Contingency allowances should be treated as the following two separate and distinct cost elements and included in each estimate of construction cost:

### 1.1. Price and detail development contingency

Considering the limited information about the building and site conditions available at the initial concept stage the contingency allowance may be a significant percentage of the total estimated costs. The more complex or unique the project is, the higher the initial allowance may be. Price and detail development contingency allowances reduce to zero by completion of the working drawings, when complete project information is available. This allowance is for additional items or changes that occur as the design and pricing progresses

### 1.2. Construction contingency

This allowance is for additional items or changes during the construction period due to unforeseen circumstances such as unknown ground / site conditions, access restrictions, existing buildings, boundaries, existing services, etc

## 2. Escalation (fluctuation) allowances

Elemental cost estimates are compiled using unit rates current at the time the estimate is prepared (estimate base date) and exclude any allowance for escalation. It is, however, also prudent to consider the expected future escalation in construction costs as follows:

**2.1.** Pre-tender escalation (the period from the estimate base date to the date of the tender submission)

**2.2.** Contract escalation (the period from the date of tender submission up to the date of construction practical completion)

The amounts of the allowances are determined by adding a percentage to the estimate. The percentage may be calculated using published tender price or building cost indices or may be derived from in-house sources. Care should be taken to ensure that the rates derived from cost analyses, etc and employed to calculate the elemental estimate have been adjusted to reflect unit rates current at the time the estimate is compiled. Potential cost increase caused by changing tender market conditions should also be considered

Incorporating these mark-ups in a consistent manner within elemental estimates facilitates meaningful comparisons of estimated costs from different projects and different sources

### **Value added tax (VAT) and sales tax**

Tax is indicated as an element of cost

Value added tax in relation to building projects is a complex issue. Specialist advice should be sought on VAT matters to ensure that the correct rates are applied to the various components of the project

Estimators should not attempt to indicate sales tax separately if it is not readily identifiable

## 5. DEFINITIONS

### Symbols, abbreviations and definitions

Symbols contained in this guide are as listed below:

#### Symbols used for measurement

Symbol	Description
mm	Millimetre
m	Metre
m <sup>2</sup>	Square metre
m <sup>3</sup>	Cubic metre
No	Number
kg	Kilogram
kN	Kilonewton
kW	Kilowatt
t	Tonne

#### Commonly used functional units and functional units of measurement

Function	Unit of measurement	Abbr
Parking facilities	Per parking bay	Ea.
Offices	Per m <sup>2</sup> of construction area	m <sup>2</sup>
Shops, department stores, shopping centres, etc	Per m <sup>2</sup> of construction area	m <sup>2</sup>
Retail warehouses	Per m <sup>2</sup> of construction area	m <sup>2</sup>
Factories	Per m <sup>2</sup> of construction area	m <sup>2</sup>
Warehouses / stores	Per m <sup>2</sup> of construction area	m <sup>2</sup>
Apartments	Per bedroom	Ea.
Hotels / motels	Per key	Ea.
Hotel furniture, fittings and equipment	Per bedroom	Ea.
Churches, chapels, temples, mosques, etc	Per seat	Ea.
Hospitals	Per bed	Ea.
Prisons	Per cell	Ea.
Theatres	Per seat	Ea.
Cinemas	Per seat	Ea.
Schools	Per pupil	Ea.

#### Definitions

**Component** - means a measured item which forms part of an **element** or a sub element. Each **element** is subdivided into components (eg the element Roofs is subdivided into the components of Construction, Coverings, Glazed roofs, etc). Where a specific component forms a high cost portion of the estimate, such component should be further subdivided into subcomponents

**Construction area** – means the construction area of a building is the summation of all areas (whether completed or partially completed) on plan measured at each covered floor level over the external walls or external lines of the outermost vertical enclosing planes or, where applicable, the centre line of party walls between buildings.

The following items are **included** in the calculation of construction area:

- internal stairwell and staircase areas
- Covered parking areas, ramps, etc. within the enclosing planes of the building
- Internal atrium space, accessible and capable of use at the lowest level
- lift shaft areas
- duct space areas
- mezzanine floor areas
- areas in trafficable attic spaces
- floor areas to lift motor rooms, plant rooms, etc.
- all covered porches, balconies and balcony corridors within the enclosing planes of the building
- all covered porches, balconies and balcony corridors projecting beyond the enclosing planes of the building, provided that the relevant areas have at least three of their walls not less than two thirds of the overall storey height on which they occur
- floor areas to attached sheds, carports, etc. provided that the relevant areas have at least three of their walls not less than two thirds of the overall storey height on which they occur.

The following items are **excluded** from the calculation of construction area:

- all areas not having at least three of their walls not less than two thirds of the overall storey height on which they occur
- external steps and paved areas
- areas of projecting roof overhangs, hoods, canopies and the like
- enclosed open areas (light or ventilation wells and courtyards)
- areas of open covered walkways and carports, etc.
- areas of unenclosed fire escapes
- areas on plan of small projections such as pilasters, attached piers, fins, chimney breasts, etc.
- voids over or under structural, raked or stepped floors

**Contract escalation** – means an allowance included for **escalation** during the period from the date of tender to the construction completion period. Refer also to the definition of **pre-tender** escalation

**Cost** – means all the labour, material, plant and equipment, etc required to create an **element** including overheads and profit

**Cost per functional unit** – means the total estimated cost divided by the **functional unit**

**Cost per square metre** – means the cost of the **element** divided by the **construction area**

**Cost (percentage) %** - means the cost of the **element** expressed as a percentage of the total cost

**Cost per unit** – means the cost of an **element** divided by the measured **unit quantity** of the **element** (eg the cost of the **element** Roofs divided by the area of the **element** Roofs)

**Element** - Sections are divided into elements (eg Substructure, Exterior facade, Roofs, etc). An element is that part of any building that always performs the same function irrespective of its construction or specification, thus facilitating the use of information obtained from an analysis of a building when estimating the cost of other similar buildings. Elements should not be combined

**Element unit** – means a unit of measurement which relates to the quantity of the **element** or **component** (eg the area of slabs, number of sanitary fittings, etc)

**Element unit rate** – means the total cost of an **element** divided by the **element unit quantity**

**Elemental cost analysis** – means a comprehensive assessment of costs involved in previously constructed buildings of a similar kind and is aimed primarily at providing reliable information which will assist in estimating the cost of future buildings

**Elemental method** – means an estimating method based on an elemental breakdown of a building. The method involves the use of the **element unit quantity** and **element unit rate**

**Escalation** – means an allowance included in the estimate for fluctuations in the prices of labour, plant and equipment and materials. It can be positive or negative. Refer also to **pre-tender escalation** and **contract escalation**

**Estimate base date** – means the date on which the cost of an estimate is determined as a basis for calculating **escalation**, etc

**Fluctuation** – Refer to **pre-tender escalation** and **contract escalation**

**Functional unit** – means a unit of measurement used to represent the prime use of a building or part of a building (eg per hospital bed, per hotel room / key and per m<sup>2</sup> of retail area). It also includes all associated circulation space

**Overheads and profit** – Refer to principal **contractor's overheads and profit**

**Preliminaries** – Refer to **principal contractor's preliminaries**

**Pre-tender escalation** – means an allowance included for **escalation** during the period from the base date of the estimate to the contract tender date. Refer also to **contract escalation**

**Principal contractor** – means the contractor appointed for the total construction and completion of the building project

**Principal contractor's overheads and profit** – Refer to **Principal contractor's preliminaries**

**Principal contractor's preliminaries** – include costs associated with salaries and wages, setting out, hoardings and gantries, signboards, offices, office furniture and equipment, consumables, sheds, toilets, major plant, equipment, gear and loose tools, temporary services, scaffolding, vehicles / transport, safety measures and equipment, cleaning, insurances, head office administration proportioned to each project plus the return on capital invested. It excludes costs associated with **subcontractor's overheads and profit** and **subcontractor's preliminaries**

**Quantity** – means the actual measured quantity of an **element** or **component**

**Rentable area** – means the total revenue-producing area of the building as defined in the SAPOA Method for Measuring Floor Areas in Buildings or other appropriate definition of rentable (lettable) area

**Sections** – means the subdivision of **elements** into the following sections: Primary Elements, Specialist Installations, Equipment, Tenant installations, Alterations, External Works and Services, Preliminaries, Contingency Allowances, Escalation and Tax

**Subcontractor** – means a nominated or selected subcontractor who executes specialist work within the building development

**Subcontractor's overheads and profit** – means **overheads and profit** that relate specifically to building work which is to be carried out by a **subcontractor**, which **overheads and profits** are to be included in the **unit rates**

**Subcontractor's preliminaries** – means **preliminaries** that relate specifically to building work which is to be carried out by a **subcontractor**, which **preliminaries** are to be included in the **unit rates**

**Tenant installation allowances** – means allowances included in the total estimated costs for all **elements** and **components** comprising the anticipated tenant installation costs within the applicable rentable space

**Unit quantity** – means the quantity (metre, area, number, etc) measured for each **element**

**Unit rate** – means the monetary rate applied to an **element** or **component** per unit of measurement (eg cost per m, cost per m<sup>2</sup> and cost per m<sup>3</sup>). The term is also relevant to costs per m<sup>2</sup> of **construction area** and cost per **functional unit**

## 6. SALIENT FEATURES OF THIS GUIDE

The element SPECIAL FOUNDATIONS falls under 'Specialist Installations' as it represents an abnormal site condition and would adversely affect meaningful cost comparison of typical building projects with different ground conditions

There is no separate element called BASEMENT and the basement components such as floors, walls, etc are included with the appropriate primary elements. Retaining walls to basements are included with EXTERNAL FACADE. The slab over the upper basement level is included with the STRUCTURAL FRAME of the building over. However, where appropriate the estimator may decide to treat the basement as a separate primary element

BASEMENT EXCAVATIONS are deemed to be part of the site preparation and, therefore, is included with EXTERNAL WORKS AND SERVICES

STRUCTURAL FRAME includes slabs, columns, beams, ramps and staircases. Independent structural components are incorporated with STRUCTURAL FRAME. Slabs, or portions thereof, receiving waterproofing to be measured under ROOFS

ROOFS incorporate all types of roofs whether concrete, steel, timber, etc. Concrete slabs, or portions thereof, receiving waterproofing are deemed to be part of ROOFS and not part of STRUCTURAL FRAME

EXTERNAL FACADE incorporates sun control, screens, grilles, etc as it forms an integral part thereof

Concrete walls are included with EXTERNAL FACADE or INTERNAL DIVISIONS, as the case may be, and not with the STRUCTURAL FRAME based on a functional, rather than a construction, definition

PARTITIONS is an element which is separate from INTERNAL DIVISIONS

FLOOR FINISHES incorporates raised access floors even though it is a specialist installation

The section SPECIALIST INSTALLATIONS includes all specialist subcontractor work, except for the conventional electrical Installation within the building. There is a comprehensive list of specialist installations which incorporates all the more frequently encountered specialist work

CONVEYANCING SYSTEMS comprises lifts and escalators, etc

EQUIPMENT has been introduced as a separate section and comprises COMMERCIAL, INSTITUTIONAL, VEHICULAR and OTHER equipment. It excludes loose fixtures, fittings and equipment

A new element ARTWORK, FURNISHINGS, ETC has been introduced. It includes artwork, window treatment, floor mats, multiple seating, etc

A new element TENANT INSTALLATIONS has been included. It is to provide for tenant installation costs when adequate design information prevents cost allocations to the various elements and components

An element, MISCELLANEOUS ITEMS, appears at the end of sections 1, 2 and 5 for any items which are not catered for within the list of elements in each applicable section



PRELIMINARIES has been amended to contain only a percentage or lump sum allowance. It appears at the end of the estimate

CONTRACTOR'S FEE and TRAINING have been omitted as it fell largely in disuse

## **7. SCHEDULE OF ELEMENTS / COMPONENTS**

### **Code**

The code is the numerical identification for each element or component

### **Section and element**

An element is that part of any building that always performs the same function irrespective of its construction or specification

### **Component**

A component is a subdivision of an element

### **Measurement required for element or component**

The measurement required is the actual quantitative unit of the element or component. Each of the elements or components is considered and evaluated in the plane in which it occurs (eg the element Roofs would be evaluated per square metre in the various planes of the roof, the component Downpipes per metre length and the component Dormers per unit number). The quantity of an element or a component is measured and multiplied by a monetary rate thus obtaining an estimated construction cost for that element or component

### **Unit**

Unit denotes the unit of measurement of the individual element or component

### **Composition of element or component**

Each element comprises various components. Each component comprises various parts or subcomponents

### **Taking off / pricing notes**

Taking off/pricing notes are guidelines to assist the estimator in the taking off and pricing stages of an estimate. It is sometimes difficult to find the appropriate element for an item. For that reason, a narrative of what is normally included and excluded in each element is provided in the "Taking off / pricing notes" column of the schedule of elements / components. The listings of inclusions and exclusions are not intended to be exhaustive. Rather, they provide a general outline of what to expect in each element and help users to find items quickly

## **SCHEDULE OF ELEMENTS / COMPONENTS**

CODE	SECTION AND ELEMENT	CODE	COMPONENTS	MEASUREMENT REQUIRED FOR ELEMENT OR COMPONENT	UNIT	COMPOSITION OF ELEMENT OR COMPONENT	TAKING OFF / PRICING NOTES
1	<b>PRIMARY ELEMENTS</b>						
100	<b>Substructure</b>			Construction area of lowest floor having foundations	m <sup>2</sup>	All work below lowest floor level of the buildings proper including basement foundation	Measure superstructure under 102 – Structural frame, special foundations under 200 - Special foundations, sub-surface drains under 101.45 – Sub-surface drains and basement excavations and general excavations to change levels under 602 - Earthworks
		100.10	Un-reinforced strip footings	Length on plan	m	Excavation, risk of collapse, backfilling, compaction, ant proofing, working space, concrete, blinding and formwork	Measure footings for external and internal walls separately for use when measuring superstructure State depth of excavation and size of footing
		100.15	Reinforced strip footings	Length on plan	m	Excavation, risk of collapse, backfilling, compaction, ant proofing, working space, concrete, blinding, formwork and steel reinforcement	Measure footings for external and internal walls separately for use when measuring superstructure State depth of excavation and size of footing State steel reinforcement kg per m <sup>3</sup> of concrete allowed

		100.20	Ground beams	Length on plan	m	Excavation, risk of collapse, compaction, ant proofing, working space, backfilling, concrete, blinding, formwork and steel reinforcement	Measure ground beams for external and internal separately for use when measuring superstructure State depth of excavation and size of beams State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		100.25	Column bases and pile caps	Number	no	Excavation, risk of collapse, backfilling, compaction, ant proofing, working space, concrete, blinding, formwork and steel reinforcement	State depth of excavation and size of bases and pile caps State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		100.30	Lift shaft bases	Number	no	Excavation, risk of collapse, backfilling, compaction, ant proofing, working space, concrete, blinding, formwork and steel reinforcement	State depth of excavation and size of bases State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		100.35	Columns	Length	m	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, structural steelwork and sundry items below the lowest floor level	State size of columns State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		100.40	Brick and block walls	Length on plan	m	Brickwork, block work, brick reinforcement, filling in cavities, etc to underside of damp-proof course	Measure different types and thicknesses and straight or curved walls separately

							Include horizontal damp proof course and triangular fillet in walls State height of wall
		100.45	Concrete walls	Length on plan	m	Concrete, formwork (whether smooth, patterned or otherwise) steel reinforcement, etc up to lowest floor level	State thickness of walls and measure different thicknesses and straight or curved walls separately State height of wall State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		100.50	Plinth finishes	Area on elevations	m <sup>2</sup>	Finishes to the external envelope below the lowest floor level	Measure different finishes separately Measure expensive finishes in detail Measure smooth, patterned or other formwork to concrete walls under 100.45 – Concrete walls
		100.55	Rock, etc excavation	Volume	m <sup>3</sup>	Rock excavation, removal of concrete, brickwork, etc	State percentage hard, soft or other of excavation volume allowed
		100.60	Sundries	Construction area of lowest floor having foundations	m <sup>2</sup>	Carting on/away and dewatering items that apply to 100.10 to 100.55 above	Measure dewatering to basements under 602.45 – Dewatering Each component to be measured in the applicable unit of measurement

101	<b>Ground floor</b>			Area on plan of lowest floor construction, measured over walls	m <sup>2</sup>	Complete lowest floor construction, including integral steps and ramps	Measure floor finishes (screed, hardeners, sealers, etc) under 107 – Floor finishes
		101.10	Solid floors	Area on plan of the portion having solid floors, measured over walls	m <sup>2</sup>	Excavation or filling under solid floors, disposal of excavated material, compaction, ant proofing, hard core, under floor waterproofing, surface beds, mesh reinforcement , expansion joints, thickening out of surface beds under walls and at edges, power floating, broomed finish, etc	Measure different types separately Measure expansion joints and thickening separately State floor thicknesses State type of mesh reinforcement allowed Measure applied finishes under 107 – Floor finishes
		101.15	Insulation	Area of insulation below solid floors	m <sup>2</sup>	Comprises under floor insulation	Measure different types separately
		101.20	Suspended floors	Area on plan of the portion of the building having suspended floors, measured over walls	m <sup>2</sup>	Excavation, disposal of excavated material, ant proofing, concrete, brickwork and ties to sleeper piers, wall plates, sleepers, bearers, floor joists, boarding, battens, slabs, formwork and reinforcement, etc	Measure different types separately Measure applied finishes to boarding under 107 – Floor finishes State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		101.25	Steps	Area on plan of the steps, measured over walls	m <sup>2</sup>	Excavations, disposal of excavated material, filling, compaction, ant proofing, hard core, under floor waterproofing, concrete, formwork, reinforcement, etc	Measure finishes under 107 – Floor finishes and balustrades under 114 – Balustrading, handrails, etc State steel reinforcement kg per m <sup>3</sup> of concrete allowed

		101.30	Ramps	Area on slope of the ramps, measured over walls	m <sup>2</sup>	Excavations, disposal of excavated material, filling, compaction, ant proofing, hard core, under floor waterproofing, concrete, reinforcement, ribbed finishes, etc	State thicknesses of ramps Measure finishes under 107 – Floor finishes and balustrades under 114 – Balustrading, handrails, etc State steel reinforcement kg per m <sup>3</sup> of concrete or type of mesh reinforcement allowed
		101.35	Service ducts, trenches, etc	Length on plan	m	Excavations, disposal of excavated material, compaction, ant proofing, under floor waterproofing, concrete, formwork, reinforcement, brickwork, gratings, covers, etc	Measure different types and sizes separately State depth and width State thickness of sides and bottom State steel reinforcement kg per m <sup>3</sup> of concrete or type of mesh reinforcement allowed Measure different types of gratings, covers, etc separately
		101.40	Pits and bases	Number	no	Excavations, disposal of excavated material, compaction, under floor waterproofing, concrete, reinforcement, gratings, covers, etc	Measure different types and sizes separately State thickness of sides and bottom State steel reinforcement kg per m <sup>3</sup> of concrete or type of mesh reinforcement allowed Measure different types of gratings, covers, etc separately
		101.45	Sub-surface drains	Length	m	Excavations, disposal of excavated material, sub-	Measure different types and diameters separately



						surface drains, stone chips, geofabric filter blanket, floor outlets, internal manholes, etc	Measure site sub-surface water drainage under 604.10 – Sub-surface drains Measure different types of gratings, covers, etc to internal manholes separately
		101.50	Catch pits, sumps, etc	Number	no	Excavations, disposal of excavated material, compaction, under floor waterproofing, concrete, reinforcement, gratings, covers, etc	Measure different types and sizes separately State thickness of sides and bottom State steel reinforcement kg per m <sup>3</sup> of concrete or type of mesh reinforcement allowed Measure different types of gratings, covers, etc separately
		101.55	Pumps	Number	no	Pumps, motors, etc	Measure different types and sizes separately
102	<b>Structural frame</b>			Area on plan of those portions of the building having structural floor slabs, independent columns, beams, etc measured over walls, small openings and staircases (deduct area of lift shafts and large openings)	m <sup>2</sup>	Components above lowest floor level that form the skeleton frame of the building	Measure concrete walls with 103 - Exterior enclosure or 105 - Internal divisions Measure all floor finishes under 107 – Floor finishes, all ceiling finishes under 109 – Ceiling finishes and balustrades and handrails under 114 – Balustrading, handrails, etc State height of formwork support and whether permanent Measure concrete slabs, or portions thereof, receiving

							waterproofing under 104 - Roofs
		102.10	Slabs	Area on plan of structural floor and roof slabs measured over walls and small openings (deduct area of staircases, ramps, lift shafts and large openings)	m <sup>2</sup>	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, structural steelwork, stressing cables, tamped finish, power floating, broomed finish and sundry items	Measure different slab types (solid, waffle, post tensioned, and trough, etc) separately State thicknesses of slabs Measure solid portions of coffer slabs separately State steel reinforcement kg per m <sup>3</sup> of concrete allowed State post tension steel per m <sup>2</sup> of slab area State height of formwork support and whether permanent Measure hardeners, etc under 107 – Floor finishes
		102.15	Precast / composite decking systems	Area on plan of precast / composite decking systems	m <sup>2</sup>	Solid, hollow, tee or other section precast and pre-stressed concrete plank and slab decks	Measure different types separately State thickness of slabs including structural toppings State steel reinforcement kg per m <sup>3</sup> of concrete or type of mesh reinforcement allowed Measure hardeners, etc under 107 – Floor finishes
		102.20	Ramps	Area on slope measured over supporting walls	m <sup>2</sup>	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, structural	State thicknesses of ramps Measure applied finishes under 107 - Floor Finishes and balustrades and handrails

						steelwork, ribbed finishes and sundry items	under 114 – Balustrading, handrails, etc State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		102.25	Staircases and fire escapes	Area on plan measured over enclosing walls at each floor level	m <sup>2</sup>	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, metal pan, structural steelwork, timber and sundry items	Measure different types separately Measure applied finishes under 107 - Floor finishes and balustrades and handrails under 114 - Balustrading, handrails, etc State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		102.30	Columns	Length	m	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, structural steelwork and sundry items	Measure different sizes separately State size of columns Measure column heads separately stating size State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		102.35	Beams	Length	m	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, structural steelwork and sundry items	Measure different types and sizes separately State net size of beams State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		102.40	Portal frames	Combined length of columns and beams	m	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, structural	State size of beams and columns State steel reinforcement kg per m <sup>3</sup> of concrete allowed

						steelwork, timber and sundry items	
		102.45	Space frames	Area on plan	m <sup>2</sup>	Structural support framework, fittings, fixings, factory applied coatings, fire protective coatings and site applied decorative paint	Measure different types separately
		102.50	Steel frames	Area on plan	m <sup>2</sup>	The structural steel frame, columns, beams, lattice beams, braces, struts, factory applied coatings, fire protection coatings and site applied decorative paint	Measure different components separately State kg per m <sup>2</sup> allowed
		102.55	Timber frames	Area on plan	m <sup>2</sup>	The complete timber frame systems, including all components and fixings, panel system such as off-site manufactured timber frames, laminated timber structures and the like, roof trusses, where an integral part of the frame and cannot be separated from the frame, floor, roof and structural wall members, including wall linings and floor boarding forming an integral part of the frame, which cannot be separated from the frame system	Measure different components separately

103	<b>External facade</b>			Area on elevation of the external envelope of the building in line with the general faces of the building including gable walls, measured over openings, columns, slab edges, etc	m <sup>2</sup>	All vertical components enclosing the building	Measure from lowest floor level to underside of roof Measure balustrade and parapet walls under 114 – Balustrading, handrails, etc applied finishes to interior faces of external walls under 108 – Internal wall finishes, columns and beams and exterior walls under 102 – Structural frame, window treatments under 211.20 – Window treatment
		103.10	Brick and block walls	Area on elevation excluding openings	m <sup>2</sup>	Brickwork, block work, beam filling, gable walls, sundries (eg damp proofing, ties to concrete, block filling, building cavities solid, reinforcement, etc)	Measure different types and wall thicknesses separately
		103.15	Concrete walls	Area on elevation excluding openings	m <sup>2</sup>	Concrete, formwork (whether smooth, patterned or otherwise) steel reinforcement, etc	Measure different wall thicknesses separately State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		103.20	Pre-fabricated composite walls	Area on elevation excluding openings	m <sup>2</sup>	Frame construction, cladding both sides, etc.	Measure different types and wall thicknesses separately
		103.25	Waterproofing, drainage, etc	Area on elevation	m <sup>2</sup>	Waterproofing and tanking, soft board protection, interior skin, perimeter drainage, catch pits, sumps, pumps, etc	Measure different types separately

		103.30	Cladding	Developed area on elevation	m <sup>2</sup>	The complete cladding with finish, fixing method, shims, etc	Measure different types, thicknesses and finishes separately
		103.35	Finishes	Area on elevation	m <sup>2</sup>	All finishes to the external envelope, excluding openings but including all finishes to projecting slabs, etc	Measure different finishes separately Measure expensive finishes in detail Measure smooth, patterned or other formwork to concrete walls under 103.15 – Concrete walls
		103.40	Curtain walls	Area on elevation	m <sup>2</sup>	The curtain wall complete with framing, glass, infill panels, service ducts, etc and any related sundry builder's work	If divided vertically and horizontally by structural frame, then measure as windows
		103.45	Shop fronts and similar glazed screens	Area on elevation measured over doors and stall board risers	m <sup>2</sup>	Shop fronts, shop entrances, doors, stall board risers and bulkheads above including finishes and appurtenant sundry builder's work	Doors to be measured separately as "extra over". Measure single, double and rotating doors separately State provisional sum net rate if applicable State if remote controlled Measure bulkhead construction, fixing and finishes thereof separately
		103.50	Windows	Area on elevation	m <sup>2</sup>	Windows, lintols, internal and external cills, reveals, sealants, glass and paint	Measure different types and windows with different types of glass separately

							Measure window treatments under 211.20 – Window treatment
		103.55	Sun control	Area on elevation	m <sup>2</sup>	Special sun control features complete with finishes and sundry builder's work	Measure different types separately
		103.60	Grilles, screens, louvres, etc	Area on elevation	m <sup>2</sup>	Grilles, screens, louvers, etc complete with finishes and sundry builder's work	Measure different types separately
		103.65	Doors	Number	no	Doors, frames, lintols, fanlights, sidelights, anchors, ironmongery, door closers, dowels, reveals, glass and paint	Measure different types and single and double doors separately State if doors are non-standard sizes Measure door closers / openers separately
		103.70	Special doors	Number	no	Doors, frames, lintols, fanlights, sidelights, anchors, ironmongery, door closers, dowels, reveals, glass and paint	Measure different types of doors (eg fire, revolving, hanger, garage, blast resistant electronic, etc) separately
104	<b>Roofs</b>			Area of the roof covering and waterproofing measured in the various planes of the roof, balconies, terraces, canopies over parapets, box gutters, etc	m <sup>2</sup>	The complete roof including concrete flat roofs	Measure gable walls under 103 – Exterior enclosure and parapet walls under 114 – Balustrading, handrails, etc

		104.10	Construction	Area on flat or on slope, excluding roof, lantern, etc lights and dormers, hatches, etc	m <sup>2</sup>	The complete roof construction including trusses, rafters, binders, hangers, hip and valley rafters, ridge boards, wall plates, ties, wind bracing, etc	Measure concrete slabs, or portions thereof, receiving waterproofing, timber and structural steel construction separately Measure different slab types (solid, waffle, post tensioned, and trough, etc) separately State thicknesses of slabs Measure solid portions of coffer slabs separately State steel reinforcement kg per m <sup>3</sup> of concrete allowed State post tension steel per m <sup>2</sup> of slab area State height of formwork support and whether permanent Measure concrete slabs (not receiving waterproofing) under 102 – Structural frame State whether measured on flat or on slope
		104.15	Coverings	Area excluding roof, lantern, etc lights and dormers, hatches, etc	m <sup>2</sup>	Roof and dome coverings (eg tiling, slating, sheet coverings and thatching), flashings, treatment, battens, purlins, boarding, hip and ridge coverings, valley details, lightning conductors / spark arrestors, underlay, vapour control layers, edge trims and other components required for	Measure different types separately



						the applicable cladding/covering system	
		104.20	Glazed roofs	Area	m <sup>2</sup>	Construction, patent glazing, glazed, Perspex, polycarbonate, etc roofing systems, roof components, including flashings, cover strips, integral drainage channels, perimeter treatments, sundry items, paint, etc	Measure different types separately
		104.25	Roof, lantern, skylights and openings	Area	m <sup>2</sup>	Construction, glazed, perspex, polycarbonate, paint, etc	Measure different types separately
		104.30	Dormers, hatches, etc	Number	no	Construction, cladding, covering, flashing, window, glass and paint, etc	Measure different types separately
		104.35	Waterproofing	Area measured over parapets, etc, but excluding roof, lantern, etc lights and dormers, hatches, etc	m <sup>2</sup>	Screeds for and mastic asphalt roofing, liquid applied roof coatings and built up felt roof coverings, including underlay, vapour control layers, flashings, edge trims, skirtings, upstands and other boundary work to roofs, balconies, terraces, canopies, gutters, etc, sundry items, protective paint and stone chips	Measure different types separately Measure paving slabs, tiles, etc under 104.45 Trafficable surfaces

		104.40	Insulation	Area excluding roof, lantern, etc lights and dormers, hatches, etc	m <sup>2</sup>	Insulation materials and appurtenant sundry items	
		104.45	Trafficable surfaces	Area of trafficable surfaces on waterproofing	m <sup>2</sup>	Paving slabs, tiles, etc to form service walkways, terraces, balconies, etc on roof surfaces including appurtenant sundry items	Measure different types separately Measure in detail if expensive
		104.50	Eaves	Length	m	Eaves soffit and edge treatment and gutters including fittings, gutter outlets, balloons and gratings to outlets, etc	Measure different types separately Measure in detail if expensive State eaves projection
		104.55	Verges	Length	m	Soffit and edge treatment	Measure different types separately Measure in detail if expensive
		104.60	Rain water drainage	Length	m	Fullbores, downpipes cast-in or surface mounted, including bends, swan necks and rainwater shoes outlets, rainwater heads, roof/balcony drains, sundries, paint, etc	Measure different types and fullbores separately
		104.65	Ventilators and cowls	Number	no	Ridge, revolving, powered, slope, etc ventilators, cowls, etc	Measure different types separately
		104.70	Chimneys	Number	no	Construction, finishes, cowls, etc	Measure different types and sizes separately

							State length
105	<b>Internal divisions</b>			Area on elevation of internal divisions measured over all openings, columns, etc	m <sup>2</sup>	All vertical components dividing the interior of the building	Measure partitioning under 106 – Partitions
		105.10	Brick and block walls	Area on elevation excluding openings	m <sup>2</sup>	All brickwork, block work and sundries	Measure different types and thicknesses separately
		105.15	Concrete walls	Area on elevation excluding openings	m <sup>2</sup>	Concrete, formwork (whether smooth, patterned or otherwise), steel reinforcement, etc	Measure different thicknesses separately State steel reinforcement kg per m <sup>3</sup> of concrete allowed
		105.20	Shop fronts and similar glazed screens	Area on elevation measured over doors and stall board risers	m <sup>2</sup>	Shop fronts, shop entrances, doors, stall board risers and bulkheads above including finishes and appurtenant sundry builder's work	Doors to be measured separately as "extra over". Measure single, double and rotating doors separately State provisional sum net rate if applicable State if remote controlled Measure bulkhead construction, fixing and finishes thereof separately
		105.25	Borrowed lights	Area on elevation	m <sup>2</sup>	Borrowed lights, view panels, sidelights, etc cills, glass and paint	Measure different types separately
		105.30	Hatches and access doors	Number	no	Hatches, frames, lintols, ironmongery, dowels, reveals, paint, etc	Measure different types separately

		105.35	Screens, etc	Area on elevation	m <sup>2</sup>	Timber, wire mesh, etc screens, gates, posts, frame, etc	Measure different types separately Measure gates separately
		105.40	Doors	Number	no	Doors, frames, lintols, fanlights, sidelights, anchors, ironmongery, door closers, dowels, reveals, glass and paint	Measure different types and sizes separately Measure expensive door closers separately State if doors are non-standard
		105.45	Special doors	Number	no	Doors, frames, lintols, fanlights, sidelights, anchors, ironmongery, door closers, dowels, reveals, glass and paint	Measure different types (eg fire, sliding / folding, vault, acoustic, etc) and sizes separately Measure expensive door closers separately
106	<b>Partitions</b>			Area on elevation of partitions measured over doors, sidelights, fanlights and borrowed lights	m <sup>2</sup>	Demountable, operable, retractable/movable, fixed, fire rated and glazed partitions, frames, doors, fanlights, borrowed lights, ironmongery, finishes, attached skirtings and cornices, glass, etc	
		106.10	Office partitions	Area on elevation	m <sup>2</sup>	Demountable, fixed, operable, retractable/movable, fire rated and glazed partitions, borrowed lights, sound attenuation, finishes, attached skirtings and cornices, glass, etc	Measure each type separately Measure over doors Measure partitioning with sound attenuation separately State provisional sum net rate if applicable

		106.15	Toilet partitions	Area on elevation	m <sup>2</sup>	Toilet partitioning/cubicles, finishes, attached skirtings, etc	Measure each type separately Measure over doors State provisional sum net rate if applicable
		106.20	Doors	Number	no	Doors, frames, fanlights, sidelights, ironmongery, door closers, paint and glass and forming openings in partitioning	Measure different types and sizes separately Doors to be measured as "extra over" State if doors are non-standard
107	<b>Floor finishes</b>			Area on plan of those portions of the building having floor finishes, suspended, raised access floors, etc measured over walls, steps, ramps, small openings and staircases (deduct area of lift shafts and large openings)	m <sup>2</sup>	All finishes to floors, stairs, ramps, etc and raised access floors	Measure floor mats, etc under 211.25 – Floor mats, etc
		107.10	Applied floor finishes	Area on plan of those portions of the building having applied floor finishes measured over walls, integral steps and small openings (deduct area of staircases, ramps, lift shafts and large openings)	m <sup>2</sup>	Hardeners, sealers, screeds, levelling screeds, wood block flooring, composition block flooring, parquet flooring, in-situ and tiled, carpet, vinyl, rubber, PVC, thermoplastic, cork, linoleum and antistatic floor finishes to solid floor construction, including dividing strips, etc	Measure different types and integral step finishes separately State P C net rate if applicable

		107.15	Suspended floor finishes	Area on plan of those portions of the building having floor finishes to suspended floors measured over walls, integral steps and small openings (deduct area of staircases, ramps, lift shafts and large openings)	m <sup>2</sup>	Floor finishes, sealers, etc to boarding, etc	Measure different types and integral step finishes separately
		107.20	Raised access floors	Area on plan of those portions of the building having raised access floors measured over walls, steps, ramps and small openings (deduct area of staircases, lift shafts and large openings)	m <sup>2</sup>	Proprietary raised access floor systems, including adjustable pedestals/supports, floor panels, ventilation and access panels, cavity fire barriers, air plenum barriers, outlet boxes and trunking, skirtings/edge trims risers and nosings at changes of level, adhesives, bearing pads and shims integral steps, ramps, etc	Measure different types, integral steps and ramps including finishes, separately State if patent type
		107.25	Stair and ramp floor finishes	Area on plan of staircases and ramps measured over walls at each floor level above lowest floor level	m <sup>2</sup>	Finishes to treads, risers, landings and edges	Measure different types separately
		107.30	Skirtings, etc	Length	m	Skirtings including finishes except where integral with partitions and panelling	Measure different types separately
108	<b>Internal wall finishes</b>			Area on elevation of internal finishes to all walls measured between	m <sup>2</sup>	Finishes to internal walls and internal face of external envelope including internal	Finishes, etc to office and toilet partitioning are included with 106 – Partitions

				unfinished floor and ceiling and over doors, windows, columns, etc		columns, reveals, projecting beams, etc	
		108.10	Finishes	Area on elevation excluding area of finishes imparted by formwork, openings, etc	m <sup>2</sup>	Finishes to internal walls and internal face of external envelope, lift shaft and other concrete walls, internal columns, reveals, projecting beams, etc	Measure different finishes separately State PC net rate if applicable Measure expensive finishes in detail Measure smooth, patterned or other formwork to concrete walls under 103.15 – Concrete walls or 105.15 – Concrete walls as the case may be
		108.15	Rails, corner protectors, etc	Length	m	Picture, bumper, dado, hat and coat rails, corner protectors, etc, including finishes, except where integral with partitions and panelling	Measure different types separately
109	<b>Ceiling finishes</b>			Area on plan of those portions of the building having soffit finishes and ceilings measured over walls, small openings, ramps and staircases (deduct area of lift shafts and large openings)	m <sup>2</sup>	Soffit finishes and ceilings	
		109.10	Slab soffit finishes	Area on plan measured over walls, small openings, ramps and staircases (deduct area	m <sup>2</sup>	Finishes to soffits of slabs, staircases, ramps, landings and sides and soffits of beams	Measure different types separately

				of lift shafts and large openings)			
		109.15	Nailed-up ceilings	Area on plan measured over walls and small openings (deduct area of ramps, staircases, lift shafts and large openings)	m <sup>2</sup>	Joists, bearers, hangers, brading, boarding, finishes, trap doors, finishes, etc	Measure different types separately
		109.20	Suspended ceilings	Area on plan measured over walls and small openings (deduct are of ramps, staircases, lift shafts and large openings)	m <sup>2</sup>	Construction, hangers, tees, panels, integral cornices, finishes, etc	Measure different types separately State provisional sum net rate if applicable
		109.25	Bulkheads	Length on plan	m	The complete construction, fixing and finishes thereof	Measure different types separately State girth
		109.30	Cornices, etc	Length on plan	m	Cornices, trims, etc to slab soffits, nailed-up and suspended ceilings including finishes	Measure different types separately
		109.35	Access panels, trapdoors, grilles, etc.	Number	no	The complete construction, fixing and finishes thereof	Measure different types and sizes separately. State size
110	<b>Fittings</b>			Construction area	m <sup>2</sup>	All fittings and fixtures normally included in a construction contract complete with ironmongery, steelwork, finishes, etc	State type of material and finish Measure sanitary fittings, etc integral to joinery fittings under 112 – Plumbing, toilet and bathroom accessories under



							112.20 – Fitting sundries, fire extinguishers under 113.20 - Extinguishers and equipment under 3 - Equipment
		110.10	Built-in cupboards	Length	m	Cupboards built into recesses in walls, between walls, etc	Measure different types separately State height and if patent type
		110.15	Cupboards fixed to walls	Length	m	Cupboards attached to face of walls	Measure different types separately State height and if patent type
		110.20	Pigeon hole fittings, mail boxes, etc	Length	m	Pigeon hole fittings, magazine display racks, mail boxes, etc	Measure different types separately State height and if patent type
		110.25	Room dividers	Length	m	Room dividers of all types other than built-in cupboards or cupboards plugged to walls	Measure different types separately State height and if patent type
		110.30	White, chalk, etc boards	Area on elevation	m <sup>2</sup>	White, chalk, etc boards	Measure different types separately
		110.35	Pinning, bulletin, etc boards	Area on elevation	m <sup>2</sup>	Pinning, notice, bulletin, etc boards	Measure different types separately
		110.40	Building directories	Number	no	Main entrance lobby, upper floors, etc directories	Measure different types per floor separately Measure external building directory under 210 - Signage

		110.45	Raised platforms	Area on plan	m <sup>2</sup>	Raised platforms including finishes not forming part of the floor construction	State height and covering
		110.50	Counters	Length	m	Counters	Measure different types separately State height and if patent type
		110.55	Kitchen floor and wall cupboards	Length on plan	m	Kitchen units at floor and wall level	Measure different types separately State height and if patent type State type of tops
		110.60	Worktops, benches, vanities, etc	Length on plan	m	Worktops and work benches including integral cupboards or framing below.	Measure different types separately State height and if patent type State type of tops
		110.65	Shelving	Length	m	Shelving, brackets, cleats, bearers, grounds, etc	Measure different types separately State height and if patent type Measure free standing shelving separately State number of shelves
		110.70	Seating benches	Length on plan	m	Single and back-to-back double seating benches	Measure different types, single and back-to-back, etc separately
		110.75	Lockers	Number	no	Staff, sport, fire arm, etc lockers	State size and height

		110.80	Telephone enclosures	Number	no	Telephone enclosures, etc	Measure different types separately
		110.85	Tables	Number	no	Tables forming part of fittings	Measure different plan shapes separately
		110.90	Lecterns, etc	Number	no	Lecterns, etc	Measure different types separately
		110.95	Miscellaneous	Number	no	Fittings that cannot be included above	Measure different types separately
111	<b>Electrical installation</b> (refer also to 206, 207 and 608)			Construction area	m <sup>2</sup>	The complete electrical installation including power skirting or rails, light fittings, etc and builder's work but excludes primary transformers	
		111.10	Main switchboard, etc	Area	m <sup>2</sup>	Main switchboard, interior distribution transformers, sub-distribution boards, enclosed circuit breakers, motor control panels, conduit and wiring to distribution boards, etc excluding builder's work	
		111.15	Circuit wiring	Area	m <sup>2</sup>	Circuit wiring and devices for lighting fixtures, socket outlets, equipment connections, etc excluding builder's work	

		111.20	Luminaires	Area	m <sup>2</sup>	Luminaires, etc excluding builder's work	Measure different use areas within a building and anticipated lux levels separately
		111.25	Emergency lighting	Area	m <sup>2</sup>	Emergency lighting fixtures, etc excluding builder's work	
		111.30	Special light fittings	Number	no	Special light fittings not included elsewhere excluding builder's work	Measure chandeliers, etc separately
		111.35	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 111.10 to 111.30 above, sleeves, duct covers, etc	
		111.40	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 111.10 to 111.30 above	
112	<b>Plumbing</b>			Number of sanitary fittings	no	The complete internal plumbing installation	Geysers, boilers, pumps, etc not to be counted as fittings Each 600mm of stall urinal and each shower to be counted as a fitting
		112.10	Sanitary fittings	Number	no	Sanitary fittings and units complete with taps, service pipes, stop cocks and traps and those combined with cupboards and worktops excluding builder's work	Measure water closets, urinals, wash hand basins, sinks, bathtubs, wash fountains, showers, drinking fountains and coolers, bidets and other sanitary fittings separately State PC net rate if applicable

							State quality and colour.
		112.15	Pods	Number	no	Bathroom, toilet and shower room pods complete, including structural framework, floor, wall and ceiling linings, applied finishes, sanitary appliances, all fixtures, furnishings, etc excluding builder's work	Measure each type separately Include hoisting, etc under 7 – Preliminaries
		112.20	Sanitary fitting sundries	Number	no	Soap dishes, toilet paper holders, mirrors, towel rails, medicine cabinets, paraplegic grab bars, urinal screens, etc excluding builder's work	Measure different types separately
		112.25	Plumbing	Number	no	Anti-siphonage, waste pipe and fittings, soil and vent stacks, floor drains, paint on pipes, a proportion of holes and cutting to tiling, etc excluding builder's work	
		112.30	Duct covers	Number	no	Framing, covers, finishes, etc excluding builder's work	
		112.35	Cold water supplies	Number	no	Piping, paint on pipes, a proportion of holes and cutting to tiling, wheel valves, taps, where not part of a sanitary appliance or services equipment, pressurisation expansion units, pressure	

						booster sets etc excluding builder's work	
		112.40	Hot water supplies	Number	no	Piping, lagging, paint on pipes, a proportion of holes and cutting to tiling, wheel valves, taps, where not part of a sanitary appliance or services equipment etc excluding builder's work	
		112.45	Steam and condensate distribution	Number	no	Steam distribution pipelines to and condensate return pipelines from services equipment, including fittings, valves, strainers, pressure reducing sets, steam reduction stations, condensate receivers and storage tanks, condensate pump sets, steam connection outlets, taps, where not part of services equipment, heat exchangers, storage cylinders, calorifiers, instrumentation and control components to steam and condensate systems, thermal insulation, etc excluding builder's work	Measure different types separately
		112.50	Geysers	Number	no	Geysers, stands, trays and overflow pipes excluding builder's work	State capacity of geysers

		112.55	Boilers	Number	no	Boilers and hot water cylinders, lagging, etc excluding builder's work	State capacity of boilers, etc
		112.60	Solar heating	Number	no	Solar heating installation, panels, support work and pipework and associated storage tanks excluding builder's work	State area, type of panels and capacity of tanks
		112.65	Heat pumps	Number	no	Heat pump installation, support- and pipework excluding builder's work	
		112.70	Water storage tanks	Number	no	Tanks, ball valves, tank stands, trays and overflow pipes excluding builder's work	State capacity of storage tanks
		112.75	Booster pumps	Number	no	Pumps, motors, etc excluding builder's work	
		112.80	Grey water systems	Number	no	Grey water systems, etc excluding builder's work	Measure different types separately
		112.85	Builder's work	Number	no	Comprises builder's work in connection with 112.10 to 112.80 above	
		112.90	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 112.10 to 112.80 above	

113	<b>Fire protection</b> (refer also to 201)			Number of fire service fittings	no	Complete fire service installation excluding sprinkler installation and other special fire protection installations (refer to 201 – Special fire protection)	
		113.10	Fire stops	Area	m <sup>2</sup>	Fire stopping to vertical service shafts, etc	Measure in number or length if area is inappropriate
		113.15	Fire resistant paint, etc	Area	m <sup>2</sup>	Fire resistant (intumescent) paint to structural steelwork, etc	
		113.20	Extinguishers	Number	no	Extinguishers including backing boards, etc	Measure different types separately State mass/capacity
		113.25	Hose reels	Number	no	Hose reels, equipment, etc and cupboard	Measure different types separately
		113.30	Hydrants, pedestals, etc	Number	no	Hydrants, pedestals, sundry builder's work, etc	
		113.35	Water supply	Number	no	Piping, paint on pipes, a portion of holes and cutting to tiling, wheel valves, etc	Measure twin booster connections under 607.20 – Twin booster connections
		113.40	Water storage tanks	Number	no	Tanks, ball-valves, tank stands, trays and overflow pipes	Measure different types separately State capacity of tanks



		113.45	Booster pumps	Number	no	Pumps, motors, etc	Measure different types and sizes separately
		113.50	Builder's work	Number	no	Comprises builder's work in connection with 113.10 to 113.40 above	
		113.55	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 113.10 to 113.40 above	
114	<b>Balustrading, handrails, etc</b>			Length of all balustrading, handrails, balustrade and parapet walls, etc	m	Balustrading, handrails, balustrade and parapet walls	
		114.10	Balustrade walls	Length	m	Balustrade walls, complete with copings, finishes, etc	Measure different types separately State height
		114.20	Parapet walls	Length	m	Parapet walls, complete with copings, finishes, etc	Measure different types separately State height
		114.25	Steel handrails	Length	m	Steel handrails, sundry fixing items, finishes, cappings, etc	Measure different types separately
		114.30	Timber handrails	Length	m	Timber handrails, sundry fixing items, finishes, cappings, etc	Measure different types separately
		114.35	Steel balustrading	Length	m	Steel balustrading, handrails, sundry fixing items, infill panels, finishes, cappings, etc	Measure different types separately State height

		114.40	Timber balustrading	Length	m	Timber balustrading, handrails, sundry fixing items, infill panels, finishes, cappings, etc	Measure different types separately State height
		114.45	Glazed balustrading	Length	m	Glass balustrading, handrails, sundry fixing items, infill panels, finishes, cappings, etc	Measure different types separately State height
115	<b>Miscellaneous items</b>			Construction area	m <sup>2</sup>	Items that cannot be included with other elements and components above	
		115.10	Catwalks, ladders, etc	Length	m	Catwalk construction, handrails, finishes, fire escape ladders, chutes/slides, access, loft ladders, including hatch doors, etc	Measure different types separately State dimensions
		115.15	Bollards	Number	no	Internal bollards, etc	Measure different types separately
		115.20	Other	Number	no	Items that cannot be included with other elements and components above	Measure different types separately
<b>2</b>	<b>SPECIALIST INSTALLATIONS</b>						
200	<b>Special foundations</b>			Area on plan of lowest floor having special foundations measured over walls	m <sup>2</sup>	Specialist foundations, piling, caissons, etc and sundry builder's work	Measure standard foundations, pile caps and ground beams under 100 - Substructure

		200.10	Sheet piling	Area on elevation	m <sup>2</sup>	Sheet piling excluding builder's work	Measure different types separately
		200.15	Driven piles	Number	no	Precast concrete, steel, timber, etc driven piles excluding builder's work	State type, dimensions and length State bearing capacity
		200.20	Cast in-situ piles	Number	no	Cast in-situ piles excluding builder's work	State type, diameter and length State steel reinforcement kg per m <sup>3</sup> of concrete allowed State bearing capacity
		200.25	Augured piles	Number	no	Augured piles excluding builder's work	State type, diameter and length State steel reinforcement kg per m <sup>3</sup> of concrete allowed State bearing capacity
		200.30	Vibro-compacted columns	Number	no	Vibro-compacted columns excluding builder's work	State size and length State bearing capacity
		200.35	Establishment, etc	Number	no	Establishment and de-establishment	Measure establishment and de-establishment separately
		200.40	Pile testing, etc	Number	no	Establishment, pile testing, de-establishment, etc	
		200.45	Caissons	Number	no	Caissons excluding builder's work	State type, diameter, depth, etc
		200.50	Raft foundations	Area on plan measured over walls	m <sup>2</sup>	Raft foundations excluding builder's work	State thickness, filling, etc State steel reinforcement kg per m <sup>3</sup> of concrete allowed

		200.55	Underpinning, etc	Length on plan	m	Underpinning, special precautions, etc excluding builder's work	Measure different types, curved work, etc separately
		200.60	Shoring	Area on elevation	m <sup>2</sup>	Shoring, ground / rock anchors, etc excluding builder's work	Measure different, curved work, etc types separately
		200.65	Dewatering	Area on plan of lowest floor having special foundations	m <sup>2</sup>	Subterranean dewatering, well pointing, etc excluding builder's work	Measure different types, curved work, etc separately
		200.70	Builder's work	Area on plan of lowest floor having special foundations	m <sup>2</sup>	Builder's work, platforms for piling rigs, stripping back heads of concrete piles, cutting off and removing excess length of precast concrete piles, disposal of excavated material, etc in connection with 200.10 to 200.65 above	
		200.75	Profit and attendance	Area on plan of lowest floor having special foundations	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 200.10 to 200.65 above	
201	<b>Special fire protection systems</b> (refer also to 113)			Area on plan of the protected portions of the building measured over walls (deduct area of lift shafts)	m <sup>2</sup>	The complete special fire protection installation and sundry builder's work	

		201.10	Sprinklers	Area on plan of the portions of the building protected with sprinklers	m <sup>2</sup>	The complete installation including water supply and pumping equipment, piping, valves and fittings, sprinkler heads, release devices, storage tanks, etc excluding builder's work	State if double or single system State if ASIB compliant Measure different types separately
		201.15	Fire detection and alarm	Area on plan of the portions of the building protected with a fire detection and alarm system	m <sup>2</sup>	The complete smoke detection and early fire warning system installation excluding builder's work	Measure different types separately
		201.20	Building evacuation	Area on plan of the portions of the building protected with a building evacuation system	m <sup>2</sup>	The complete building evacuation system excluding builder's work	Measure different types separately
		201.25	Foam generating	Area on plan of the portions of the building protected with a foam generating system	m <sup>2</sup>	The complete foam generating system excluding builder's work	
		201.30	Fire suppression	Area on plan of the portions of the building protected with a fire suppression system	m <sup>2</sup>	The complete "Pyroshield" gas extinguishing and "Inergen" agent system excluding builder's work	Dry chemical powder and flooded systems are less frequently installed in new buildings
		201.35	Smoke ventilation / control	Area on plan of the portions of the building protected with a smoke ventilation / control system	m <sup>2</sup>	Artificial ventilation, openable louvers, roof mounted smoke ventilators, etc excluding builder's work	Measure different types separately

		201.40	Builder's work	Area on plan of the protected portions of the building	m <sup>2</sup>	Builder's work in connection with 201.10 to 201.35 above	
		201.45	Profit and attendance	Area on plan of the protected portions of the building	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 201.10 to 201.35 above	
202	<b>Conveyance systems</b>			Number of installations	no	The complete conveyance installation and sundry builder's work	Measure lift shaft bases under 100.30 – Lift shaft bases
		202.10	Passenger lifts	Number	no	The complete passenger lift installation, including lift cars, doors and equipment, guides and counter balances, hydraulic and lifting equipment, emergency lighting, lift alarms and telephones excluding builder's work	Measure different types separately State number of stops, speed, capacity, etc State if traction, hydraulic, etc Measure upgraded cage specification / finishes separately Measure architraves under 105.40 – Special doors
		202.15	Freight lifts	Number	no	The complete freight lift installation, including lift cars, doors and equipment, guides and counter balances, hydraulic and lifting equipment, emergency lighting, lift alarms and telephones excluding builder's work	Measure different types separately State number of stops, speed, capacity, etc State if traction, hydraulic, etc

		202.20	Car lifts	Number	no	The complete car lift installation excluding builder's work	Measure different types separately State number of stops, capacity, etc State if traction, hydraulic, etc
		202.25	Wheel chair lifts	Number	no	The complete wheel chair lifts installation excluding builder's work	Measure different types separately
		202.30	Hoists	Number	no	The complete hoists installation excluding builder's work	Measure different types separately State number of stops, speed, capacity, etc
		202.35	Dumbwaiters	Number	no	The complete dumb waiters installation, including cages, doors and equipment, guides and counter balances, hydraulic and lifting equipment excluding builder's work	Measure different types separately State number of stops, capacity, etc
		202.40	Pneumatic tubes	Number	no	The complete pneumatic tube system installation excluding builder's work	Measure different types separately State length, controls, etc
		202.45	Chutes	Number	no	The complete linen, refuse and mail chutes' installation excluding builder's work	Measure different types separately State height, number of access points, etc

		202.50	Turntables	Number	no	The complete turntable installation excluding builder's work	Measure different types separately State diameter, whether mechanical or electrical, etc
		202.55	Transportation systems	Number	no	The complete transportation system (baggage handling, aircraft loading, etc) installation excluding builder's work	Measure different types separately State length, width, etc
		202.60	Funiculars	Number	no	The complete funicular installation excluding builder's work	Measure different types separately State incline, length, capacity of cage, etc
		202.65	Escalators	Number	no	The complete installation including under step lighting, under handrail lighting, balustrades, cladding to sides and soffits excluding builder's work	Measure different types separately State step width, whether circular on plan and rise Measure soffit and side cladding separately State special features (eg voice recorded system), etc
		202.70	Travelators	Number	no	The complete travelators installation excluding builder's work	Measure different types separately State length and width Measure handrails separately if not integral
		202.75	Conveyors	Number	no	The complete conveyors installation excluding builder's work	Measure different types separately



							State length, width, speed, rise, etc
		202.80	Builder's work	Number	no	Builder's work in connection with 202.10 to 202.75 above	
		202.85	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 202.10 to 202.75 above	
203	<b>Air conditioning</b>			Area on plan of the portions of the building having air conditioning measured over walls, small openings (deduct area of lift shafts and large openings)	m <sup>2</sup>	The complete air conditioning installation and sundry builder's work	
		203.10	Energy supply	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Oil, gas, solar, wind energy, steam, hot and chilled water supply excluding builder's work	Measure different types separately
		203.15	Heat generating systems	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Boilers, piping and fittings, primary pumps, auxiliary equipment and piping insulation excluding builder's work	Measure different types separately
		203.20	Chillers	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Chillers excluding builder's work	Measure different types separately

		203.25	Cooling towers, etc	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Cooling towers, evaporative coolers, condensing units, etc excluding builder's work	Measure different types separately
		203.30	Piping and fittings, etc	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Piping, insulation, fittings, primary pumps, equipment, etc excluding builder's work	Measure different types separately
		203.35	Supply and return air systems	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Supply and return air systems, air handling units with coils, filters, ductwork, VAV boxes, duct heaters, induction units and grilles, secondary pumps, heat exchangers, sound attenuation, vibration insulation, piping and insulation excluding builder's work	Measure different types separately
		203.40	Ventilation and exhaust systems	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Ventilation and exhaust systems excluding builder's work	Measure different types separately
		203.45	Steam, hot water, etc distribution	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Steam, hot water, glycol and chilled water distribution, associated terminal devices including convectors, fan-coil units excluding builder's work	Measure different types separately
		203.50	Heat recovery equipment	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Heat recovery equipment excluding builder's work	Measure different types separately

		203.55	Air conditioning units	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Window or through-the-wall units excluding builder's work	Measure different types separately
		203.60	Reverse-cycle, etc terminal heat pumps	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Reverse-cycle, water- or air-cooled terminal heat pumps excluding builder's work	Measure different types separately
		203.65	Self-contained air conditioners, etc	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Self-contained, air- or water-cooled, floor, ceiling and rooftop air conditioners, heat pumps, heating and cooling generating systems, exhaust and ventilation systems, terminal devices, etc excluding builder's work	Measure different types separately
		203.70	Testing and balancing	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Piping and air systems testing and balancing excluding builder's work	
		203.75	Other systems and equipment	Area on plan of the portions of the building-having air conditioning	m <sup>2</sup>	Special cooling systems and devices, special humidity control, dust and fume collectors, air curtains, air purifiers, paint spray booth ventilation systems, etc excluding builder's work	Measure different types separately
		203.80	Builder's work	Area on plan of the portions of the building having air conditioning	m <sup>2</sup>	Builder's work in connection with 203.10 to 203.75 above	

		203.85	Profit and attendance	Area on plan of the portions of the building having air conditioning	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 203.10 to 203.75 above	
204	<b>Ventilation</b>			Area on plan of the portions of the building having ventilation measured over walls and small openings (deduct area of lift shafts and large openings)	m <sup>2</sup>	The complete ventilation installation and sundry builder's work	
		204.10	Ventilation	Area on plan of the portion of the building having ventilation	m <sup>2</sup>	The ventilation installation excluding builder's work	Measure kitchen, etc extract canopies separately
		204.15	Builder's work	Area on plan of the portion of the building having ventilation	m <sup>2</sup>	Builder's work in connection with 204.10 above	
		204.20	Profit and attendance	Area on plan of the portion of the building having ventilation	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 204.10 above	
205	<b>Heating and cooling</b>			Area on plan of the portion of the building having heating or cooling measured over walls, small openings (deduct area of staircases, lift shafts and large openings)	m <sup>2</sup>	The complete heating and cooling installation and sundry builder's work	

		205.10	Heat generating systems	Area on plan of the portion of the building having heat generating system	m <sup>2</sup>	Boilers (biomass fuel, gas/oil fired, coal fired, wood pellet, electric or other), adjacent piping and fittings , primary pumps, including burners, blow down facilities, coal distribution equipment, ash handling and storage equipment, grit arrestors and pressurisation plant, auxiliary equipment and piping insulation for under floor, wall mounted, etc heating excluding builder's work	Measure different types separately
		205.15	Cooling generating systems	Area on plan of the portion of the building having cooling generating systems	m <sup>2</sup>	Chillers, cooling towers and evaporative coolers, condensing units, piping and fittings, primary pumps, equipment and piping insulation excluding builder's work	Measure different types separately
		205.20	Builder's work	Area on plan of the portion of the building having heating or cooling	m <sup>2</sup>	Builder's work in connection with 205.10 and 205.15 above	
		205.25	Profit and attendance	Area on plan of the portion of the building having heating or cooling	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 205.10 and 205.15 above	

206	<b>Special electrical systems</b> (refer also to 111, 207 and 608)			Construction area	m <sup>2</sup>	The complete special electrical systems installation and sundry builder's work	
		206.10	Uninterrupted power supply	Number	no	Uninterrupted power supply excluding builder's work	
		206.15	Clean power supply	Number	no	Clean power supply excluding builder's work	
		206.20	Power factor correction	Number	no	Power factor correction system excluding builder's work	
		206.25	Lightning and grounding protection	Number	no	Lightning and grounding installation excluding builder's work	
		206.30	Power generating	Number	no	Power generating system excluding builder's work	
		206.35	Other special electrical systems	Number	no	Other special electrical systems excluding builder's work	
		206.40	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 206.10 to 206.35 above	
		206.45	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 206.10 to 206.35 above	

207	<b>Electronic systems</b> (refer also to 111, 206 and 608)			Construction area	m <sup>2</sup>	The complete electronic systems installation and sundry builder's work	
		207.10	Building management	Number	no	The building management system excluding builder's work	
		207.15	Voice data	Number	no	The voice data system excluding builder's work	
		207.20	Television	Number	no	The television installation excluding builder's work	
		207.25	Other electronic systems	Number	no	Other electronic systems excluding builder's work	
		207.30	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 207.10 to 207.25 above	
		207.35	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 207.10 to 207.25 above	
208	<b>Other services</b>			Construction area	m <sup>2</sup>	Such services as gas installation, etc and sundry builder's work	
		208.10	Gas installation	Construction area	m <sup>2</sup>	Gas installation excluding builder's work	

		208.15	Other services	Number	no	Other services excluding builder's work	
		208.20	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 208.10 and 208.15 above	
		208.25	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 208.10 and 208.15 above	
209	<b>Communications and security</b>			Area on plan of the portion of the building having security systems	m <sup>2</sup>	The complete communications and security installation and sundry builder's work	
		209.10	Public address and music systems	Number	no	The public address and music system excluding builder's work	Measure different types separately
		209.15	Inter-communication and paging systems	Number	no	The intercommunication and paging system excluding builder's work	Measure different types separately
		209.20	Telephone systems	Number	no	The telephone system excluding builder's work	Measure different types separately
		209.25	Call systems	Number	no	The nurse, etc call system excluding builder's work	Measure different types separately
		209.30	Closed circuit television systems	Number	no	The closed circuit television system excluding builder's work	Measure different types separately



		209.35	Local area network systems	Number	no	The local area network system excluding builder's work	Measure different types separately
		209.40	Clock and programme systems	Number	no	The clock and program system excluding builder's work	Measure different types separately
		209.45	Fire alarm systems	Number	no	The fire alarm system excluding builder's work	Measure different types separately
		209.50	Security and detection systems	Number	no	Door monitoring, card access, motion detectors, etc excluding builder's work	Measure different types separately
		209.55	Turnstiles	Number	no	The turnstiles installation excluding builder's work	Measure different types separately
		209.60	Builder's work	Number	no	Builder's work in connection with 209.10 to 209.55 above	
		209.65	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 209.10 to 209.55 above	
210	<b>Signage</b>			Construction area	m <sup>2</sup>	The complete signage installation and sundry builder's work	Measure road and parking area signage, markings, etc under 612 – Roads, paving, etc
		210.10	Building signage	Number	no	The complete exterior building signage installation excluding builder's work	Measure different types separately

		210.15	Signage pylons, towers, etc	Number	no	The complete signage pylon construction and installation excluding builder's work	Measure different types separately
		210.20	Directional, identification, safety, etc	Number	no	Directories, notice boards, letters, signs, plaques, symbols and emblems of all kinds for identification, directional and safety purposes excluding builder's work	Measure different types separately State if illuminated
		210.25	Flagpoles	Number	no	Flagpoles excluding builder's work	State height
		210.30	Builder's work	Number	no	Builder's work in connection with 210.10 to 210.25 above	
		210.35	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 210.10 to 210.25 above	
211	<b>Artwork, furnishings, etc</b>			Construction area	m <sup>2</sup>	Statues, ornamentation, artworks, murals, fountains, etc	
		211.10	Artwork	Number	no	Fixed furnishings, statues, ornamentation, artworks, murals, banners, etc	Measure different types separately
		211.15	Cabinetry, etc	Number	no	Cabinetry, etc including sundry builder's work	Measure different types separately

		211.20	TV arms, brackets, etc.	Number	no	Arms, brackets, etc. including sundry builder's work	Measure different types separately
		211.25	Window treatment	Number	no	Pelmets, curtain tracks, louver drapes, venetian blinds, window remote control, etc including sundry builder's work	Measure different types separately
		211.30	Hospital curtain tracks, drip rails, etc	Length	m	Tracks, bends, ends, drip rails, etc.	Measure different types separately
		211.35	Floor mats, etc	Number	no	Mat recesses, floor mats, etc including sundry builder's work	Measure different types separately
		211.40	Multiple seating	Number	no	Multiple seating including sundry builder's work	Measure different types separately
		211.45	Interior landscaping	Number	no	Interior landscaping including sundry builder's work	Measure different types separately
		211.50	Interior seating benches, rubbish bins, etc	Number	no	Interior seating benches, rubbish bins (eg inside shopping malls, etc)	Measure different types separately
		211.55	Builder's work	Number	no	Builder's work in connection with 211.10 to 211.40 above	
		211.60	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 211.10 to 211.40 above	

212	<b>Miscellaneous items</b>			Construction area	m <sup>2</sup>	Special items that cannot be included with other elements or components above	
		212.10	Fireplaces, etc	Number	no	Fireplaces or units, mantles, shelves, hearths, flue linings, cappings, oil burners, paraffin heaters, etc	
		212.15	Saunas	Number	no	The complete sauna installation including sundry builder's work	Measure different sizes separately State occupancy
		212.20	Jacuzzis	Number	no	The complete jacuzzi installation including sundry builder's work	Measure different sizes separately State occupancy
		212.25	Other	Number	no	Miscellaneous items that cannot be included with other elements or components above	
		212.30	Builder's work	Number	no	Builder's work in connection with 212.10 to 211.25 above	
		212.35	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 212.10 to 211.25 above	
<b>3</b>	<b>EQUIPMENT</b>						

300	<b>Commercial</b>			Construction area	m <sup>2</sup>	All commercial equipment and sundry builder's work	Excludes loose fixtures, fittings and equipment
		300.10	Security and vault	Number	no	Security and vault equipment installation excluding builder's work	Measure different types separately
		300.15	Teller and service	Number	no	Bullet resistant teller window, pass-thru windows, safety deposit boxes and service equipment installation excluding builder's work	Measure different types separately
		300.20	Registration	Number	no	Registration equipment installation excluding builder's work	Measure different types separately
		300.25	Checkroom	Number	no	Checkroom equipment installation excluding builder's work	Measure different types separately
		300.30	Trading	Number	no	Supermarket checkout counter, conveyor belt, scanning equipment, etc installation excluding builder's work	Measure different types separately
		300.35	Commercial laundry and dry cleaning	Number	no	Dry cleaners, dryers, folders and spreaders, irons and pressers, coin operated washers and dryers, etc equipment installation excluding builder's work	Measure different types separately

		300.40	Vending	Number	no	Vending equipment installation excluding builder's work	Measure different types separately
		300.45	Office	Number	no	Office equipment installation excluding builder's work	Measure different types separately
		300.50	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 300.10 to 300.45 above	
		300.55	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 300.10 to 300.45 above	
301	<b>Institutional</b>			Construction area	m <sup>2</sup>	All institutional equipment and sundry builder's work	Excludes loose fixtures, fittings and equipment
		301.10	Ecclesiastical	Number	no	Baptistery, altar, pews, lecterns, pulpits, individual seating, wall cross, etc installation excluding builder's work	Measure different types separately
		301.15	Library	Number	no	Library equipment installation excluding builder's work	Measure different types separately
		301.20	Theatre and stage	Number	no	Stages, band risers, upholstered chairs, control booths, stage curtains, border lights, spot lights, telescoping platforms and risers, rigging systems and controls, flying bridges, etc equipment	Measure different types separately

						installation excluding builder's work	
		301.25	Instrumental	Number	no	Instrumental equipment installation excluding builder's work	Measure different types separately
		301.30	Audio-visual	Number	no	Projection screens, projectors, lenses, etc equipment installation excluding builder's work	Measure different types separately
		301.35	Detention	Number	no	Cell equipment installation excluding builder's work	Measure different types separately
		301.40	Research	Number	no	Thermometer, fume hoods, exhaust hoods, incubators, glove boxes, sterilizers, eye wash, etc laboratory equipment installation excluding builder's work	Measure different types separately
		301.45	Medical	Number	no	Medical equipment (eg pendants, theatre operating lights, bedhead trunking, autoclaves, medical / LP gases, etc) installation excluding builder's work	Measure different types separately
		301.50	Mortuary	Number	no	Autopsy table, refrigerator, crematory, etc equipment installation excluding builder's work	Measure different types separately

		301.55	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 301.10 to 301.50 above	
		301.60	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 301.10 to 301.50 above	
302	<b>Vehicular</b>			Construction area	m <sup>2</sup>	All vehicular equipment and sundry builder's work	Excludes loose fixtures, fittings and equipment
		302.10	Vehicular service	Number	no	Compressed air , lubrication, spray painting, etc equipment installation excluding builder's work	Measure different types separately
		302.15	Parking control	Number	no	Parking control installation, card readers, parking ticket dispensers, parking fee collection equipment, parking booms, parking booths, traffic lights, etc excluding builder's work	Measure different types separately
		302.20	Loading dock	Number	no	Loading dock installation, dock levellers, scissor lifts, dock seals and shelters, etc excluding builder's work	Measure different types separately
		302.25	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 302.10 to 302.20 above	



		302.30	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 302.10 to 302.20 above	
303	<b>Other</b>			Construction area	m <sup>2</sup>	All other equipment and sundry builder's work	Excludes loose fixtures, fittings and equipment
		303.10	Maintenance	Number	no	Vacuum cleaning, etc equipment installation excluding builder's work	Measure different types separately
		303.15	Facade cleaning	Number	no	Window and facade cleaning equipment, trolleys/cradles/gondolas, cleaner's rails, etc installation excluding builder's work	State if gondola manual or automatic State length of cleaner's rails
		303.20	Solid waste handling	Number	no	Incinerators, compactors, shredders, balers, etc installation excluding builder's work	Measure different types separately State compactor capacity
		303.25	Food storage service	Number	no	Refrigerated food cases and shelving, wine cellar, equipment installation excluding builder's work	Measure different types separately
		303.30	Domestic appliances	Number	no	Residential cooking range, microwave oven, deep freeze, icemaker, refrigerator, dishwasher, garbage disposal, ventilation hood, washers,	Measure different types separately

						dryers, etc equipment installation excluding builder's work	
		303.35	Security	Number	no	Wall mounted safes	Measure different types separately State whether manual or electronic
		303.40	Commercial kitchen	Number	no	Cooking range, stove, hob, oven, deep freeze, icemaker, refrigerator, dishwasher, etc installation excluding builder's work	Measure different types separately
		303.45	Cold rooms	Number	no	Prefabricated cold rooms, freezers, associated mechanical equipment, etc installation excluding builder's work	Measure different types separately State capacity
		303.50	Darkroom, etc	Number	no	Developing sink, dryers, processors, viewing lights, projection screens, etc installation excluding builder's work	Measure different types separately
		303.55	Athletic, recreational, playground and therapeutic	Number	no	Athletic, recreational, playground and therapeutic equipment installation excluding builder's work	Measure different types separately

		303.60	Planetarium	Number	no	Planetarium equipment installation excluding builder's work	Measure different types separately
		303.65	Observatory	Number	no	Observatory equipment installation excluding builder's work	Measure different types separately
		303.70	Agricultural	Number	no	Agricultural equipment installation excluding builder's work	Measure different types separately
		303.75	Builder's work	Construction area	m <sup>2</sup>	Builder's work in connection with 303.10 to 303.65 above	
		303.80	Profit and attendance	Construction area	m <sup>2</sup>	Profit and attendance for the principal contractor in connection with 303.10 to 303.65 above	
4	<b>TENANT INSTALLATIONS</b>						
400	<b>Tenant installations</b>			Rentable area	m <sup>2</sup>	Amounts allowed for undefined tenant installation costs	
		400.10	Tenant installation allowances	Rentable area	m <sup>2</sup>	All elements and components comprising the anticipated tenant installation costs within the applicable rentable space	State the net rate per m <sup>2</sup> of rentable area allowed in anticipation of future detail design information Measure the rentable area enclosure in detail with the

							elements and components above Measure shops, offices, etc separately
<b>5</b>	<b>ALTERATIONS</b>						
500	<b>Alterations</b>			Construction area of the portion of the building having alteration and/or renovation works	m <sup>2</sup>	All alterations and renovations to existing buildings	
		500.10	Temporary barriers, screens, etc	Area on elevation	m <sup>2</sup>	Temporary barriers, screens, etc	Measure in detail
		500.15	Removal of existing work	Area	m <sup>2</sup>	Removal of existing work, etc	Measure in detail Measure in number or length if area is inappropriate Measure removal of toxic / hazardous building materials and components under 600.30 – Toxic / Hazardous building materials and components
		500.20	Cutting through floors and ceilings	Number	no	Cutting through floors and ceilings, etc	Measure in detail
		500.25	Building up openings	Area	m <sup>2</sup>	Building up openings, etc	Measure in detail Measure in number or length if area is inappropriate

		500.30	Preparatory work to existing surfaces	Area	m <sup>2</sup>	Preparatory work to existing surfaces, etc	Measure in detail
		500.35	Making good of finishes, etc	Area	m <sup>2</sup>	Repairs and making good of finishes, etc	Measure in detail Measure in number or length if area is inappropriate
		500.40	Openings through existing walls, etc	Number	no	Openings through existing walls, etc	Measure in detail
		500.45	Cleaning existing surfaces	Area	m <sup>2</sup>	Cleaning and removing stains and deposits from existing surfaces	Measure in detail
		500.50	Protective coatings to existing surfaces	Area	m <sup>2</sup>	Specialist painting/coating systems, lime washing, colourless water proofers, anti-graffiti colourless coatings, bird/vermin repellent coatings, etc to protect existing internal and external surfaces	Measure different types separately
<b>6</b>	<b>EXTERNAL WORKS AND SERVICES</b>						
600	<b>Demolitions</b>			Area of items demolished	m <sup>2</sup>	Demolition of buildings and removal of paving, rubble, etc	
		600.10	Buildings	Construction area	m <sup>2</sup>	Complete demolition of buildings, removal of rubble, etc	State if removal of foundations are included

		600.15	Relocation of buildings and utilities	Number	no	The relocation of buildings and utilities	Measure different types separately
		600.20	Breaking up and removing	Area	m <sup>2</sup>	The breaking up and removal of existing hard pavings, including concrete, bituminous bound material etc	Measure in detail Measure in number or length if area is inappropriate
		600.25	Taking down and removing	Area	m <sup>2</sup>	The taking down and removal of walls, slabs, doors, sanitary fittings, etc	Measure in detail Measure in number or length if area is inappropriate
		600.30	Toxic / hazardous building materials and components	Area	m <sup>2</sup>	The removal, employing special safety measures, of toxic or hazardous material (eg asbestos) prior to demolition or refurbishment works	Measure in detail Measure in number or length if area is inappropriate Allow for special hoarding requirements under 7 – Preliminaries
601	<b>Site clearance</b>			Area of site clearance	m <sup>2</sup>	Clearing of site, removal of trees, etc	Measure breaking up and removal of paving, etc under 600.20 – Breaking up and removing
		601.10	Site clearing and grubbing	Area	m <sup>2</sup>	Clearing existing site vegetation (eg shrubs and undergrowth), including disposing thereof	Measure breaking up and removal of paving, etc under 600.20 – Breaking up and removing Measure dumping charges separately

		601.15	Contaminated land	Area	m <sup>2</sup>	The removal and/or treatment of contaminated ground material using dig and dump strategy, including safe disposal of excavated material to licensed tip (ie non-hazardous and hazardous material) tipping charges and landfill tax,	Measure ground material removal and in-situ treatment methods, such as dilution, clean cover, on-site encapsulation, bio-remediation, soil washing, soil flushing, thermal treatment, vacuum extraction and stabilisation separately
		601.20	Trees	Number	no	Taking down trees, including grubbing up tree stumps and roots and disposing thereof	State girth and height
		601.25	Hedges, fences, etc	Length	m	The removal of hedges, fences, etc	Measure each type separately
602	<b>Earthworks</b>			Volume of excavation and/or filling	m <sup>3</sup>	Grading, excavation, rock excavation, carting away and fill to modify site contours, soil stabilization and treatment, site watering and shoring and embankments	Measure excavations for foundations under 100 – Substructure
		602.10	Grading and excavation	Volume	m <sup>3</sup>	General grading, excavation, etc to modify site contours and carting away material	Measure carting away of excavated material separately
		602.15	Filling	Volume	m <sup>3</sup>	Bulk filling over site, roof gardens, etc and carting on earth filling	Measure carting away / on of earth filling separately

		602.20	Soil stabilisation	Area	m <sup>2</sup>	Cement or chemical grouting, electrochemical stabilisation, sand stowing, compacting surrounding soil and filling with aggregates or hard fill, by means of power vibrators, soil nailing, ground anchors, pressure grouting, compacting, freezing of ground water and subsoil, stabilising soil in situ by incorporating cement with a rotovator, etc soil stabilisation measures	Measure different types separately
		602.25	Basement excavation	Volume of excavations measured over external walls	m <sup>3</sup>	Excavation, risk of collapse, backfilling and carting away of excavated material	State average depth of excavation
		602.30	Rock, etc excavation	Volume	m <sup>3</sup>	Rock excavation to basements, etc, breaking out (or grubbing up) existing substructures, extracting old piles, ground floor slabs, strip foundations, basement retaining walls, brick, block and other hard materials, etc including disposal	State percentage hard, soft or other of excavation volume allowed Measure rock excavation to basements separately
		602.35	Lateral support	Length	m	Temporary and permanent support, shoring, ground anchors, etc	State height of support and whether permanent or temporary



		602.40	Dewatering	Number	no	Subterranean dewatering, well pointing, sumps, pumps, etc	
		602.45	Sundries	Volume of excavations measured over external walls	m <sup>3</sup>	Items that cannot be included in any of the above elements	
603	<b>Soil drainage</b>			Length of soil drains measured over manholes from the feet of stacks to the connections, etc	m	All works in connection with soil drainage	
		603.10	Soil drains	Length	m	Excavations, piping, concrete encasing, cleaning eyes, etc	Measure different types and diameters separately
		603.15	Laboratory and industrial liquid waste drainage	Length	m	Excavations, piping, fittings, including glass drainage, traps, access points, rodding eyes, collars, gullies, connections tanks, storage tanks and vessels, settlement tanks, effluent treatment plant, dosing equipment, sterilisation equipment, supports integral to the storage tanks and vessels, thermal insulation, connections to equipment, monitoring equipment, painting, anti-corrosion treatments and coating systems to drainage pipelines	Measure different systems separately

		603.20	Manholes, inspection chambers, etc	Number	no	Manholes, inspection chambers, etc complete with channelling, covers, etc	Measure different types and sizes separately
		603.25	Pump stations	Number	no	Complete pump station installation including pumps, piping, etc	
		603.30	Waste water treatment plants	Number	no	Package waste water treatment plants, plinth, bund walls, excavation, associated piping, etc including sundry builder's work	State capacity State whether above or below ground
		603.35	Septic tanks, etc	Number	no	Septic tanks, soak away, conservancy tanks, etc	Measure different types and sizes separately
604	<b>Sub-surface water drainage</b>			Length of sub-surface drains measured over catch pits to sumps	m	All works in connection with sub-surface water drainage, sumps, pumps, catch pits, etc	
		604.10	Sub-surface drains	Length	m	Excavations, sub-surface drains, stone chips, geofabric filter blanket, etc	Measure different types and diameters separately Measure sub-surface drains below the lowest floors under 101.45 – Sub-surface drains
		604.15	Catch pits, inspection chambers, sumps, etc	Number	no	Catch pits, inspection chambers, sumps, etc complete with covers or gratings and all sundry items	Measure different types separately

		604.20	Pumps, etc	Number	no	Pumps, motors, etc	Measure different types and sizes separately
605	<b>Storm water drainage</b>			Length of storm water channelling and piping measured over catch pits to connections	m	All works in connection with storm water drainage, gratings or covers, etc	
		605.10	Surface water channelling	Length	m	Channelling and all sundry items	Measure different types and sizes separately
		605.15	Piping	Length	m	Excavations, piping and all sundry items	Measure different types and diameters separately
		605.20	Ditches and culverts	Length	m	Excavations, ditches, culverts, gratings, covers, etc and all sundry items	Measure different types and sizes separately
		605.25	Rain water harvesting	Number	no	Rainwater harvesting system tanks, piping, etc	Measure different types separately
		605.30	Retention ponds	Area	m <sup>2</sup>	Excavations, banks, outlet structure, sediment control, etc and all sundry items	Measure different types and sizes separately
		605.35	Manholes, catch pits, inspection chambers, sumps, etc	Number	no	Manholes, catch pits, roadside inlet chambers, inspection chambers, sumps, etc complete with covers or gratings and all sundry items	Measure different types and sizes separately
		605.40	Pumps	Number	no	Pumps, motors, etc	Measure different types and sizes separately

606	<b>Water supply</b>			Length of water piping from connection to building and over site	m	Water supplies within the site, piping, wheel valves, non-return valves, valve chambers, trust blocks, storage tanks, taps to standpipes, sundry builder's work, etc	Measure irrigation systems under 619.15 – Irrigation systems
		606.10	Potable incoming main	Length	m	Excavations, piping, wheel valves, non-return valves, valve chambers, trust blocks, meters, sundry builder's work, etc	Measure different diameters separately
		606.15	Potable site reticulation	Length	m	Excavations, piping, wheel valves, taps to standpipes, meters, sundry builder's work , etc	Measure different diameters separately
		606.20	Non-potable site reticulation	Length	m	Excavations, piping, wheel valves, taps to standpipes, meters, sundry builder's work , etc	Measure different diameters separately
		606.25	Chilled water reticulation	Length of piping	m	Chilled water piping, pumping stations, cooling towers, etc	Measure different types separately
		606.30	Steam and condensate distribution	Length of piping	m	Steam distribution pipelines to and condensate return pipelines from services equipment including fittings, valves, strainers, pressure reducing sets, steam reduction	Measure different types separately

						stations, condensate receivers and storage tanks, condensate pump sets, steam connection outlets, taps, where not part of services equipment, heat exchangers, storage cylinders, calorifiers, instrumentation and control components	
		606.35	Storage tanks	Number	no	Tanks, plinth, bunt walls, excavation, associated piping, etc including sundry builder's work	State capacity State whether above or below ground
		606.40	Well systems, boreholes, etc	Number	no	Well, borehole, sleeves, associated piping, head gear, pump, etc	State depth
607	<b>Fire service</b>			Length of water piping from connection to building and over site	m	Fire service within the site, piping, wheel valves, non-return valves, valve chambers, trust blocks, sundry builder's work, etc	
		607.10	Incoming main	Length	m	Excavations, piping, wheel valves, non-return valves, valve chambers, trust blocks, sundry builder's work, etc	Measure different diameters separately
		607.15	Site reticulation	Length	m	Excavations, piping, wheel valves, sundry builder's work, etc	Measure different diameters separately

		607.20	Twin booster connections	Number	no	Booster connections, standpipe, connection to mains, etc	
		607.25	Hydrants, pedestals, etc	Number	no	Hydrants, pedestals, sundry builder's work, etc	
608	<b>Electrical installation</b> (refer also to 111, 206 and 207)			Length of cables from connection to main distribution board within the building and over site	m	Electrical installation within the site including cables, street lighting, flood lighting, sundry builder's work, etc	
		608.10	Electrification	Number	no	Electric power generating plant, sundry builder's work, etc	State capacity
		608.15	Incoming main	Length	m	Overhead and underground power distribution, cables, duct banks, grounding, sundry builder's work, etc	Measure different types separately
		608.20	Site reticulation	Length	m	Overhead and underground power distribution, cables, duct banks, grounding, kiosks, sundry builder's work, etc	Measure different types separately
		608.25	Site communications and security	Length	m	Overhead and underground communications, site security, surveillance and observation, detection and alarm systems, duct banks, grounding, sundry builder's work, etc	Measure different types separately

		608.30	Substations and transformers	Number	no	Primary and secondary transformers, fixtures, switchgear, cable ladders and trays, sundry builder's work, etc	Measure different types separately State capacity
		608.35	Emergency power generating	Number	no	Emergency power generating, sundry builder's work, etc	Measure different sizes separately
		608.40	Photovoltaic / wind generation	Number	no	Photovoltaic or wind generation systems, sundry builder's work, etc	
		608.45	Fuel tanks	Number	no	Generator fuel tanks, plinth, bund walls, excavation, sundry builder's work, etc	State capacity State whether above or below ground
		608.50	Street, bollard, etc lighting	Number	no	External lighting, columns, poles, bollards, and masts, luminaires and lamps, cables, duct banks, controls, grounding, kiosks, sundry builder's work, etc to external illumination systems including lighting to pedestrian areas, paths and roads, and illuminated traffic signs	Measure different types separately
		608.55	Floodlighting	Number	no	Floodlighting, sundry builder's work, etc	Measure different types separately
		608.60	Builder's work	Number	no	Builder's work in connection with 608.10 to 608.55 above	

		608.65	Profit and attendance	Number	no	Profit and attendance for the principal contractor in connection with 608.10 to 608.55 above	
609	<b>Gas and fuel distribution</b>			Length of piping over site	m	The gas and fuel storage tanks and distribution installation	
		609.10	Storage and distribution	Length of piping	m	Liquefied petroleum gas (LPG) systems, oil, petrol, diesel storage tanks and vessels, piping, equipment, etc	Measure different types separately State capacity of tanks
610	<b>Connection fees, etc</b>			Number of connections, etc	no	The local authority connection fees, etc	
		610.10	Soil drainage	Number	no	The local authority connection fees, etc	
		610.15	Storm water drainage	Number	no	The local authority connection fees, etc	
		610.20	Water supply	Number	no	The local authority connection fees, etc	
		610.25	Fire service	Number	no	The local authority connection fees, etc	
		610.30	Electrical installation	Number	no	The local authority connection fees, etc	



		610.35	Gas and fuel	Number	no	The local authority connection fees, etc	
611	<b>Boundary, screen, retaining walls, etc</b>			Area on elevation of walls, etc	m <sup>2</sup>	Foundations, walls, finishes, copings, doors, screens, etc to boundary, screen, retaining walls, etc	
		611.10	Boundary walls	Area on elevation	m <sup>2</sup>	Foundations, brick, block or concrete walls, finishes, copings, etc	Measure different types separately
		611.15	Screen walls	Area on elevation	m <sup>2</sup>	Foundations, brick, block or concrete walls, finishes, copings, etc	
		611.20	Retaining walls	Area on elevation	m <sup>2</sup>	Foundations, brick, block or concrete walls, finishes, copings, etc	
		611.25	Terrace and perimeter walls	Area on elevation	m <sup>2</sup>	Foundations, brick, block or concrete walls, finishes, copings, etc	
		611.30	Doors	Number	no	Doors, frames, lintols, anchors, ironmongery, dowels, paint, etc	Measure different types and sizes separately
		611.35	Gates	Number	no	Gates, stays, ironmongery, etc	Measure different types and sizes separately
612	<b>Fences and railings</b>			Length of fences and railings measured over gates	m	Timber, metal and concrete fencing, railings, gates,	

						standards, droppers, posts, footings, etc	
		612.10	Fences	Length	m	Timber, metal and concrete fencing systems, noise/light screening, standards, droppers, posts, footings, etc	Measure different types separately State fence height and overhang (if applicable)
		612.15	Railings	Length	m	Timber, metal and concrete railings, footings, supports, ends, etc	Measure different types separately State railing height
		612.20	Gates	Number	no	Gates, security gates, posts, stays, footings, ironmongery, access control systems, entry systems (audio and visual), etc	Measure different types and sizes separately State if electronic, double or single, etc
613	<b>Roads, paving, etc</b>			Area on plan of roads, paving, etc	m <sup>2</sup>	Roads, parking areas, paving, hard stands, paths, bridges, etc kerbs, rails and barriers, painted lines, markings and signage	Measure surface water channelling under 605 – Storm water drainage
		613.10	Roads	Area	m <sup>2</sup>	Coated macadam and asphalt including road bases, base course and wearing courses, application of binders, forming channels, perforated units as protection to grassed areas, etc	Measure different types separately State thickness
		613.15	Parking areas	Area	m <sup>2</sup>	Coated macadam and asphalt, including bases, base course	Measure different types separately

						and wearing courses, application of binders, interlocking bricks and blocks including sand beds, geotextile membranes, perforated units as protection to grassed areas, etc	State thickness
		613.20	Paving	Area	m <sup>2</sup>	Interlocking bricks and blocks, cobbled pavings, etc including sand beds, geotextile membranes, perforated units as protection to grassed areas, etc	Measure different types separately State thickness Measure expansion joints separately
		613.25	Steps and ramps	Area	m <sup>2</sup>	Exterior steps and handicap, etc ramps	Measure different types separately
		613.30	Bridges	Area	m <sup>2</sup>	Vehicular and pedestrian bridges, paving and surfacing, balustrade walls, handrails, etc	Measure different types separately State width and span
		613.35	Kerbs and gutters	Length	m	Kerbs, kerb channels, gutters, etc including concrete foundations, and haunchings, kerbs and kerb accessories (standard and purpose made kerbs) for 612.10 to 612.30 above	Measure different types separately
		613.40	Bollards	Number	no	Bollards, etc	Measure different types separately

		613.45	Rails and barriers	Length	m	Bump, guard, etc rails and protection barriers for 612.10 to 612.30 above	Measure different types separately
		613.50	Painted lines, markings and signage	Number	no	Painted lines, zebra crossings, markings and traffic signage for 612.10 to 612.30 above	Measure different types separately
614	<b>Covered parking, walkways, etc</b>			Area on plan of covered parking, walkways, etc	m <sup>2</sup>	Foundations, columns, walls, doors, windows, screens, roofs, finishes, floor finishes, etc	
		614.10	Covered parking	Area on plan	m <sup>2</sup>	Foundations, columns, walls, doors, windows, screens, roofs, finishes, floor finishes, etc	Measure in detail if information is available
		614.15	Covered walkways	Area on plan	m <sup>2</sup>	Foundations, columns, walls, doors, windows, screens, roofs, finishes, floor finishes, etc	Measure in detail if information is available
615	<b>Decks</b>			Area on plan of decks	m <sup>2</sup>	Bearers, joists, decking, etc.	
		615.10	Timber	Area on plan	m <sup>2</sup>	Construction, supports, decking, etc.	
		615.15	Steel	Area on plan	m <sup>2</sup>	Construction, supports, decking, etc.	
616	<b>Pergolas, canopies, etc</b>			Area on plan of pergolas, canopies, etc	m <sup>2</sup>	Foundations, construction, covering, supports, etc	

		616.10	Pergolas	Area on plan	m <sup>2</sup>	Foundations, construction, covering, supports, etc	Measure different types separately
		616.15	Canopies	Area on plan	m <sup>2</sup>	Construction, covering, supports, etc	Measure different types separately
617	<b>Minor construction work</b>			Area on plan of all minor construction work	m <sup>2</sup>	Miscellaneous structures on site such as gate houses, guard huts, boiler houses, sub-station buildings, bicycle stores, prefabricated/timber workshops, sheds, stores, switchgear rooms, kennels, animal shelters, etc	
		617.10	Minor construction work	Area on plan	m <sup>2</sup>	All elements	Measure different structures separately Measure in detail if information is available
618	<b>Pools, etc</b>			Number of pools	no	Pools, decorative fountains, watercourses, surrounds, change rooms, filtration plant, power connections, piping system and devices, water heating, pool equipment, etc	
		618.10	Swimming pools, etc	Number	no	Pool, surrounds, filtration plant, power connections, piping system and devices, pool equipment, etc	Measure swimming, reflection, etc pools separately State size and depth range

		618.15	Decorative fountains and water courses	Number	no	Fountain, surrounds, filtration plant, power connections, piping system and devices, fountain equipment, etc	Measure different structures separately
		618.20	Change rooms, etc	Area on plan	m <sup>2</sup>	Change rooms, etc complete	Measure in detail if information is available
619	<b>Sports facilities</b>			Number of sports facilities	no	Tennis courts, bowling greens, putting greens, etc and change rooms, shelters, etc	
		619.10	Playing fields	Number	no	Tennis courts, bowling greens, putting greens, etc	Measure each playing field separately
		619.15	Spectator seating, stands, etc	Number	no	Spectator seating, stands, etc	Measure different structures separately Measure in detail if information is available
		619.20	Change rooms, etc	Area on plan	m <sup>2</sup>	Change rooms, shelters, etc complete	Measure in detail if information is available
620	<b>Garden works</b>			Area on plan of garden works	m <sup>2</sup>	Fine grading and soil preparation, erosion control measures, top soil and planting beds, seeding and sodding, planting, planters, rockeries, grassing and planting, stone pitching, other landscape features and general landscaping	

		620.10	Landscaping	Area on plan of landscaping	m <sup>2</sup>	Fine grading and soil preparation, erosion control measures, top soil and planting beds, seeding and sodding, planting, planters, rockeries, grassing and planting, stone pitching, other landscape features and general landscaping	Measure soft and hard landscaping and different features separately
		620.15	Irrigation systems	Area on plan under irrigation	m <sup>2</sup>	Piping, sprinkler heads and programming facilities	Measure different types separately
621	<b>Miscellaneous items</b>			Construction area	m <sup>2</sup>	External works and services that cannot be included with other elements or components above	
		621.10	Site / street furniture and equipment	Number	no	Seats, benches, rubbish bins, tables, poster display units, notice boards, cycle stands etc	Measure different types separately Measure interior rubbish bins under 211.70 – Interior rubbish bins, etc
		621.15	Other	Number	no	External works and services that cannot be included with other elements or components above	
<b>7</b>	<b>PRELIMINARIES</b>						
700	<b>Preliminaries</b>			Construction area	m <sup>2</sup>	The whole of the preliminaries bill	

		700.10	Preliminaries	Construction area	m <sup>2</sup>	The whole of the preliminaries bill	Express as a percentage of the total construction cost or as a lump sum excluding 800 – Contingency allowances
<b>8</b>	<b>CONTINGENCY ALLOWANCES</b>						
800	<b>Contingency allowances</b>			Construction area	m <sup>2</sup>	Amounts allowed for covering lack of detail at estimate stage and unforeseen expenditure	
		800.10	Price and detail development contingency	Construction area	m <sup>2</sup>	Amounts allowed for covering lack of detail until the design is fully resolved	Express as a percentage of the total construction cost including 700 – Preliminaries
		800.15	Construction contingency	Construction area	m <sup>2</sup>	Amounts allowed for unforeseen expenditure during the construction period	Express as a percentage of the total construction cost including 700 – Preliminaries and 800.10 – Price and detail development contingency
<b>9</b>	<b>ESCALATION</b>						
		900.10	Pre-tender	Construction area	m <sup>2</sup>	Amounts allowed for escalation from date of estimate to contract tender date	State method of calculation and source of escalation prediction information
		901.15	Contract	Construction area	m <sup>2</sup>	Amounts allowed for escalation from contract tender date to contract completion date	State method of calculation and source of escalation prediction information



<b>10</b>	<b>TAX</b>						
1000	<b>Value added tax</b>			Construction area	m <sup>2</sup>	Amounts allowed for value added tax (VAT) and / or sales tax	Only applicable if vendor cannot recover it as an input credit
		1000.10	Value added tax	Construction area	m <sup>2</sup>	Amounts allowed for value added tax (VAT)	State current percentage applicable
1001	<b>Sales tax</b>						
		1001.10	Sales tax	Construction area	m <sup>2</sup>	Amounts allowed for sales tax, if readily separately identifiable	State current percentage applicable

## 8. EXAMPLES

### Elemental estimate cost summaries

The proposed summary sheet for presenting building and site work elemental costs with cost analysis parameters provides an efficient tool for communicating economic information to decision makers in a quickly understood, concise format that helps them make project choices

The summary format helps them:

1. Understand the cost profile of the entire project
2. Analyse cost using analytical parameters. This can be done for most elements without having to refer to back-up information contained in the detail sheets
3. Identify potential cost overruns early to initiate corrective action

### Preparing an elemental cost analysis

Elemental costs include material and labour costs and subcontractor overheads and profit. At any stage of cost estimating elemental estimates can be based on elemental rates and quantities or the summing of component costs, or both. Using one approach for some elements does not restrict the use of other approaches for other elements in the same estimate

All elements of a cost analysis should be shown in the same sequence for easy reference. If no cost is attributable to an element, a zero or dash should be entered in the cost column

For analysis purposes, the cost of each element is expressed in a separate column as a price per square metre of the gross construction area. Where appropriate, each element should also be expressed with an elemental quantity, a ratio and an elemental unit price

Where there is more than one building on a single site, separate elemental cost analysis should be compiled for each building and for the site work with preliminaries, fee and contingency allowances proportioned between them. Floors within a high rise development fulfilling different functions (eg retail, parking, offices, etc) should be dealt with similarly

### Items to include

Items included in and excluded from the estimated cost are to be clearly communicated when presenting estimates of construction cost

Typical items to be included are as follows:

Project description

Project reference

Report number

Date of report

Owner's name

Principal agent's name

Site

Drawing numbers

Scale

Status of cost plan

Basis of cost plan (ie assumptions)

Estimate base date

Inclusions and exclusions

## **Headings for estimate of construction cost**

### **Code**

The code is the numerical identification for each element or component

### **Description**

The list of sections and elements

### **Cost**

Cost is the cost of an element and is the aggregate of the component costs comprising the particular element

### **Quantity**

Quantity is the actual measured quantity of an element or component

### **Unit**

Unit denotes the unit of measurement of the individual element or component

### **Cost per unit (elemental rate)**

Cost per unit is the cost of an element divided by the measured quantity of the element (eg the cost of the element 'Roofs' divided by the area of the element 'Roofs')

### **Cost per square metre or functional unit**

Cost per square metre is the cost of the element divided by the construction area. Where appropriate and/or required by an employer, costs may also be expressed as a cost per functional unit as an alternative to, or in addition to, the cost/m<sup>2</sup>. The functional unit may be an employer defined unit. It is therefore essential to define the functional unit clearly when costs are expressed in this way

### **Cost (percentage) %**

Cost % is the cost of the element expressed as a proportion of the total cost

**EXAMPLE A****TYPICAL EXAMPLE OF THE LAYOUT OF AN ELEMENTAL ESTIMATE****ELEMENT 103: EXTERNAL FAÇADE**

Elements	Component	Description	Details of Element and Component				Element Rate R*	Cost R*
			Unit	Quantity	Cost per unit R*	Cost		
103 External facade			m <sup>2</sup>	5 860	622.03	3 645 125	193.61	3.53
	103.10 Brick and block walls	230mm Brick walls	m <sup>2</sup>	956	375.00	358 500		
	103.35 Finishes	Cement plaster and PVA paint to walls	m <sup>2</sup>	1 809	125.00	226 125		
	103.40 Curtain walls	Colour anodised aluminium curtain walls	m <sup>2</sup>	142	1 650.00	234 300		
	103.50 Windows	Colour anodised windows	m <sup>2</sup>	1 946	1 450.00	2 821 700		
	103.65 Doors	FLB door size 813 x 2032mm	no	1	4 500.00	4 500		

**Notes:** Construction area = 18 827 m<sup>2</sup>; Elemental area = 5 860 m<sup>2</sup>

Details included in descriptions will depend upon the extent of information available.

\*Or other currency denomination

**EXAMPLE B****TYPICAL EXAMPLE OF AN ELEMENTAL ESTIMATE SUMMARY****ESTIMATE OF ESCALATED CONSTRUCTION COST AT CONTRACT COMPLETION DATE INCLUDING VALUE ADDED TAX (VAT)\*\* (28/02/2014)****SUMMARY OF CONSTRUCTION COST**

	<b>Construction Cost</b>	<b>Rate per m<sup>2</sup></b>	<b>% of construction cost</b>
	<b>R*</b>	<b>R*</b>	<b>%</b>
Primary elements	49 962 950	2 653.79	48.36
Specialist installations	19 483 050	1 034.85	18.86
Equipment	-	-	-
Tenant installations	-	-	-
Alterations	-	-	-
External works and services	14 215 300	755.05	13.76
Price and detail development contingencies	4 183 700	222.22	4.05
Preliminaries	10 542 000	559.94	10.20
<b>ESTIMATE OF CONSTRUCTION COST EXCLUDING CONSTRUCTION CONTINGENCIES (04/07/2012)</b>	<b>98 387 000</b>	<b>5 225.85</b>	<b>95.23</b>
Construction contingencies	4 923 000	261.49	4.77
<b>ESTIMATE OF CURRENT CONSTRUCTION COST EXCLUDING VAT** (04/07/2012)</b>	<b>103 310 000</b>	<b>5 487.33</b>	<b>100.00</b>
Pre-tender escalation	9 480 100	503.54	9.18
Contract escalation	7 312 500	388.40	7.08
<b>ESTIMATE OF ESCALATED CONSTRUCTION COST AT CONTRACT COMPLETION DATE EXCLUDING VALUE ADDED TAX (VAT)** (28/02/2014)</b>	<b>120 102 600</b>	<b>6 379.27</b>	<b>116.26</b>
Value added tax (VAT)**	16 814 360	893.10	16.28
<b>ESTIMATE OF ESCALATED CONSTRUCTION COST AT CONTRACT COMPLETION DATE INCLUDING VALUE ADDED TAX (VAT)** (28/02/2014)</b>	<b>136 916 960</b>	<b>7 272.37</b>	<b>132.54</b>

**CONSTRUCTION AREA:** 18 827m<sup>2</sup>**PROGRAMME ASSUMPTIONS:**

Construction cost estimate date : 4 July 2012  
Building contract tender date : 1 February 2013  
Construction commencement date : 1 March 2013  
Construction completion date : 28 February 2014  
Opening date : 1 March 2014

**ESCALATION:**

Pre-tender escalation	Based on latest published tender price index	
	Construction cost estimate date index	: 159.5
	Building contract tender date index	: 174.0
Contract escalation	Based on latest published building cost index	
	: (escalation during building period) adjusted for cash flow and fixed portion	
	Building contract tender date index	: 456.2
	Construction completion date index	: 503.2

**VALUE ADDED TAX (VAT)\*\*** Value added tax calculated at 14.00%

**EXCLUSIONS**

This estimate of construction cost is based on ruling competitive tender market conditions and excludes the following:

- Abnormal foundations
- Security system
- Loose furniture and fittings
- Fencing and gates
- Professional fees

**USER NOTE:**

Other items comprising the total capital investment for the project should be reflected elsewhere eg:

Property costs	Promotional costs	Financing costs	Funding costs
Local authority costs	Sundry costs	Professional fees	Tenancing costs

\*Or other currency denomination

\*\*Adjust if Sales Tax is applicable

**EXAMPLE B - continued**

<b>ELEMENTAL ESTIMATE OF CONSTRUCTION COST</b>							
<b>Code</b>	<b>Description</b>	<b>Cost</b>	<b>Quantity</b>	<b>Unit</b>	<b>Cost per unit</b>	<b>Cost per m<sup>2</sup></b>	<b>Cost %</b>
		<b>R*</b>			<b>R*</b>	<b>R*</b>	
1	<b>PRIMARY ELEMENTS</b>	49 962 950	18 827	m <sup>2</sup>	2 653.79	2 653.79	48.36%
100	Substructure	2 097 660	5 252	m <sup>2</sup>	399.40	111.42	2.03%
101	Ground floor	1 313 000	5 252	m <sup>2</sup>	250.00	69.74	1.27%
102	Structural frame	14 139 400	18 889	m <sup>2</sup>	748.55	751.02	13.69%
103	External facade	8 402 130	5 860	m <sup>2</sup>	1 433.81	446.28	8.13%
104	Roofs	2 144 660	5 806	m <sup>2</sup>	369.39	113.91	2.08%
105	Internal divisions	2 305 540	3 393	m <sup>2</sup>	679.50	122.46	2.23%
106	Partitions	4 000 500	5 931	m <sup>2</sup>	674.51	212.49	3.87%
107	Floor finishes	2 418 010	18 168	m <sup>2</sup>	133.09	128.43	2.34%
108	Internal wall finishes	1 603 890	8 712	m <sup>2</sup>	184.10	85.19	1.55%
109	Ceiling finishes	3 503 400	19 632	m <sup>2</sup>	178.45	186.08	3.39%
110	Fittings	271 000	18 827	m <sup>2</sup>	14.39	14.39	0.26%
111	Electrical installation	5 289 500	18 827	m <sup>2</sup>	280.95	280.95	5.12%
112	Plumbing	944 650	93	no	10 157.53	50.18	0.91%
113	Fire protection	480 850	226	no	2 127.65	25.54	0.47%
114	Balustrading, handrails, etc	1 048 760	883	m	1 187.72	55.71	1.02%
115	Miscellaneous items	-	-	m <sup>2</sup>	-	-	-
2	<b>SPECIALIST INSTALLATIONS</b>	19 483 050	18 827	m <sup>2</sup>	1 034.85	1 034.85	18.86%
200	Special foundations	3 360 590	5 252	m <sup>2</sup>	639.87	178.50	3.25%
201	Special fire protection systems	2 125 680	10 504	m <sup>2</sup>	202.37	112.91	2.06%
202	Conveyance systems	1 840 000	3	no	613 333.33	97.73	1.78%
203	Air conditioning	8 603 700	7 667	m <sup>2</sup>	1 122.17	456.99	8.33%
204	Ventilation	1 553 080	5 252	m <sup>2</sup>	295.71	82.49	1.50%
205	Heating and cooling	-	-	m <sup>2</sup>	-	-	-
206	Special electrical systems	1 325 000	18 827	m <sup>2</sup>	70.38	70.38	1.28%
207	Electronic systems	-	-	m <sup>2</sup>	-	-	-
208	Other services	-	-	m <sup>2</sup>	-	-	-
209	Communications and security	515 000	18 827	m <sup>2</sup>	27.35	27.35	0.50%
210	Signage	135 000	18 827	m <sup>2</sup>	7.17	7.17	0.13%
211	Artwork, furnishings, etc	-	-	m <sup>2</sup>	-	-	-
212	Miscellaneous items	25 000	18 827	m <sup>2</sup>	1.33	1.33	0.02%
3	<b>EQUIPMENT</b>	-	-	m <sup>2</sup>	-	-	-
300	Commercial	-	-	m <sup>2</sup>	-	-	-
301	Institutional	-	-	m <sup>2</sup>	-	-	-
302	Vehicular	-	-	m <sup>2</sup>	-	-	-
303	Other	-	-	m <sup>2</sup>	-	-	-
4	<b>TENANT INSTALLATIONS</b>						
400	Tenant installations	-	-	m <sup>2</sup>	-	-	-
5	<b>ALTERATIONS</b>	-	-	m <sup>2</sup>	-	-	-
500	Alterations	-	-	m <sup>2</sup>	-	-	-

**EXAMPLE B – continued**

<b>ELEMENTAL ESTIMATE OF CONSTRUCTION COST</b>							
<b>Code</b>	<b>Description</b>	<b>Cost</b>	<b>Quantity</b>	<b>Unit</b>	<b>Cost per unit</b>	<b>Cost per m<sup>2</sup></b>	<b>Cost %</b>
		<b>R*</b>			<b>R*</b>	<b>R*</b>	
6	<b>EXTERNAL WORKS AND SERVICES</b>	14 215 300	18 827	m <sup>2</sup>	755.05	755.05	13.76%
600	Demolitions	1 204 520	5 619	m <sup>2</sup>	214.37	63.98	1.17%
601	Site clearance	-	-	m <sup>2</sup>	-	-	-
602	Earthworks	10 146 330	26 258	m <sup>3</sup>	386.41	538.92	9.82%
603	Soil drainage	31 000	100	m	310.00	1.65	0.03%
604	Sub-surface water drainage	198 050	667	m	296.93	10.52	0.19%
605	Storm water drainage	-	-	m	-	-	-
606	Water supply	44 500	182	m	244.51	2.36	0.04%
607	Fire service	32 800	120	m	273.33	1.74	0.03%
608	Electrical installation	115 000	62	m	1 854.84	6.11	0.11%
609	Gas and fuel distribution	-	-	m	-	-	-
610	Connection fees, etc	895 000	5	no	179 000.00	47.54	0.87%
611	Boundary, screen, retaining walls, etc	-	-	m <sup>2</sup>	-	-	-
612	Fences and railings	265 800	184	m	1 444.57	14.12	0.26%
613	Roads, paving, etc	932 300	2 688	m <sup>2</sup>	346.84	49.52	0.90%
614	Covered parking, walkways, etc	-	-	m <sup>2</sup>	-	-	-
615	Decks, etc	-	-	m <sup>2</sup>	-	-	-
616	Pergolas, canopies, etc	-	-	m <sup>2</sup>	-	-	-
617	Minor construction work	-	-	m <sup>2</sup>	-	-	-
618	Pools, etc	-	-	no	-	-	-
619	Sports facilities	-	-	no	-	-	-
620	Garden works	350 000	3 354	m <sup>2</sup>	104.35	18.59	0.34%
621	Miscellaneous items	-	-	no	-	-	-
7	Price and detail development contingencies	4 183 700	18 827	m <sup>2</sup>	222.22	222.22	4.05%
8	Preliminaries	10 542 000	18 827	m <sup>2</sup>	559.94	559.94	10.20%
	<b>ESTIMATE OF CURRENT CONSTRUCTION COST EXCLUDING CONSTRUCTION CONTINGENCIES (04/07/2012)</b>	98 387 000	18 827	m <sup>2</sup>	5 225.85	5 225.85	95.23%
9	Construction contingencies	4 923 000	18 827	m <sup>2</sup>	261.49	261.49	4.77%
	<b>ESTIMATE OF CURRENT CONSTRUCTION COST EXCLUDING VALUE ADDED TAX (VAT)** (04/07/2012)</b>	103 310 000	18 827	m <sup>2</sup>	5 487.33	5 487.33	100.00%
10	<b>ESCALATION</b>	16 792 600	18 827	m <sup>2</sup>	563.55	563.55	16.26%
1000	Pre-tender	9 480 100	18 827	m <sup>2</sup>	257.14	257.14	9.18%
1001	Contract	7 312 500	18 827	m <sup>2</sup>	306.41	306.41	7.08%
11	<b>TAX</b>			m <sup>2</sup>			
1100	Value added tax (VAT)**	16 814 360	18 827	m <sup>2</sup>	847.12	847.12	16.28%
1101	Sales tax	-	-	m <sup>2</sup>	-	-	-
	<b>ESTIMATE OF ESCALATED CONSTRUCTION COST AT CONTRACT COMPLETION DATE INCLUDING VALUE ADDED TAX (VAT)** (28/02/2014)</b>	136 916 960	18 827	m <sup>2</sup>	7 272.37	7 272.37	132.54%

**NOTE:** Contractor's fee spread over all elements

\* Or other currency denomination \*\* Adjust if sales tax is applicable



## 9. INDEX

- Access panels, trapdoors, grilles, etc. 10, 48  
Africa Association of Quantity Surveyors 3  
Agricultural ..... 15, 82  
Air conditioning ..... 12, 64  
Air conditioning units ..... 13, 66  
Altar ..... 77  
Alterations ..... 7, 15, 83  
Animal shelters ..... 100  
Applied floor finishes ..... 10, 45  
Artwork, furnishings, etc ..... 14, 74  
Association of South African Quantity Surveyors ..... 3  
Athletic, recreational, playground and therapeutic ..... 15, 82  
Audio-visual ..... 14, 78  
Augured piles ..... 12, 59  
Autoclaves ..... 79  
Autopsy table ..... 79  
Baggage handling ..... 63  
Balers ..... 80  
Balustrade walls ..... 57  
Balustrading, handrails, etc ..... 11, 57  
Band risers ..... 78  
Banners ..... 74  
Basement excavation ..... 16, 87  
Beams ..... 9, 35  
Bedhead trunking ..... 79  
Benefits of elemental cost estimating ..... 6  
Bicycle stores ..... 100  
Boiler houses ..... 100  
Boilers ..... 11, 54  
Bollards ..... 12, 17, 58, 99  
Booster pumps ..... 11, 55, 56  
Borrowed lights ..... 10, 43  
Boundary walls ..... 17, 96  
Boundary, screen, retaining walls, etc 17, 96  
Bowling greens ..... 101  
Breaking up and removing ..... 15, 85  
Brick and block walls ..... 9, 10, 29, 37, 43  
Bridges ..... 17, 98  
Builder's work 11, 12, 13, 14, 15, 17, 52, 55, 56, 60, 61, 64, 67, 69, 70, 71, 72, 73, 75, 76, 77, 79, 80, 82, 95  
Building directories ..... 10, 49  
Building evacuation ..... 12, 61  
Building management ..... 13, 70  
Building signage ..... 14, 73  
Building up openings ..... 15, 84  
Buildings ..... 15, 85  
Built-in cupboards ..... 10, 48  
Bulkheads ..... 10, 48  
Bullet resistant teller window ..... 76  
Cabinetry, etc ..... 14, 74  
Caissons ..... 12, 59  
Call systems ..... 13, 72  
Canopies ..... 17, 100  
Car lifts ..... 12, 62  
Card access ..... 72  
Card readers ..... 79  
Cast in-situ piles ..... 12, 58  
Catch pits, inspection chambers, sumps, etc ..... 16, 90  
Catch pits, sumps, etc ..... 9, 33  
Catwalks, ladders, etc ..... 12, 58  
Ceiling finishes ..... 10, 47  
Cell equipment ..... 78  
Change rooms, etc ..... 17, 18, 101  
Checkroom ..... 14, 76  
Chilled water reticulation ..... 16, 91  
Chillers ..... 13, 65  
Chimneys ..... 10, 42  
Chutes ..... 12, 63  
Circuit wiring ..... 11, 51  
Cladding ..... 9, 37  
Clean power supply ..... 13, 69  
Cleaner's rails ..... 80  
Cleaning existing surfaces ..... 15, 84  
Clock and programme systems ..... 14, 72  
Closed circuit television systems ..... 13, 72  
Coin operated washers and dryers ..... 77  
Cold rooms ..... 15, 81  
Cold water supplies ..... 11, 53  
Column bases and pile caps ..... 9, 29  
Columns ..... 9, 29, 35  
Commercial ..... 14, 76  
Commercial kitchen ..... 15, 81  
Commercial laundry and dry cleaning 14, 77  
Communications and security ..... 13, 71  
Compactors ..... 80  
Component ..... 20, 26  
Compressed air ..... 79  
Concrete walls ..... 9, 10, 30, 37, 43  
Connection fees, etc ..... 17, 95  
Conservancy tanks ..... 89  
Construction ..... 10, 39  
Construction area ..... 20  
Construction contingency ..... 18, 19, 103  
Contaminated land ..... 15, 86  
Contingency allowances ..... 7, 103  
Contract ..... 104  
Contract escalation ..... 19, 21, 22  
Contractor's overheads and profit ..... 22  
Control booths ..... 78  
Conveyance systems ..... 12, 61  
Conveyors ..... 12, 64  
Cooking range ..... 81  
Cooling generating systems ..... 13, 68  
Cooling towers, etc ..... 13, 65  
Cornices, etc ..... 10, 48  
Cost ..... 21  
Cost (percentage) % ..... 21  
Cost per functional unit ..... 21

Cost per square metre .....	21	Energy supply.....	12, 65
Cost per unit.....	21	Equipment .....	7, 14, 76
Counters .....	11, 49	Escalation.....	7, 18, 19, 22, 103
Covered parking, walkways, etc .....	17, 99	Escalators.....	12, 64
Coverings.....	10, 40	Establishment, etc.....	12, 59
Cradles.....	80	Estimate base date.....	22
Crematory .....	79	Evaporative coolers.....	65
Cupboards fixed to walls.....	10, 49	Exhaust hoods.....	78
Curtain tracks.....	74	Exterior building signage .....	73
Curtain walls .....	9, 38	External facade .....	9, 36
Cutting through floors and ceilings... ..	15, 84	External works and services.....	7, 15, 85
Cycle stands .....	102	Extinguishers.....	11, 56
Darkroom, etc .....	15, 82	Eye wash.....	78
Decks, etc .....	17, 99, 111	Facade cleaning .....	15, 80
Decorative fountains and water courses	17, 101	Fences.....	17, 97
Deep freeze .....	81	Fences and railings .....	17, 97
Definitions .....	20	Filling.....	16, 87
Demolitions .....	15, 85	Finishes .....	9, 10, 38, 46
Design development .....	5	Fire alarm systems .....	14, 72
Detection and alarm systems.....	93	Fire detection and alarm.....	12, 60
Detention.....	14, 78	Fire protection .....	11, 55
Developing sink.....	82	Fire resistant paint, etc.....	11, 56
Dewatering.....	12, 16, 59, 88	Fire service .....	16, 17, 92, 96
Diesel storage tanks .....	95	Fire stops.....	11, 55
Directional, identification, safety, etc	14, 73	Fire suppression.....	12, 61
Dishwasher .....	81	Fireplaces, etc.....	14, 75
Ditches and culverts.....	16, 90	Fittings.....	10
Dock levellers.....	80	Flagpoles.....	14, 73
Dock seals and shelters.....	80	Floodlighting .....	16, 95
Domestic appliances.....	15, 81	Floor finishes .....	10, 45
Door closers.....	39	Floor mats, etc.....	14, 74
Door monitoring .....	72	Fluctuation.....	22
Doors .....	9, 10, 17, 39, 44, 45, 96	Flying bridges .....	78
Dormers, hatches, etc.....	10, 41	Foam generating .....	12, 61
Downpipes .....	42	Folders and spreaders .....	77
Driven piles .....	12, 58	Food storage service.....	15, 81
Dry cleaners.....	77	Freight lifts.....	12, 62
Dryers .....	77, 81	Fuel tanks.....	16, 94
Duct covers .....	11, 53	Fume hoods .....	78
Dumbwaiters.....	12, 63	Functional unit.....	22
Early fire warning system.....	60	Funiculars.....	12, 63
Earthworks .....	15, 86	Garbage disposal .....	81
Eaves .....	10, 42	Garden works .....	18, 101
Ecclesiastical .....	14, 77	Gas and fuel .....	17, 96
Electric power generating plant.....	93	Gas and fuel distribution.....	95
Electrical installation 11, 16, 17, 51, 93, 96		Gas installation.....	13, 71
Electrification.....	16, 93	Gate houses .....	100
Electronic systems .....	13, 70	Gates.....	17, 97
Element unit.....	21	Geysers .....	11, 54
Element unit rate.....	21	Glazed balustrading .....	12, 57
Elemental cost analysis .....	5, 22	Glazed roofs .....	10, 40
Elemental cost estimating .....	5	Gondolas .....	80
Elemental method .....	22	Grading and excavation .....	15, 87
Elemental rates .....	6	Grey water systems.....	11, 55
Elements .....	7, 21	Grilles, screens, louvers, etc .....	9, 39
Emergency lighting .....	11, 51	Grilles, trapdoors, etc. ....	10
Emergency power generating .....	16, 94	Ground anchors.....	88
		Ground beams.....	9, 29

Ground floor.....	9, 30	Measurement required for element or component.....	26
Guard huts .....	100	Medical .....	14, 79
Hatch doors.....	58	Medicine cabinets.....	53
Hatches and access doors.....	10, 43	Microwave oven .....	81
Heat generating systems .....	12, 13, 65, 68	Minor construction work .....	17, 100
Heat pumps.....	11, 55	Mirrors .....	53
Heat recovery equipment.....	13, 66	Miscellaneous.....	11, 12, 51
Heating and cooling .....	13, 68	Miscellaneous items ....	14, 18, 57, 75, 102
Hedges, fences, etc .....	15, 86	Mortuary .....	15, 79
Hoists .....	12, 62	Motion detectors.....	72
Hose reels.....	11, 56	Multiple seating .....	14, 74
Hospital curtain tracks.....	14, 74	Murals.....	74
Hot water supplies .....	11, 53	Nailed-up ceilings .....	10, 47
Hydrants, pedestals, etc .....	11, 16, 56, 93	Non-potable site reticulation.....	16, 91
Icemaker .....	81	Notice boards .....	73
Incinerators .....	80	Observatory.....	15, 82
Incoming main.....	16, 92, 93	Office .....	14, 77
Incubators .....	78	Office partitions .....	10, 44
Institutional.....	14, 77	Openings through existing walls, etc	15, 84
Instrumental .....	14, 78	Ornamentation.....	74
Insulation.....	9, 10, 31, 41	Other .....	12, 14, 15, 18, 58, 75, 80, 102
Inter- communication and paging systems .....	13, 71	Other electronic systems.....	13, 70
Interior landscaping.....	14, 74	Other services .....	13, 71
Interior seating benches, rubbish bins, etc .....	14, 75	Other special electrical systems.....	13, 70
Internal divisions .....	10, 42	Other systems and equipment .....	13, 67
Internal wall finishes.....	10, 46	Overheads and profit.....	22
Irons and pressers .....	77	Package waste water treatment plants .	89
Irrigation systems.....	18, 102	Painted lines, markings and signage	17, 99
Jacuzzis .....	14, 75	Parapet walls.....	11, 57
Kennels .....	100	Paraplegic grab bars .....	53
Kerbs and gutters.....	17, 98	Parking areas .....	17, 98
Kitchen floor and wall cupboards .....	11, 50	Parking booms .....	79
Laboratory and industrial liquid waste drainage .....	16, 88	Parking booths .....	79
Landscape features .....	102	Parking control .....	15, 79
Landscaping.....	18, 102	Parking ticket dispensers .....	79
Lateral support.....	16, 88	Partitions .....	10, 44
Lecterns .....	11, 50, 77	Passenger lifts.....	12, 62
Library .....	14, 78	Pass-thru windows .....	76
Lift shaft bases.....	9, 29	Paving .....	17, 98
Lightning and grounding protection..	13, 69	Pedestrian bridges .....	98
Loading dock.....	15, 80	Pelmets .....	74
Local area network systems .....	13, 72	Pendants .....	79
Local authority connection fees, etc.....	95	Pergolas .....	17, 100
Lockers .....	11, 50	Pergolas, canopies, etc.....	17, 100
Loft ladders .....	58	Pews.....	77
Louver drapes .....	74	Photovoltaic / wind generation .....	16, 94
Lubrication .....	79	Pigeon hole fittings, mail boxes, etc	10, 49
Luminaires .....	11, 51	Pile testing, etc .....	12, 59
Main switchboard, etc .....	11, 51	Pinning, bulletin, etc boards .....	10, 49
Maintenance .....	15, 80	Piping .....	16, 90
Making good of finishes, etc .....	15, 84	Piping and fittings, etc .....	13, 65
Manholes, catch pits, inspection chambers, sumps, etc.....	16, 90	Pits and bases.....	9, 32
Manholes, inspection chambers, etc	16, 89	Planetarium .....	15, 82
		Planting .....	102
		Plaques .....	73
		Playing fields .....	18, 101
		Plinth finishes .....	9, 30

Plumbing .....	11, 52, 53	Research .....	14, 78
Pneumatic tubes .....	12, 63	Retaining walls .....	17, 96
Pods .....	11, 52	Retention ponds .....	16, 90
Pools, etc .....	17, 100	Reverse-cycle, etc terminal heat pumps	13, 66
Portal frames .....	9, 35	Risk and contingency allowances .....	18
Poster display units .....	102	Roads .....	17, 97
Potable incoming main .....	16, 91	Roads, paving, etc .....	17, 97
Potable site reticulation .....	16, 91	Rock anchors .....	59
Power distribution .....	93	Rock, etc excavation .....	9, 16, 30, 87
Power factor correction .....	13, 69	Roof mounted smoke ventilators .....	61
Power generating .....	13, 69	Roof, lantern, skylights and openings	10, 41
Precast / composite decking systems .....	9	Roofs .....	10, 39
Precast / composite .....	34	Room dividers .....	10, 49
Prefabricated cold rooms .....	81	Rubbish bins .....	102
Pre-fabricated composite walls .....	9, 37	Safety deposit boxes .....	76
Preliminaries .....	7, 18, 22, 103	Sales tax .....	18, 104
Preparatory work to existing surfaces	15, 84	Sanitary fitting sundries .....	11, 53
Pre-tender .....	103	Sanitary fittings .....	11, 52
Pre-tender escalation .....	19, 22	Saunas .....	14, 75
Price and detail development contingency .....	18, 19, 103	Scanning equipment .....	77
Primary elements .....	7, 9, 28	Scissor lifts .....	80
Principal contractor .....	22	Screen walls .....	17, 96
Principal contractor's overheads and profit .....	22	Screens, etc .....	10, 43
Principal contractor's preliminaries .....	22	Seating benches .....	11, 50
Processors .....	82	Section and element .....	26
Profit and attendance	11, 12, 13, 14, 15, 17, 52, 55, 56, 60, 61, 64, 67, 68, 69, 70, 71, 73, 75, 76, 77, 79, 80, 82, 95	Sections .....	22
Projection screens .....	78	Security .....	81
Projector screens .....	82	Security and detection systems .....	14, 72
Projectors .....	78	Security and vault .....	14, 76
Protection barriers .....	99	Seeding and sodding .....	102
Protective coatings to existing surfaces	15, 84	Self-contained air conditioners, etc .	13, 66
Public address and music systems ..	13, 71	Septic tanks, etc .....	16, 89
Pulpits .....	77	Service ducts, trenches, etc .....	9, 32
Pump stations .....	16, 89	Sheds .....	100
Pumps .....	9, 16, 33, 90, 91	Sheet piling .....	12, 58
Putting greens .....	101	Shelving .....	11, 50
Quantity .....	22	Shop fronts and similar glazed screens .	9, 10, 38, 43
Raft foundations .....	12, 59	Shoring .....	12, 59, 88
Railings .....	17, 97	Shredders .....	80
Rails and barriers .....	17, 99	Signage .....	14, 73
Rails, corner protectors, etc .....	10, 47	Signage pylons, towers, etc .....	14, 73
Rain water drainage .....	10, 42	Site / street furniture and equipment	18, 102
Rain water harvesting .....	16, 90	Site clearance .....	15, 85
Raised access floors .....	10, 46	Site clearing and grubbing .....	15, 86
Raised platforms .....	10, 49	Site communications and security ...	16, 93
Ramps .....	9, 31, 34	Site reticulation .....	16, 93
Refrigerated food cases .....	81	Site security .....	93
Refrigerator .....	79, 81	Skirtings, etc .....	10, 46
Registration .....	14, 76	Slab .....	9, 34
Reinforced strip footings .....	9, 28	Slab soffit finishes .....	10, 47
Relocation of buildings and utilities ..	15, 85	Smoke ventilation / control .....	12, 61
Removal of existing work .....	15, 83	Soak away .....	89
Rentable area .....	22	Soap dishes .....	53
		Soil drainage .....	16, 17, 88, 95
		Soil drains .....	16, 88
		Soil stabilisation .....	16, 87

Solar heating.....	11, 54	Taking off / pricing notes .....	26
Solid floors .....	9, 31	Tax .....	7, 104
Solid waste handling .....	15, 80	Telephone enclosures .....	11, 50
Space frames.....	9, 36	Telephone systems .....	13, 72
Special doors .....	9, 10, 39, 44	Telescoping platforms and risers .....	78
Special electrical systems.....	13, 69	Television .....	13, 70
Special fire protection systems .....	12, 60	Teller and service .....	14, 76
Special foundations.....	12, 58	Temporary barriers, screens, etc ....	15, 83
Special light fittings .....	11, 51	Tenant installation allowances ..	15, 23, 83
Specialist installations.....	7, 58	Tenant installations .....	7, 15, 83
Spectator seating, stands, etc.....	18, 101	Tennis courts.....	101
Sports facilities.....	18, 101	Terrace and perimeter walls.....	17, 96
Spray painting .....	79	Testing and balancing .....	13, 66
Sprinklers .....	12, 60	Theatre and stage .....	14, 78
Stage curtains .....	78	Theatre operating lights.....	79
Stages.....	78	Thermometer .....	78
Stair and ramp floor finishes .....	10, 46	Timber balustrading.....	12, 57
Staircases and fire escapes.....	9, 35	Timber frames .....	9, 36
Statues.....	74	Timber handrails.....	11, 57
Steam and condensate distribution.....	11, 16, 54, 92	Toilet paper holders.....	53
Steam, hot water, etc distribution.....	13, 66	Toilet partitions .....	10, 44
Steel balustrading .....	12, 57	Top soil.....	102
Steel frames.....	9, 36	Toxic / hazardous building materials and components.....	15, 85
Steel handrails .....	11, 57	Trading .....	14, 77
Steps.....	9, 31	Traffic lights .....	79
Steps and ramps.....	17, 98	Traffic signage.....	99
Sterilizers .....	78	Trafficable surfaces .....	10, 42
Storage and distribution .....	17, 95	Transformers .....	94
Storage tanks.....	16, 92	Transportation systems .....	12, 63
Stores.....	100	Travelators .....	12, 64
Storm water drainage.....	16, 17, 90, 95	Trees .....	15, 86
Street, bollard, etc lighting .....	16, 94	Trolleys.....	80
Structural frame .....	9, 33	Turnstiles.....	14, 72
Subcontractor.....	22	Turntables .....	12, 63
Subcontractor's overheads and profit ....	22	TV arms, brackets, etc. ....	74
Subcontractor's preliminaries.....	23	Twin booster connections.....	16, 93
Sub-station buildings.....	100	Underpinning, etc .....	12, 59
Substations and transformers .....	16, 94	Uninterrupted power supply .....	13, 69
Substructure.....	9, 28	Unit quantity .....	23
Sub-surface drains.....	9, 16, 32, 89	Unit rate.....	5, 23
Sub-surface water drainage.....	16, 89	Un-reinforced strip footings .....	9, 28
Subterranean dewatering.....	88	Upholstered chairs .....	78
Sumps, etc.....	16	Urinal screens .....	53
Sun control.....	9, 39	Vacuum cleaning.....	80
Sundries.....	9, 16, 30, 88	Value added tax .....	18, 19, 104
Supermarket checkout counter .....	77	Vehicular .....	15, 79
Supply and return air systems .....	13, 65	Vehicular service .....	15, 79
Surface water channelling.....	16, 90	Vending .....	14, 77
Surveillance and observation.....	93	Venetian blinds.....	74
Suspended ceilings.....	10	Ventilation.....	13, 67
Suspended floor finishes.....	10, 45	Ventilation and exhaust systems.....	13, 66
Suspended floors .....	9, 31	Ventilation hood.....	81
Swimming pools, etc.....	17, 101	Ventilators and cowls .....	10, 42
Switchgear rooms .....	100	Verges.....	10, 42
Symbols used for measurement .....	20	Vibro-compacted columns.....	12, 59
Tables .....	11, 50, 102	Viewing lights .....	82
Taking down and removing.....	15, 85	Voice data .....	13, 70

Wall cross .....	77	Wheel chair lifts .....	12, 62
Washers .....	81	White, chalk, etc boards .....	10, 49
Waste water treatment plants .....	16, 89	Window treatment .....	14, 74
Water storage tanks .....	11, 55, 56	Windows .....	9, 38
Water supply .....	11, 16, 17, 56, 91, 95	Wine cellar, equipment .....	81
Waterproofing .....	10, 41	Worktops, benches, vanities, etc.....	11, 50
Waterproofing, drainage, etc.....	9, 37	Zebra crossings.....	99
Well systems, boreholes, etc .....	16, 92		