

**Spon's  
Civil Engineering and  
Highway Works  
Price Book**

**2010**



# Spon's Civil Engineering and Highway Works Price Book

*Edited by*  
DAVIS LANGDON LLP

**2010**

*Twenty-fourth edition*



**Spon Press**

an imprint of Taylor & Francis

LONDON AND NEW YORK

First edition 1984  
Twenty-fourth edition published 2010  
by Spon Press  
2 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

Simultaneously published in the USA and Canada  
by Spon Press  
270 Madison Avenue, New York, NY 10016

*Spon Press is an imprint of the Taylor & Francis Group, an informa business*

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Typeset in Arial by Taylor & Francis Books

Printed and bound in Great Britain by  
TJ International Ltd, Padstow, Cornwall

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*British Library Cataloguing in Publication Data*

A catalogue record for this book is available from the British Library

ISBN 13: 978-0-415-55258-5 (hardback)

ISBN 13: 978-0-203-87244-4 (ebook)

ISBN 10: 0-415-55258-3 (hardback)

ISBN 10: 0-203-87244-4 (ebook)

ISSN: 0957-171X

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# Preface

At the time of writing the construction industry is experiencing a marked downturn especially in the Private Sector. Whilst currently raw materials, supplier and manufacturer prices are rising Tender Prices are dropping. This plus the effect of the current tight credit market price levels for the coming year are extremely difficult to forecast. Infrastructure works associated with the London 2012 Olympics are now on stream and are providing a base load for civil engineering contractors for some years to come.

The drop in demand for steel products throughout the year to May 2009 has seen prices fall; however there are indications of recent hardening of prices. Oil prices appear to be rising again in the first half of 2009 fuelled by demand in the Far East and political tensions in the oil producing regions. These prices continue to impact on manufacturing, energy and transportation costs and the effect this is extremely difficult to predict for 2009 / 2010.

Thus under current market conditions the prices in the various Parts of this publication can only be taken as a guide to actual costs and any sustained upturn is liable to see marked increases in costs as manufacturers and specialists seek to recover margins lost in the downturn.

For the 2010 edition, we have carried out a general revision of all prices up to May/June 2009 in consultation with leading manufacturers, suppliers and specialist contractors. Our efforts have been directed at reviewing, revising and expanding the scope, range and detail of information to help enable the reader to compare or adjust any unit costs with reference to allocated resources or outputs.

The rates, prices and outputs included in the Resources and Unit Cost calculations, including allowances for wastage, normal productivity and efficiency, are based on medium sized Civil Engineering schemes of about £8 - £10 million in value, with no acute access or ground condition problems. However, they are equally applicable, with little or no adjustment, to a wide range of construction projects from £2 million to £50 million. Where suitable, tables of multipliers have been given to enable easy adjustment to outputs or costs for varying work conditions.

As with all attempts to provide price guidance on a general basis, this must be loaded with caveats. In applying the rates to any specific project, the user must take into account the general nature of the project, i.e. matters such as scale, site difficulties, locale, tender climate etc. This book aims at providing as much information as possible about the nature of the rate so as to assist the user to adapt it if necessary.

This edition continues to provide the reader with cost guidance at a number of levels, varying from the more general functional costs shown in Part 7 and Part 12, through the detailed unit costs in Parts 4 and 5 which relate respectively to the CESMM3 and the Highways Method of Measurement bills of quantities formats, down to the detailed resource costings given in Part 3 supplemented by the further advice on output factors in Part 13.

The Unit Costs sections (Parts 4, 5 and 7) cover a wide range of items and, where appropriate, notes are included detailing assumptions on composition of labour gang, plant resources and materials waste factors. Part 3 (Resources) includes detailed analysis of labour and plant costs, allowing the user to adjust unit costs to individual requirements by the substitution of alternative labour, materials or plant costs. Unit Costs are obviously dependent upon the outputs or manhours used to calculate them. The outputs used in this work have been compiled in detail from the editors' wide ranging experience and are based almost exclusively on time and motion studies and records derived from a large number of recent Civil Engineering schemes. This information is constantly being re-appraised to ensure consistency with current practice. A number of prices and outputs are based upon detailed specialist advice and acknowledgements to the main contributors are included on page xviii.

The market could change very rapidly and to monitor this and maintain accuracy levels readers should use the free price book update service, which advises of any significant changes to the published information over the period covered by this edition. The Update is posted free every three months on the publishers' website, until the publication of the next annual Price Book, to those readers who have registered with the publishers; in order to do so readers should follow the advice given on the coloured card bound within this volume.

Whilst all efforts are made to ensure the accuracy of the data and information used in the book, neither the editors nor the publishers can in any way accept liability for loss of any kind resulting from the use made by any person of such information.

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# Abbreviations

BS	British Standard	$\mu$	micron ( $10^{-3}$ millimetre)
BSS	British Standard Specification	mm	millimetre
DERV	diesel engine road vehicle	mm <sup>2</sup>	square millimetre
DfT	Department for Transport	N	newton
ha	hectare	ne	not exceeding
hp	horsepower	nr	number
hr	hour	pa	per annum
in	inch	PC	Prime Cost
kg	kilogramme	sq	square
km	kilometre	t	tonne
kVA	kilovolt ampere	TSO	The Stationery Office
kW	kilowatt	wk	week
m	metre	yd	yard
m <sup>2</sup>	square metre	yd <sup>3</sup>	cubic yard
m <sup>3</sup>	cubic metre		



# Acknowledgements

The Editors wish to record their appreciation of the assistance given by many individuals and organisations in the compilation of this edition.

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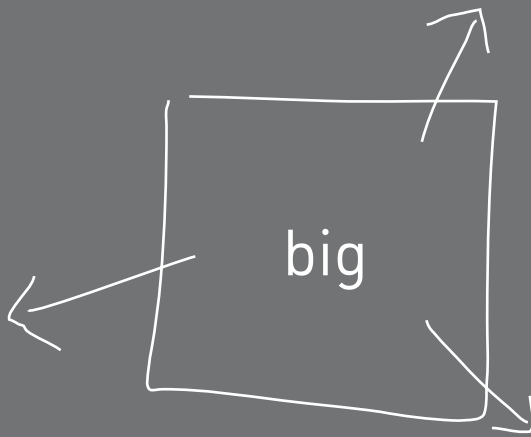
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PART 1

# General

## PURPOSE AND CONTENT OF THE BOOK

For many years the Editors have compiled a price book for use in the building industry with, more recently, companion volumes for use in connection with engineering services contracts and landscaping work. All of these price books take their reliability from the established practice within these sectors of the construction industry of pricing work by the application of unit rates to quantities measured from the designer's drawings. This practice is valid because most building work can be carried out under similar circumstances regardless of site location; a comparatively low proportion of contract value is subject to the risks that attend upon work below ground level; and once the building envelope is complete most trades can proceed without serious disruption from the weather.

This is not, however, the general method of pricing Civil Engineering work: the volume of work below ground, increased exposure to weather and the tremendous variety of projects, in terms of type, complexity and scale, makes the straightforward use of unit rates less reliable. So, whilst even in building work similar or identical measured items attract a fairly broad range of prices, the range is much greater in Civil Engineering Bills. This uncertainty is compounded by the lower number of bill items generated under Civil Engineering Methods of Measurement, so that the precise nature of the work is less apparent from the bill descriptions and the statistical effect of 'swings and roundabouts' has less scope to average out extremes of pricing.

To prepare a price for a Civil Engineering project, then, it is necessary to have regard to the method to be adopted in executing the work, draw up a detailed programme and then cost out the resources necessary to prosecute the chosen method. Because the first part of this process is the province of the Contractor's planner, there has been a tendency to postpone detailed estimating until the tendering stage itself, with the employer relying up to that point upon an estimate prepared on a 'broad brush' basis.

The result has been a growing pressure on the part of project sponsors for an improvement in budgetary advice, so that a decision to commit expenditure to a particular project is taken on firmer grounds. The absence of a detailed pricing method during the precontract phase also inhibits the accurate costing of alternative designs and regular cost checking to ensure that the design is being developed within the employer's budget.

This book therefore seeks to draw together the information appropriate to two methods of pricing: the cost of resources for use where an operational plan has been outlined, and unit rates for use where quantities can be taken from available drawings.

To take some note of the range of unit rates that might apply to an item, the rates themselves are in some cases related to working method for example by identifying the different types of plant that would suit varying circumstances. Nonetheless, it would be folly to propose that all types of Civil Engineering work could be covered by a price book such as this. The Editors have therefore had in mind the type and scale of work commissioned by a local authority, a public corporation or a large private company.

This does embrace the great majority of work undertaken by the industry each year. Although almost all projects will have individual features that require careful attention in pricing, there will be some projects that are so specialist that they will not conform to standard pricing information at all.

But for most projects, within the range of work covered, this book should provide a firm foundation of cost information upon which a jobspecific estimate can be built.

The contents of the book are therefore set out in a form that permits the user to follow the estimating process through in a structured way, as follows:

### **Part 1: General**

The balance of this section describes in narrative form the work stages normally followed in a Contractor's office from receipt of the tender documents through to the submission of the tender.

It also includes a review of current Capital Allowances, Value Added Tax and The Aggregates Levy.

**Part 2: Preliminaries and General Items**

Containing a checklist of items to be priced with Preliminaries and General Items (or 'Method Related Charges') and a worked example containing specific cost information.

**Part 3: Resources**

This deals with the basic cost of resources, so that a resource-based system of estimating can be adopted where it is possible to develop an outline programme and method statement. Reference to this section will also assist the user to make adjustments to unit rates where different labour or material costs are thought to apply and to calculate analogous rates for work based on the hypothetical examples given. It is stressed that all of the costs given in this section are exclusive of the items costed with the preliminaries and of financing charges, head office overheads and profit. The materials and plant costs as shown are gross, with no deduction of discount.

**Parts 4 and 5: Unit Costs**

These sections are structured around methods of measurement for Civil Engineering Work and gives 'trade by trade' unit rates for those circumstances where the application of unit rates to measured quantities is possible and practical. Again, it is stressed that the rates are exclusive of the items costed with preliminaries and of financing charges, head office overheads and profit. Both materials and plant costs are adjusted to allow a normal level of discount, with allowances for materials wastage and plant usage factors.

**Part 6: Land Remediation**

The Land Remediation section reviews the general background of ground contamination and discusses the impact of the introduction of the Landfill Directive in July 2004.

**Part 7: Unit Costs (Ancillary Building Works)**

This section is to be utilised in conjunction with Parts 4 and 5 to enable the user to incorporate within the estimate items more normally associated with Building Work rather than Civil Engineering and which do not fall readily under recognised methods of measurement for Civil Engineering Work. Due to the diversity of items that fall under such a definition, because of specification differences, the format for this section is structured to incorporate a range of items to allow the production of the estimate for such items prior to detailed design information being available. Additionally this section includes, in the same format, items covering simple Building Works which occur in connection with a Civil Engineering Contract but which do not form a significant proportion of the overall value and therefore do not need to be estimated in great detail using Parts 4 and 5 unit rates.

**Part 8: Oncosts and Profit**

Having produced an estimate for the predicted cost of the work, being the sum of the preliminaries and the measured work, the estimate must be converted to a tender by the application of any adjustment made by management (which follows the Management Appraisal described later in this part of the book) and by additions for financing charges, head office overheads and profit. These additions are discussed in this section and also included is a worked example of a tender summary.

**Part 9: Costs and Tender Prices Indices**

The cost and tender price indices included in this part of the book provide a basis for updating historical cost or price information, by presenting changes in the indices since 1988. Caution must be taken when applying these indices as individual price fluctuations outside the general trend may have significant effect on contract cost.

**Part 10: Daywork**

Including details of the CECA dayworks schedule and advice on costing excluded items.

### **Part 11: Professional Fees**

These contain reference to standard documentation relating to professional fees for Consulting Engineers and Quantity Surveyors.

### **Part 12: Approximate Estimates**

The prices in this section have been assembled from a number of sources, including the relevant items in the unit costs section and recovered data from recent projects. They are intended to give broad price guides or to assist in comparison exercises.

### **Part 13: Outputs**

Scheduled here are various types of operations and the outputs expected of them. Also listed are man hours for various trades found in Civil Engineering.

### **Part 14: Tables and Memoranda**

These include conversion tables, formulae, and a series of reference tables structured around trade headings. It also includes a review of current Capital Allowances, Value Added Tax and The Aggregates Levy.

## **OUTLINE OF THE TENDERING AND ESTIMATING PROCESS**

This section of the book outlines the nature and purpose of Civil Engineering estimating and provides background information for users. It comprises an outline of the estimating and tendering process with supporting notes and commentaries on particular aspects. Some worked examples on tender preparation referred to in this part are included at the end of Part 8.

It must be emphasised that the main purpose of this book is to aid the estimating process. Thus it is concerned more with the predicted cost of Civil Engineering work than with the prices in a bill of quantities. To ensure the correct interpretation of the information provided it is important to distinguish clearly between estimating and tendering; the following definitions are followed throughout.

The estimate is the prediction of the cost of a project to the Contractor. The Tender is the price submitted by the Contractor to the Employer.

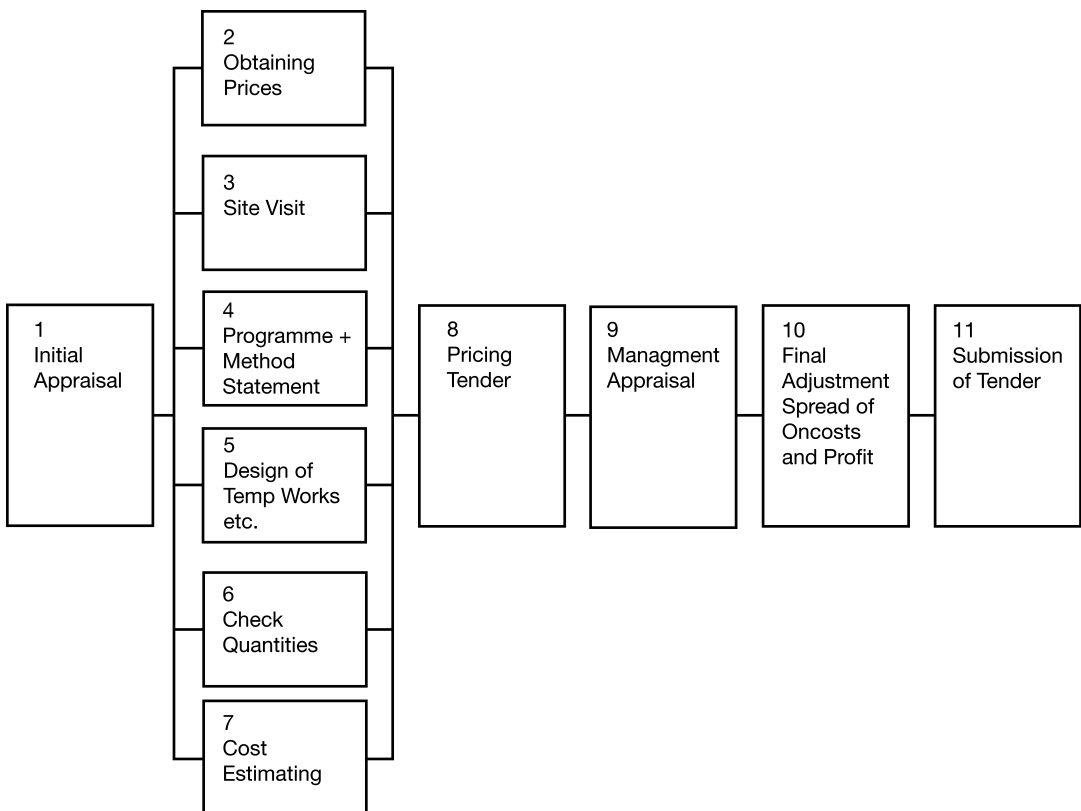
The tender is based on the estimate with adjustments being made after review by management; these include allowances for risk, overheads, profit and finance charges. As discussed later in this section, prices inserted against individual items in a bill of quantities may not necessarily reflect the true cost of the work so described due to the view taken by the Contractor on the risks and financial aspects involved in executing the work.

Whilst projects are now constructed using many different forms of contract the core estimating process falls into two main divisions namely "Design & Construct" and "Construct only". The following list summarises the activities involved in the preparation of a tender for a typical construct only Civil Engineering project where the client issues full drawings, specifications and Bills describing the extent of the works to be priced. The diagram that follows illustrates the relationships between the activities. After the diagram, notes on factors affecting each stage of the process are given.

1. An overall appraisal of the project is made including any variations to the standard contract form, insurance provisions and any other unusual or onerous requirement.
2. Material requirements are abstracted from the tender documents and prices are obtained from suppliers. Details of work normally subcontracted are abstracted, together with relevant extracts from the tender documents and prices are obtained from subcontractors.
3. The site of the works and the surrounding area is visited and studied. Local information is obtained on factors affecting the execution of the contract.

4. A programme and detailed method of working for the execution of the contract is prepared, to include details of plant requirements, temporary works, unmeasured work, appropriate supervisory staff, etc.
5. Designs are made for temporary works and other features left to be designed by the Contractor, and quantities are taken off for costing.
6. Major quantities given in the tender documents are checked.
7. The cost estimate for the project is prepared by costing out all of the resources identified by stages 2 to 6. A more detailed report is made on the conditions of contract, financial requirements, etc. and an assessment of risk/opportunity is prepared.
8. The tender documents are priced.
9. Management reviews the estimate, evaluates the risks and makes allowances for overheads, profit and finance.
10. The tender is completed and submitted.

### 1. INITIAL APPRAISAL



The purpose of the initial overall appraisal is to highlight any high value areas or any particular problems which may require specialist attention, it can also identify possible alternative methods of construction or temporary works.

Other points to be considered:

- the location and type of project and its suitability to the tenderer's particular expertise
- the size of project, its financing requirement, the proportion of annual turnover it would represent and the availability of resources

- the size of the tender list and the nature of the competition
- the identity of the employer and his professional consultants
- the adequacy of the tender documents
- an initial appraisal of risk and opportunity (see Section 8)

Corporate governance requires that the directors of companies are aware of all the liabilities inherent in the contract being sought. Few contracts are offered on totally unamended standard forms and specifications and it is the estimator's duty to ensure that a report is prepared to advise on the precise terms and conditions being offered and their potential implications.

It is essential for the estimator to study the contract documents issued with the enquiry or made available for inspection and to note those parts which will affect pricing or involve the Contractor in liabilities which must be evaluated and drawn to the attention of management. The following comments are indicative only:

### **Conditions of Contract**

For Civil Engineering work these are normally, but not exclusively, based on either the I.C.E. or ECC (NEC) standard forms. However these forms are rarely offered without addition and amendment and it is imperative that the full implications are understood and directors informed. Any required bonds, guarantees and warranties must be identified, reported and included in subcontract enquiries where appropriate. Insurance requirements and excesses must be checked against company policies.

### **Bill of Quantities**

Where a Bill is provided it serves three purposes: first and foremost it must be prepared with the objective of providing the estimator with as accurate a picture of the project as possible, so as to provide a proper basis for pricing. Second, it should enable the employer to compare tenders on an equal basis and third it will be used to evaluate the work executed for payment purposes. Individual items in the Bill do not necessarily describe in detail the work to be carried out under a particular item; reference must be made to the specification and the drawings to ascertain the full scope of the work involved.

The method of preparing the Bill may be based on the 'Civil Engineering Standard Method of Measurement' issued by the Institution of Civil Engineers or the 'Method of Measurement for Highway Works' issued by the Highways Agency, but some employing authorities have evolved their own methods and it is important for the estimator to study the Bill and its preambles to ensure that his rates and prices are comprehensive.

In all cases the quantities given in the bill are not a guarantee and the drawings usually have precedence. The estimator must understand whether he is pricing a re-measurable or fixed price contract and make due allowance.

### **Specification**

This gives a detailed description of the workmanship, finish and materials to be used in the construction of the work. It may also give completion periods for sections and/or the whole of the work together with details of the requirements for the employer and/or the Consulting Engineer in connection with their supervision on site.

Water Authority and Highway Works in particular are based around a standard specification. However even standard specifications will have contract specific appendices and tables. The estimator must take due note of these requirements and ensure that this information is issued and taken into account by all potential subcontractors and material suppliers.

### **Drawings**

These give details of the work to be carried out and must be read in conjunction with the specification. It is important for the estimator to study the notes and descriptions given on the drawings as these amplify the specification.



Should the estimator discover any conflict between the various documents, it is important to have such discrepancies clarified by the Employer or Engineer prior to submission of any offer.

## **2. OBTAINING PRICES**

### **(a) Materials**

When pricing materials, the following points must be noted:

- checks must be made to ensure that the quality of materials to be supplied meets with the requirements of the specification. If necessary, samples should be obtained and tested for compliance
- checks must be made to ensure that the rates of delivery and fabrication periods can meet the demands of the programme. It is sometimes necessary to use more than one supplier, with differing prices, to ensure a sufficient flow of materials
- tests should be carried out to ascertain allowances to be made for operations such as compaction of soils and aggregates. Records of past contracts using similar materials can give this information, providing such records are accurate and reliable

### **(b) Subcontractors**

- It is common practice among Civil Engineering Contractors to subcontract a significant proportion of their work.

Subcontracted work can represent the bulk of the value of measured work.

When utilising subcontractors' prices it is extremely important to ensure that the rates given cover the full extent of the work described in the main contract, and that the subcontractors quotation allows for meeting the main Tender programme and methods of working.

Unless an exclusive relationship has been entered into prior to the tendering process it is likely that the same sub-contractor will submit prices to a number of competing tenderers. It is important for the estimator to ensure that the price offered represents the method intended and is not a generic sum which is subject to variation if successful.

## **3. SITE VISIT**

Factors to check during the site visit include:

- access
- limitations of working space
- existing overhead and underground services
- nearby public transport routes
- availability of services water, gas, electricity, telephone, etc.
- availability of labour and subcontractors
- availability of materials particularly aggregates and fill materials and location of nearest tipping facility
- nature of the ground, including inspection of trial bores / pits if dug ground water level
- presence of other Contractors working on or adjacent to the site.

## **4. METHOD STATEMENT AND PROGRAMME**

As previously stated whilst an estimate is being prepared it is necessary that a detailed method of working and a programme for the execution of the works is drawn up; the latter can take the form of a bar chart or, for large and more complex projects, may be prepared on more sophisticated computerised platforms. Compliance with the employer's target completion dates is, of course, essential. The method of working will depend on this programme in so far as the type and size of plant and the gang sizes to be used must be capable of achieving the output

necessary to meet the programmed times. Allowance must be made for delays due to adverse weather, other hazards particular to the site and the requirements of the specification, particularly with regard to periods to be allowed for service diversions and other employer's requirements.

A method statement is prepared in conjunction with the programme, setting out the resources required, outputs to be achieved and the requirements in respect of temporary works, etc.

At the same time, separate bar charts may be produced giving:

- plant requirements
- staff and site supervision requirements
- labour requirements

These programmes and method statements will form the basis of the actual contract programme should the tender be accepted. They will also enable the Contractor to assure himself that he has available or can gain access to the necessary resources in plant, labour, materials and supervision to carry out the work should he be awarded the contract.

## **5. DESIGN OF TEMPORARY WORKS, ETC**

Normally the period of time allowed for tendering is relatively short and therefore it is important that those aspects requiring design work are recognised as early as possible in the tender period. Design can be carried out either by the Contractor using his own engineers or by utilising the services of a Consulting Engineer. There are three aspects of design to be considered:

### **A. Temporary works to the Contractor's requirements to enable the works to be constructed**

Design of temporary works covers the design of those parts of the work for which the Contractor accepts full responsibility in respect of stability and safety during construction. Such parts include support structures, cofferdams, temporary bridges, jetties and river diversions, special shuttering, scaffolding, haul roads and hardstandings, compounds, traffic management etc. Design must be in sufficient detail to enable materials, quantities and work content to be assessed and priced by the estimator. In designing such work, it is important that adequate attention is given to working platforms and access for labour and plant and also to ease of dismantling and reerection for further uses without damage.

It should be noted that many specialist subcontractors will provide a design service when submitting quotations. For example, scaffolding Contractors will design suitable support work for soffit shuttering, etc.

### **B. Specific items of the permanent works to meet a performance specification set out by the client or the Consulting Engineer**

It is common practice for certain parts of the work to be specified by means of a performance specification. For example, concrete is specified by strength only, piles by load carrying capacity, etc. It is then left to the Contractor to use those materials, workmanship and design which he feels are most suited to the particular site and conditions.

In many cases such design will be carried out by specialist suppliers or subcontractors.

### **C. Alternative designs for sections of the permanent works where the Contractor's experience leads him to consider that a more economical design could be used**

It is possible for a Contractor to use his expertise and experience to design and submit alternative proposals and prices for complete sections of the permanent work without, of course, altering the basic requirements of the original design. Examples would be foundations in difficult ground conditions, bridge superstructures, use of precast

in place of in situ concrete, etc. Such designs may be carried out by the Contractor's own staff or in conjunction with Consulting Engineers or specialist Contractors

Obviously this is only done when the Contractor can offer considerable savings in cost and/or a reduced construction period. It is necessary to include a price for the original design in the tender, but the decision to submit a keen tender may be underpinned by the hope of sharing such savings with the Employer.

In all cases, the Contractor's designs and calculations must be checked and approved by the Employer's Consulting Engineer, but such checks and approvals do not relieve the Contractor of his responsibilities for the safety and stability of the work.

Where any design work is undertaken it is important to ensure that adequate design insurance is maintained.

## 6. QUANTITIES CHECK

Working within obvious time constraints, the estimating team will endeavour to complete a quantities check on at least the major and high price quantities of the Bill, as this could affect pricing strategy, for example, in pricing provisional items. Any major discrepancies noted should be referred to the management appraisal agenda.

## 7. COST ESTIMATE

At this stage the estimator draws together the information and prepares a cost estimate made up of:

- preliminaries and general items (see [Part 2](#))
- temporary works
- labour, costed by reference to the method statement, with appropriate allowances for labour oncosts (non-productive overtime, travelling time / fares, subsistence, guaranteed time, bonus, Employer's Liability Insurance, training, statutory payments, etc.)
- material costs taken from price lists or suppliers' quotations, with appropriate allowances for waste
- plant, whether owned or hired, with appropriate allowances for transport to / from site, erection/dismantling, maintenance, fuel and operation. Heavy static plant (batching plant, tower cranes, etc.) will normally be priced with general items; the remainder will normally be allocated to the unit rates
- sublet work, as quoted by specialist subcontractors, with appropriate allowances for all attendances required to be provided by the main Contractor

At the same time, a preliminary assessment of risk/opportunity will be made for consideration with the Management Appraisal (see Section 8 below). On major tenders a formal quantified risk assessment (QRA) will be undertaken – the estimator will be expected to evaluate the effects of the risks for inclusion in the calculations. This will include a look at:

- weather conditions costs not recoverable by claims under the Conditions of Contract, ground becoming unsuitable for working due to the effect of weather, etc.
- flooding liability of site to flooding and the consequent costs
- suitability of materials particular risk can arise if prices are based on the use of borrow pits or quarries and inadequate investigation has been carried out or development is refused by the local authorities
- reliability of subcontractors failure of a subcontractor to perform can result in higher costs through delays to other operations and employing an alternative subcontractor at higher cost
- nonrecoverable costs such as excesses on insurance claims
- estimator's ability e.g. outputs allowed. This can only be gauged from experience
- cost increase allowances for fixed price contract
- terms and conditions contained in the contract documents
- ability to meet specification requirements for the prices allowed
- availability of adequate and suitable labour

Risk is, of course, balanced by opportunity and consideration needs to be given to areas for which particular expertise possessed by the Contractor will lead to a price advantage against other tenderers.

## 8. PRICING THE TENDER

Once the cost estimate is complete, the estimator prices the items in the Bill. The rate to be entered against the items at this stage should be the correct rate for doing the job, whatever the quantity shown.

Where the overall operation covers a number of differing Bill items, the estimator will allocate the cost to the various items in reasonable proportions; the majority of the work is priced in this manner. The remaining items are normally priced by unit rate calculation.

Resources schedules, based on the programme and giving details of plant, labour and staff, perform an important role in enabling the estimator to check that he has included the total cost of resources for the period they are required on site. It is not unusual for an item of plant to be used intermittently for more than one operation. A reconciliation of the total time for which the cost has been included in the estimate against the total time the item is needed on site as shown on the programme, gives a period of nonproductive time. The cost of this is normally included in site oncosts and preliminaries. A similar situation can arise in the cases of skilled labour, craftsmen and plant drivers.

Having priced the Bill at cost, there will remain a sum to be spread over the Bill items. The way in which this is done depends on the view taken by the Contractor of the project; for example:

- sums can be put against the listed general items in the Preliminaries Bill
- a fixed 'Adjustment Item' can be included in the Bill for the convenience of the estimator. This can be used for the adjustment made following the Management Appraisal, and for taking advantage of any late but favourable quotations received from subcontractors or suppliers
- the balance can be spread over the rates by equal percentage on all items, or by unequal percentages to assist in financing the contract or to take advantage of possible contract variations, or expected quantity changes (see notes against 7)

The Contractor will normally assess the financial advantages to be gained from submitting his bid in this manner and possibly enabling him to submit a more competitive offer.

After completing the pricing of all aspects of the tender, the total costs are summarised and profit, risk, etc., added to arrive at the total value of the Tender. A suggested form of this summary is set out in Part 8: Oncosts and Profit.

Finally, reasonable forecasts of cash flow and finance requirements are essential for the successful result of the project. Preliminary assessments may have been made for the information of management, but contract cash flow and the amount of investment required to finance the work can now be estimated by plotting income against expenditure using the programme of work and the priced Bill of Quantities. Payment in arrears and retentions, both from the Employer and to the suppliers and subcontractors, must be taken into account.

It is unlikely that sufficient time will be available during the tender period to produce such information accurately, but an approximate figure, for use as a guide for finance requirements, can be assessed.

A worked example is set out in Part 8: Oncosts and Profit.

## 9. MANAGEMENT APPRAISAL

Clearly, as far as the detail of the tender buildup is concerned, management must rely upon its established tendering procedures and upon the experience and skill of its estimators. However the comprehensive review of

tenders prior to submission is an onerous duty and the estimator should look upon the process as an opportunity to demonstrate his skill. The Management Appraisal will include a review of:

- the major quantities
- the programme and method statement
- plant usage
- major suppliers and/or subcontractors, and discounts
- the nature of the competition
- risk and opportunity
- contract conditions, including in particular the level of damages for late completion, the minimum amount of certificates, retention and bonding requirements
- cash flow and finance
- margin for head office overheads and profit
- the weighting and spreading of the cost estimate over the measured items in the Bill

## **10. SUBMISSION OF TENDER**

On completion of the tender, the documents are read over, comp checked and then despatched to the employer in accordance with the conditions set down in the invitation letter.

A complete copy of the tender as submitted should be retained by the Contractor. Drawings on which the offer has been based should be clearly marked 'Tender Copy', their numbers recorded and the drawings filed for future reference. These documents will then form the basis for price variations should the design be amended during the currency of the contract.

The Contractor may wish to qualify his offer to clarify the basis of his price. Normally such qualifications are included in a letter accompanying the tender. Legally the Form of Tender constitutes the offer and it is important that reference to such a letter is made on the Form of Tender to ensure that it forms part of the offer. Wording such as 'and our letter dated..., reference...' should be added prior to quoting the Tender Sum.

Before any qualifications are quoted, careful note must be taken of the 'instructions to tenderers', as qualifications, or at least qualifications submitted without a conforming tender, may be forbidden.

## **11. DESIGN AND CONSTRUCT VARIATIONS**

Where once the design and construct tender was the province of only very major projects, this form of procurement is now much more widespread throughout the entire spectrum of Civil Engineering works. The key difference to the construct only tender is self evident: the bidder is required to produce and price designs that will satisfy the employer's stated requirements and often need to result in a scheme in line with indicative plans.

In practice, this process runs best when managed by an overall bid manager, with the estimator organising the bill preparation and pricing from the submitted designs. The bid timescales are such that an orderly progression from design through bill preparation to pricing is rarely achieved. This process places far greater demands on the estimator's flexibility and management skills, but can prove ultimately more rewarding.



# Capital Allowances

## Introduction

Capital Allowances provide tax relief by prescribing a statutory rate of depreciation for tax purposes in place of that used for accounting purposes. They are utilised by government to provide an incentive to invest in capital equipment, including commercial property, by allowing the majority of taxpayers a deduction from taxable profits for certain types of capital expenditure, thereby deferring tax liabilities.

The capital allowances most commonly applicable to real estate are those given for capital expenditure on both new and existing industrial buildings, and plant and machinery in all commercial buildings.

Other types of allowances particularly relevant to property are hotel and enterprise zone allowances, which are in fact variants to industrial buildings allowances code. Enhanced rates of allowances are available on certain types of energy saving and environmentally friendly plant and machinery, whilst reduced rates apply to "integral features" and items with an expected economic life of more than 25 years.

## The Act

The primary legislation is contained in the Capital Allowances Act 2001. Amendments to the Act have been made in each subsequent Finance Act. Major changes to the system were announced by the Government in 2007 and the majority of these have now taken effect from April 2008.

The Act is arranged in 12 Parts and was published with an accompanying set of Explanatory Notes.

## Plant and Machinery

The Finance Act 1994 introduced major changes to the availability of Capital Allowances on real estate. A definition was introduced which precludes expenditure on the provision of a building from qualifying for plant and machinery, with prescribed exceptions.

List A in Section 21 of the 2001 Act sets out those assets treated as parts of buildings:-

- *Walls, floors, ceilings, doors, gates, shutters, windows and stairs*
- *Mains services, and systems, for water, electricity and gas.*
- *Waste disposal systems.*
- *Sewerage and drainage systems.*
- *Shafts or other structures in which lifts, hoists, escalators and moving walkways are installed.*
- *Fire safety systems.*

Similarly, List B in Section 22 identifies excluded structures and other assets.

Both sections are, however, subject to Section 23. This section sets out expenditure, which although being part of a building, may still be expenditure on the provision of Plant and Machinery.

List C in Section 23 is reproduced below:

Sections 21 and 22 do not affect the question whether expenditure on any item in List C is expenditure on the provision of Plant or Machinery

1. Machinery (including devices for providing motive power) not within any other item in this list.
2. Electrical systems (including lighting systems) and cold water, gas and sewerage systems provided mainly –
  - a. to meet the particular requirements of the qualifying activity, or
  - b. to serve particular plant or machinery used for the purposes of the qualifying activity.
3. Space or water heating systems; powered systems of ventilation, air cooling or air purification; and any floor or ceiling comprised in such systems.
4. Manufacturing or processing equipment; storage equipment (including cold rooms); display equipment; and counters, checkouts and similar equipment.
5. Cookers, washing machines, dishwashers, refrigerators and similar equipment; washbasins, sinks, baths, showers, sanitary ware and similar equipment; and furniture and furnishings.
6. Lifts, hoists, escalators and moving walkways.
7. Sound insulation provided mainly to meet the particular requirements of the qualifying activity.
8. Computer, telecommunication and surveillance systems (including their wiring or other links).
9. Refrigeration or cooling equipment.
10. Fire alarm systems; sprinkler and other equipment for extinguishing or containing fires.
11. Burglar alarm systems.
12. Strong rooms in bank or building society premises; safes.
13. Partition walls, where moveable and intended to be moved in the course of the qualifying activity.
14. Decorative assets provided for the enjoyment of the public in hotel, restaurant or similar trades.
15. Advertising hoardings; signs, displays and similar assets.
16. Swimming pools (including diving boards, slides & structures on which such boards or slides are mounted).
17. Any glasshouse constructed so that the required environment (namely, air, heat, light, irrigation and temperature) for the growing of plants is provided automatically by means of devices forming an integral part of its structure.
18. Cold stores.
19. Caravans provided mainly for holiday lettings.
20. Buildings provided for testing aircraft engines run within the buildings.
21. Moveable buildings intended to be moved in the course of the qualifying activity.
22. The alteration of land for the purpose only of installing Plant or Machinery.
23. The provision of dry docks.
24. The provision of any jetty or similar structure provided mainly to carry Plant or Machinery.
25. The provision of pipelines or underground ducts or tunnels with a primary purpose of carrying utility conduits.
26. The provision of towers to support floodlights.
27. The provision of –
  - a. any reservoir incorporated into a water treatment works, or
  - b. any service reservoir of treated water for supply within any housing estate or other particular locality.
28. The provision of –
  - a. silos provided for temporary storage, or
  - b. storage tanks.
29. The provision of slurry pits or silage clamps.
30. The provision of fish tanks or fish ponds.
31. The provision of rails, sleepers and ballast for a railway or tramway.
32. The provision of structures and other assets for providing the setting for any ride at an amusement park or exhibition.
33. The provision of fixed zoo cages.



List C is modified from April 2008 by the omission of “Electrical systems (including lighting systems) and cold water from item 2, the omission of item 3, and the omission of “Lifts, hoists, escalators and moving walkways” and their replacement by “Hoists” in item 6.

Capital Allowances on plant and machinery are given in the form of writing down allowances at the rate of 20% per annum on a reducing balance basis (see paragraph below about temporary reintroduction of first year allowances in 2009-10). For every £100 of qualifying expenditure £20 is claimable in year 1, £16 in year 2 and so on until either the all the allowances have been claimed or the asset is sold.

Allowances were given at the rate of 25% before April 2008.

### **Integral Features**

A new category of qualifying expenditure on “integral features” has been introduced from April 2008. The following items are integral features:

- An electrical system
- A cold water system
- A space or water heating system, a powered system of ventilation, air cooling or air purification, and any floor or ceiling comprised in such a system
- A lift, an escalator or a moving walkway
- External solar shading

The draft legislation also included active facades but these were subsequently omitted, the explanation given being that allowances are already given on the additional inner skin because it is part of the air-conditioning system.

The reduced writing down allowance of 10% per annum is available on integral features.

The new legislation also includes a rule that prevents a revenue deduction being obtained where expenditure is incurred that is more than 50% of the cost of replacing the integral feature.

### **Thermal Insulation**

For many years the addition of thermal insulation to an existing industrial building has been treated as qualifying for plant and machinery allowances. From April 2008 this has been extended to include all commercial buildings but not residential buildings.

The reduced writing down allowance of 10% per annum is available on thermal insulation

### **Long Life Assets**

The reduced writing down allowance of 10% per annum is available on long-life assets. Allowances were given at the rate of 6% before April 2008.

A long-life asset is defined as plant and machinery that can reasonably be expected to have a useful economic life of at least 25 years. The useful economic life is taken as the period from first use until it is likely to cease to be used as a fixed asset of any business. It is important to note that this likely to be a shorter period than an item's physical life.

Plant and machinery provided for use in a building used wholly or mainly as dwelling house, showroom, hotel, office or retail shop or similar premises, or for purposes ancillary to such use, cannot be long-life assets.

In contrast plant and machinery assets in buildings such as factories, cinemas, hospitals and so on are all potentially long-life assets.

### Case Law

The fact that an item appears in List C does not automatically mean that it will qualify for capital allowances. It only means that it may potentially qualify.

Guidance about the meaning of plant has to be found in case law. The cases go back a long way, beginning in 1887. The current state of the law on the meaning of plant derives from the decision in the case of *Wimpy International Ltd v Warland* and *Associated Restaurants Ltd v Warland* in the late 1980s.

The Judge in that case said that there were three tests to be applied when considering whether or not an item is plant.

1. Is the item stock in trade? If the answer yes, then the item is not plant.
2. Is the item used for carrying on the business? In order to pass the business use test the item must be employed in carrying on the business; it is not enough for the asset to be simply used in the business. For example, product display lighting in a retail store may be plant but general lighting in a warehouse would fail the test.
3. Is the item the business premises or part of the business premises? An item cannot be plant if it fails the premises test, i.e. if the business use is as the premises (or part of the premises) or place on which the business is conducted. The meaning of part of the premises in this context should not be confused with the law of real property. The Inland Revenue's internal manuals suggest there are four general factors to be considered, each of which is a question of fact and degree:
  - Does the item appear visually to retain a separate identity
  - With what degree of permanence has it been attached to the building
  - To what extent is the structure complete without it
  - To what extent is it intended to be permanent or alternatively is it likely to be replaced within a short period

There is obviously a core list of items that will usually qualify in the majority of cases. However, many other still need to be looked at on a case-by-case basis. For example, decorative assets in a hotel restaurant may be plant but similar assets in an office reception area would almost certainly not be.

One of the benefits of the new integral features rules, apart from simplification, is that items that did not qualify by applying these rules, such as general lighting in an office building, will now qualify albeit at the reduced rate.

### Refurbishment Schemes

Building refurbishment projects will typically be a mixture of capital costs and revenue expenses, unless the works are so extensive that they are more appropriately classified a redevelopment. A straightforward repair or a "like for like" replacement of part of an asset would be a revenue expense, meaning that the entire amount can be deducted from taxable profits in the same year.

Where capital expenditure is incurred that is incidental to the installation of plant or machinery then Section 25 of the 2001 Act allows it to be treated as part of the expenditure on the qualifying item. Incidental expenditure will often include parts of the building that would be otherwise disallowed, as shown in the Lists reproduced above. For example, the cost of forming a lift shaft inside an existing building would be deemed to be part of the expenditure on the provision of the lift.

*The extent of the application of section 25 was reviewed by the Special Commissioners for the first time in December 2007 in the case of JD Wetherspoon. The three key areas of expenditure considered were preliminaries where it was held that such costs could be allocated on a pro-rata basis; decorative timber panelling which was found to be part of the premises and so ineligible for allowances; and incidental building alterations of which enclosing walls to toilets and kitchens did not qualify but toilet cubicles and drainage did qualify along with the related sanitary fittings and kitchen equipment.*

### Annual Investment Allowance

The first year allowances previously available to small and medium sized enterprises have been withdrawn from April 2008.

They have been replaced with a new allowance available to all businesses of any size that allows a deduction for the whole of the first £50,000 of qualifying expenditure on plant and machinery.

### First Year Allowances

Temporary first year allowances have been reintroduced for businesses investing in plant and machinery between April 2009 and April 2010. It will be available to any size of business at the rate of 40%. The new allowance will apply to ordinary property businesses but not to integral features or long life assets.

### The Enhanced Capital Allowances Scheme

*The scheme is one of a series of measures introduced to ensure that the UK meets its target for reducing greenhouse gases under the Kyoto Protocol. 100% first year allowances are available on products included on the Energy Technology List published on the website at [www.eca.gov.uk](http://www.eca.gov.uk) and other technologies supported by the scheme. All businesses will be able to claim the enhanced allowances, but only investments in new and unused Machinery and Plant can qualify.*

There are currently 14 technologies and 55 sub-technologies covered by the scheme.

- Air-to-air energy recovery.
- Automatic monitoring and targeting.
- Boiler equipment.
- Combined heat and power.
- Compact heat exchangers.
- Compressor air equipment.
- Heat pumps.
- HVAC zone controls.
- Lighting.
- Motors and drives.
- Pipe work insulation.
- Refrigeration equipment.
- Solar thermal systems.
- Warm air and radiant heaters.

The Finance Act 2003 introduced a new category of environmentally beneficial plant and machinery qualifying for 100% first-year allowances. The Water Technology List includes 14 technologies,

- Cleaning in place equipment.
- Efficient showers
- Efficient taps.
- Efficient toilets.
- Efficient washing machines.
- Flow controllers.
- Leakage detection equipment.
- Meters and monitoring equipment.
- Rainwater harvesting equipment.
- Small scale slurry and sludge dewatering equipment.
- Vehicle wash water reclaim units.
- Water efficient industrial cleaning equipment.
- Water management equipment for mechanical seals.
- Efficient membrane filtration systems.

The list of qualifying technologies will be extended to include uninterruptible power supplies and 2 new sub technologies in 2009, whilst 3 existing sub technologies will be removed.

Buildings and structures and long life assets as defined above cannot qualify under the scheme. However, following the introduction of the integral features rules lighting in any non residential building may potentially qualify for enhanced capital allowances if it meets the relevant criteria.

A limited payable ECA tax credit equal to 19% of the loss surrendered was also introduced in April 2008.

### **Industrial Building Allowances**

An industrial building (or structure) is defined in Sections 271 and 274 of the 2001 Act and includes buildings used for the following qualifying purposes:

- Manufacturing
- Processing
- Storage
- Agricultural contracting
- Working foreign plantations
- Fishing
- Mineral extraction

The following undertakings are also qualifying trades:

- Electricity
- Water
- Hydraulic power
- Sewerage
- Transport
- Highway undertakings
- Tunnels
- Bridges
- Inland navigation
- Docks

The definition is extended to include buildings provided for the welfare of workers in a qualifying trade and sports pavilions provided and used for the welfare of workers in any trade. Vehicle repair workshops and roads on industrial estates may also form part of the qualifying expenditure.

Retail shops, showrooms, offices, dwelling houses and buildings used ancillary to a retail purpose are specifically excluded.

The Government announced in 2007 that Industrial Building Allowances (along with Enterprise Zone, Hotel and Agricultural Building Allowances) will be abolished by 2011, with a phased withdrawal beginning in 2008.

Writing-Down Allowances

Allowances are given on qualifying expenditure at the rate of 4% per annum on a straight-line basis over 25 years. The allowance is given if the building is being used for a qualifying purpose on the last day of the accounting period. Where the building is used for a non-qualifying purpose the year's allowance is lost.

The rate will be reduced to 3% for 2008-09, 2% for 2009-10, 1% for 2010-11 and 0% for 2011 onwards.

From 21 March 2007 a balancing adjustment is no longer made on the sale of an industrial building. A purchaser of a used industrial building will be entitled to allowances based on the vendor's tax written down value, rather than the original construction cost adjusted for any periods of non-qualifying use.

The allowances will still be spread equally over the remaining period to the date twenty-five years after first use. However, even if the building was acquired prior to 21 March 2007, whatever the annual allowance given in 2007-08, it will be reduced to  $\frac{3}{4}$  of that amount in 2008-09,  $\frac{1}{2}$  in 2009-10,  $\frac{1}{4}$  in 2010-11 and zero from 2011 onwards.

### Hotel Allowances

Industrial Building Allowances are also available on capital expenditure incurred on constructing a "qualifying hotel". The building must not only be a "hotel" in the normal sense of the word, but must also be a "qualifying hotel" as defined in Section 279 of the 2001 Act, which means satisfying the following conditions:

- The accommodation is in buildings of a permanent nature
- It is open for at least 4 months in the season (April to October)
- It has 10 or more letting bedrooms
- The sleeping accommodation consists wholly or mainly of letting bedrooms
- The services that it provides include breakfast and an evening meal (i.e. there must be a restaurant), the making of beds and cleaning of rooms.

A hotel may be in more than one building and swimming pools, car parks and similar amenities are included in the definition.

### Enterprise Zones

A 100% first year allowance is available on capital expenditure incurred on the construction (or the purchase within two years of first use) of any commercial building within a designated enterprise zone, within ten years of the site being so designated. Like other allowances given under the industrial buildings code the building has a life of twenty-five years for tax purposes.

The majority of enterprise zones had reached the end of their ten-year life by 1993. However, in certain very limited circumstances it may still be possible to claim these allowances up to twenty years after the site was first designated.

### Flats Over Shops

Tax relief is available on capital expenditure incurred on or after 11 May 2001 on the renovation or conversion of vacant or underused space above shops and other commercial premises to provide flats for rent.

In order to qualify the property must have been built with 1980 and the expenditure incurred on, or in connection with:

- Converting part of a qualifying building into a qualifying flat.
- Renovating an existing flat in a qualifying building if the flat is, or will be a qualifying flat.
- Repairs incidental to conversion or renovation of a qualifying flat, and
- The cost of providing access to the flat(s).

The property must not have more than 4 storeys above the ground floor and it must appear that, when the property was constructed, the floors above the ground floor were primarily for residential use. The ground floor must be authorised for business use at the time of the conversion work and for the period during which the flat is held for letting. Each new flat must be a self-contained dwelling, with external access separate from the ground-floor premises. It must have no more than 4 rooms, excluding kitchen and bathroom. None flats can be "high value" flats, as defined in the legislation. The new flats must be available for letting as a dwelling for a period of not more than 5 years.

An initial allowance of 100 per cent is available or, alternatively, a lower amount may be claimed, in which case the balance may be claimed at a rate of 25 per cent per annum in subsequent a years. The allowances may be recovered if the flat is sold or ceases to be let within 7 years.

**Business Premises Renovation Allowance**

The Business Premises Renovation Allowance (BPRA) was first announced in December 2003. The idea behind the scheme is to bring long-term vacant properties back into productive use by providing 100 per cent capital allowances for the cost of renovating and converting unused premises in disadvantaged areas. The legislation was included in Finance Act 2005 and was finally implemented on 11 April 2007 following EU state aid approval.

The legislation is identical in many respects to that for flat conversion allowances. The scheme will apply to properties within one of the areas specified in the Assisted Areas Order 2007 and Northern Ireland.

BPRA will be available to both individuals and companies who own or lease business property that has been unused for 12 months or more. Allowances will be available to a person who incurs qualifying capital expenditure on the renovation of business premises.

**Agricultural Building Allowances**

Allowances are available on capital expenditure incurred on the construction of buildings and works for the purposes of husbandry on land in the UK. Agricultural building means a building such as a farmhouse or farm building, a fence or other works. A maximum of only one-third of the expenditure on a farmhouse may qualify.

Husbandry includes any method of intensive rearing of livestock or fish on a commercial basis for the production of food for human consumption, and the cultivation of short rotation coppice. Over the years the Courts have held that sheep grazing and poultry farming are husbandry, and that a dairy business and the rearing of pheasants for sport are not. Where the use is partly for other purposes the expenditure can be apportioned.

The rate of allowances available and the way in which the system operates is very similar to that described above for industrial buildings. However, no allowance is ever given if the first use of the building is not for husbandry. A different treatment is also applied following acquisition of a used building unless the parties to the transaction elect otherwise.

**Other Capital Allowances**

Other types of allowances include those available for capital expenditure on Mineral Extraction, Research and Development, Know-How, Patents, Dredging and Assured Tenancy.

# Value Added Tax

## Introduction

Value Added Tax (VAT) is a tax on the consumption of goods and services. The UK adopted VAT when it joined the European Community in 1973. The principal source of European law in relation to VAT is Council Directive 2006/112/EC, a recast of Directive 77/388/EEC which is currently restated and consolidated in the UK through the VAT Act 1994 and various Statutory Instruments, as amended by subsequent Finance Acts.

*VAT Notice 708: Buildings and construction (June 2007)* gives an interpretation of the law in connection with construction works from the point of view of HM Revenue & Customs. VAT tribunals and court decisions since the date of this publication will affect the application of the law in certain instances. The Notice is available on HM Revenue & Customs website at [www.hmrc.gov.uk](http://www.hmrc.gov.uk).

## The scope of VAT

VAT is payable on:

- Supplies of goods and services made in the UK
- By a taxable person
- In the course or furtherance of business; and
- Which are not specifically exempted or zero-rated.

## Rates of VAT

There are three rates of VAT:

- A standard rate, currently 15% (until 31<sup>st</sup> December 2009)
- A reduced rate, currently 5%; and
- A zero rate.

Additionally some supplies are exempt from VAT and others are outside the scope of VAT.

## Recovery of VAT

When a taxpayer makes taxable supplies he must account for VAT at the appropriate rate of either 15% or 5%. This VAT then has to be passed to HM Revenue & Customs and will normally be charged to the taxpayer's customers.

As a VAT registered person, the taxpayer can reclaim from HM Revenue & Customs as much of the VAT incurred on their purchases as relates to the standard-rated, reduced-rated and zero-rated onward supplies they make. A person cannot however reclaim VAT that relates to any non-business activities (but see below) or to any exempt supplies they make.

At predetermined intervals the taxpayer will pay to HM Revenue & Customs the excess of VAT collected over the VAT they can reclaim. However if the VAT reclaimed is more than the VAT collected, the taxpayer can reclaim the difference from HM Revenue & Customs.

### Example

X Ltd constructs a block of flats. It sells long leases to buyers for a premium. X Ltd has constructed a new building designed as a dwelling and will have granted a long lease. This sale of a long lease is VAT zero-rated. This means any VAT incurred in connection with the development that which X Ltd will have paid (e.g. payments for consultants and certain preliminary services) will be reclaimable. For reasons detailed below the builder employed by X Ltd will not have charged VAT on his construction services.

### Use for Business and Non Business Activities

Where VAT relates partly to business use and partly to non-business use then the basic rule is that it must be apportioned so that only the business element is potentially recoverable. However in some cases VAT on land, buildings and certain construction services purchased for both business and non-business use can be recovered in full by applying what is known as the "Lennartz" mechanism to reclaim the VAT relating to the non-business use and account for VAT on the non business use over a maximum period of 10 years. Legislation regulating the use of the "Lennartz" mechanism was eventually introduced on 1 November 2007.

### Taxable Persons

A taxable person is an individual, firm, company etc who is required to be registered for VAT. A person who makes taxable supplies above certain value limits is required to be registered. The current registration limit is £68,000 for 2009-10. The threshold is exceeded if at the end of any month the value of taxable supplies in the period of one year then ending is over the limit, or at any time, if there are reasonable grounds for believing that the value of the taxable supplies in the period of 30 days than beginning will exceed £68,000.

A person who makes taxable supplies below these limits is entitled to be registered on a voluntary basis if they wish, for example in order to recover VAT incurred in relation to those taxable supplies.

In addition, a person who is not registered for VAT in the UK but acquires goods from another EC member state, or make distance sales in the UK, above certain value limits may be required to register for VAT in the UK.

### VAT Exempt Supplies

If a supply is exempt from VAT this means that no tax is payable – but equally the person making the exempt supply cannot normally recover any of the VAT on their own costs relating to that supply.

Generally property transactions such as leasing of land and buildings are exempt unless a landlord chooses to standard-rate its supplies by a process known as opting to tax. This means that VAT is added to rental income and also that VAT incurred, on say, an expensive refurbishment, is recoverable.

### Supplies outside the scope of VAT

Supplies are outside the scope of VAT if they are:

- Made by someone who is not a taxable person
- Made outside the UK; or
- Not made in the course or furtherance of business

### In course or furtherance of business

VAT must be accounted for on all taxable supplies made in the course or furtherance of business with the corresponding recovery of VAT on expenditure incurred.

If a taxpayer also carries out non-business activities then VAT incurred in relation to such supplies is generally not recoverable.



In VAT terms, business means any activity continuously performed which is mainly concerned with making supplies for a consideration. This includes:

- Any one carrying on a trade, vocation or profession;
- The provision of membership benefits by clubs, associations and similar bodies in return for a subscription or other consideration; and
- Admission to premises for a charge.

It may also include the activities of other bodies including charities and non-profit making organisations.

Examples of non-business activities are:

- Providing free services or information;
- Maintaining some museums or particular historic sites;
- Publishing religious or political views.

### **Construction Services**

In general the provision of construction services by a contractor will be VAT standard rated at 15%, however, there are a number of exceptions for construction services provided in relation to certain residential and charitable use buildings.

The supply of building materials is VAT standard rated at 15%, however, where these materials are supplied as part of the construction services the VAT liability of those materials follows that of the construction services supplied.

### **Zero-rated construction services**

The following construction services are VAT zero-rated including the supply of related building materials.

#### **The construction of new dwellings**

The supply of services in the course of the construction of a building designed for use as a dwelling or number of dwellings is zero-rated other than the services of an architect, surveyor or any other person acting as a consultant or in a supervisory capacity.

The following conditions must be satisfied in order for the works to qualify for zero-rating:

1. The work must not amount to the conversion, reconstruction or alteration of an existing building;
2. The work must not be an enlargement of, or extension to, an existing building except to the extent that the enlargement or extension creates an additional dwelling or dwellings;
3. The building must be designed as a dwelling or number of dwellings. Each dwelling must consist of self-contained living accommodation with no provision for direct internal access from the dwelling to any other dwelling or part of a dwelling;
4. Statutory planning consent must have been granted for the construction of the dwelling, and construction carried out in accordance with that consent;
5. Separate use or disposal of the dwelling must not be prohibited by the terms of any covenant, statutory planning consent or similar provision.

The construction of a garage at the same time as the dwelling can also be zero-rated as can the demolition of any existing building on the site of the new dwelling

A building only ceases to be an existing building (see points 1. and 2. above) when it is:

1. Demolished completely to ground level; or when
2. The part remaining above ground level consists of no more than a single façade (or a double façade on a corner site) the retention of which is a condition or requirement of statutory planning consent or similar permission.

### **The construction of a new building for 'relevant residential or charitable' use**

The supply of services in the course of the construction of a building designed for use as a relevant residential or charitable building is zero-rated other than the services of an architect, surveyor or any other person acting as a consultant or in a supervisory capacity.

A 'relevant residential' use building means:

1. A home or other institution providing residential accommodation for children;
2. A home or other institution providing residential accommodation with personal care for persons in need of personal care by reason of old age, disablement, past or present dependence on alcohol or drugs or past or present mental disorder;
3. A hospice;
4. Residential accommodation for students or school pupils
5. Residential accommodation for members of any of the armed forces;
6. A monastery, nunnery, or similar establishment; or
7. An institution which is the sole or main residence of at least 90% of its residents.

### **The construction of a new building for 'relevant residential or charitable' use – continued**

A 'relevant residential' purpose building does not include use as a hospital, a prison or similar institution or as a hotel, inn or similar establishment.

A 'relevant charitable' use means use by a charity:

1. Otherwise than in the course or furtherance of a business; or
2. As a village hall or similarly in providing social or recreational facilities for a local community.

Non qualifying use which is not expected to exceed 10% of the time the building is normally available for use can be ignored. The calculation of business use can be based on time, floor area or head count subject to approval being acquired from HM Revenue & Customs.

The construction services can only be zero-rated if a certificate is given by the end user to the contractor carrying out the works confirming that the building is to be used for a qualifying purpose i.e. for a 'relevant residential or charitable' purpose. It follows that such services can only be zero-rated when supplied to the end user and, unlike supplies relating to dwellings, supplies by sub contractors cannot be zero-rated.

### **The construction of an annex used for a 'relevant charitable' purpose**

Construction services provided in the course of construction of an annexe for use entirely or partly for a 'relevant charitable' purpose can be zero-rated.

In order to qualify the annexe must:

1. Be capable of functioning independently from the existing building;
2. Have its own main entrance; and
3. Be covered by a qualifying use certificate.

The conversion of a non-residential building into dwellings or the conversion of a building from non-residential use to 'relevant residential' use where the supply is to a 'relevant' housing association

The supply to a 'relevant' housing association in the course of conversion of a non-residential building or non-residential part of a building into:

1. A building or part of a building designed as a dwelling or number of dwellings; or
2. A building or part of a building for use solely for a relevant residential purpose,

of any services related to the conversion other than the services of an architect, surveyor or any person acting as a consultant or in a supervisory capacity are zero-rated.

A 'relevant' housing association is defined as:

1. A registered social landlord within the meaning of Part I of the Housing Act 1996
2. A registered housing association within the meaning of the Housing Associations Act 1985 (Scottish registered housing associations), or
3. A registered housing association within the meaning of Part II of the Housing (Northern Ireland) Order 1992 (Northern Irish registered housing associations).

If the building is to be used for a 'relevant residential' purpose the housing association should issue a qualifying use certificate to the contractor completing the works.

### **The construction of a permanent park for residential caravans**

The supply in the course of the construction of any civil engineering work 'necessary for' the development of a permanent park for residential caravans of any services related to the construction can be VAT zero-rated. This includes access roads, paths, drainage, sewerage and the installation of mains water, power and gas supplies.

### **Certain building alterations for "disabled" persons**

Certain goods and services supplied to a "disabled" person, or a charity making these items and services available to "disabled" persons can be zero-rated. The recipient of these goods or services needs to give the supplier an appropriate written declaration that they are entitled to benefit from zero rating.

The following services (amongst others) are zero-rated:

1. the installation of specialist lifts and hoists and their repair and maintenance
2. the construction of ramps, widening doorways or passageways including any preparatory work and making good work
3. the provision, extension and adaptation of a bathroom, washroom or lavatory; and
4. emergency alarm call systems

### **Approved alterations to protected buildings**

A supply in the course of an 'approved alteration' to a 'protected building' of any services other than the services of an architect, surveyor or any person acting as consultant or in a supervisory capacity can be zero-rated.

A 'protected building' is defined as a building that is:

1. designed to remain as or become a dwelling or number of dwellings after the alterations; or
2. is intended for use for a 'relevant residential or charitable purpose' after the alterations; and which is;
3. a listed building or scheduled ancient monument.

A listed building does not include buildings that are in conservation areas, but not on the statutory list, or buildings included in non-statutory local lists.

An 'approved alteration' is an alteration to a 'protected building' that requires and has obtained listed building consent or scheduled monument consent. This consent is necessary for any works that affect the character of a building of special architectural or historic interest.

It is important to note that 'approved alterations' do not include any works of repair or maintenance or any incidental alteration to the fabric of a building that results from the carrying out of repairs or maintenance work.

A 'protected building' that is intended for use for a 'relevant residential or charitable purpose' will require the production of a qualifying use certificate by the end user to the contractor providing the alteration services.

Listed Churches are 'relevant charitable' use buildings and where 'approved alterations' are being carried out zero-rate VAT can be applied. Additionally since April 1 2004, listed places of worship can apply for a grant for repair and maintenance works equal to the full amount of VAT paid on eligible works carried out on or after 1 April 2004. Information relating to the scheme can be obtained from the website at [www.ipwscheme.org.uk](http://www.ipwscheme.org.uk).

### **DIY Builders and Converters**

Private individuals who decide to construct their own home are able to reclaim VAT they pay on goods they use to construct their home by use of a special refund mechanism made by way of an application to HM Revenue & Customs. This also applies to services provided in the conversion of an existing non-residential building to form a new dwelling.

The scheme is meant to ensure that private individuals do not suffer the burden of VAT if they decide to construct their own home.

Charities may also qualify for a refund on the purchase of materials incorporated into a building used for non-business purposes where they provide their own free labour for the construction of a 'relevant charitable' use building.

### **Reduced-rated construction services**

The following construction services are subject to the reduced rate of VAT of 5%, including the supply of related building materials.

#### **A changed number of dwellings conversion**

In order to qualify for the 5% rate there must be a different number of 'single household dwellings' within a building than there were before commencement of the conversion works. A 'single household dwelling' is defined as a dwelling that is designed for occupation by a single household.

These conversions can be from 'relevant residential' purpose buildings, non-residential buildings and houses in multiple occupation.

#### **A house in multiple occupation conversion**

This relates to construction services provided in the course of converting a 'single household dwelling', a number of 'single household dwellings', a non-residential building or a 'relevant residential' purpose building into a house for multiple occupation such as a bed sit accommodation.

#### **A special residential conversion**

A special residential conversion involves the conversion of a 'single household dwelling', a house in multiple occupation or a non-residential building into a 'relevant residential' purpose building such as student accommodation or a care home.

### **Renovation of derelict dwellings**

The provision of renovation services in connection with a dwelling or 'relevant residential' purpose building that has been empty for two or more years prior to the date of commencement of construction works can be carried out at a reduced rate of VAT of 5%.

**Installation of energy saving materials**

The supply and installation of certain energy saving materials including insulation, draught stripping, central heating and hot water controls and solar panels in a residential building or a building used for a relevant charitable purpose.

**Grant-funded of heating equipment or connection of a gas supply**

The grant funded supply and installation of heating appliances, connection of a mains gas supply, supply, installation, maintenance and repair of central heating systems, and supply and installation of renewable source heating systems, to qualifying persons. A qualifying person is someone aged 60 or over or is in receipt of various specified benefits.

**Installation of security goods**

The grant funded supply and installation of security goods to a qualifying person.

**Housing alterations for the elderly**

Certain home adaptations that support the needs of elderly people were reduced rated with effect from 1 July 2007.

**Building Contracts****Design and build contracts**

If a contractor provides a design and build service relating to works to which the reduced or zero rate of VAT is applicable then any design costs incurred by the contractor will follow the VAT liability of the principal supply of construction services.

**Management contracts**

A management contractor acts as a main contractor for VAT purposes and the VAT liability of his services will follow that of the construction services provided. If the management contractor only provides advice without engaging trade contractors his services will be VAT standard rated.

**Construction Management and Project Management**

The project manager or construction manager is appointed by the client to plan, manage and co-ordinate a construction project. This will involve establishing competitive bids for all the elements of the work and the appointment of trade contractors. The trade contractors are engaged directly by the client for their services.

The VAT liability of the trade contractors will be determined by the nature of the construction services they provide and the building being constructed.

The fees of the construction manager or project manager will be VAT standard rated. If the construction manager also provides some construction services these works may be zero or reduced rated if the works qualify.

**Liquidated and Ascertained Damages**

Liquidated damages are outside of the scope of VAT as compensation. The employer should not reduce the VAT amount due on a payment under a building contract on account of a deduction of damages. In contrast an agreed reduction in the contract price will reduce the VAT amount.

Similarly, in certain circumstances HM Revenue & Customs may agree that a claim by a contractor under a JCT or other form of contract is also compensation payment and outside the scope of VAT.



# The Aggregates Levy

The Aggregates Levy came into operation on 1 April 2002 in the UK, except for Northern Ireland where it has been phased in over five years from 2003.

It was introduced to ensure that the external costs associated with the exploitation of aggregates are reflected in the price of aggregate, and to encourage the use of recycled aggregate. There continues to be strong evidence that the levy is achieving its environmental objectives, with sales of primary aggregate down and production of recycled aggregate up. The Government expects that the rates of the levy will at least keep pace with inflation over time, although it accepts that the levy is still bedding in.

The rate of the levy increased to £2.00 per tonne from 1 April 2009 and is levied on anyone considered to be responsible for commercially exploiting 'virgin' aggregates in the UK and should naturally be passed by price increase to the ultimate user.

All materials falling within the definition of 'Aggregates' are subject to the levy unless specifically exempted.

It does not apply to clay, soil, vegetable or other organic matter.

The intention is that it will:

- Encourage the use of alternative materials that would otherwise be disposed of to landfill sites.
- Promote development of new recycling processes, such as using waste tyres and glass
- Promote greater efficiency in the use of virgin aggregates
- Reduce noise and vibration, dust and other emissions to air, visual intrusion, loss of amenity and damage to wildlife habitats

## Definitions

'Aggregates' means any rock, gravel or sand which is extracted or dredged in the UK for aggregates use. It includes whatever substances are for the time being incorporated in it or naturally occur mixed with it.

'Exploitation' is defined as involving any one or a combination of any of the following:

- Being removed from its original site
- Becoming subject to a contract or other agreement to supply to any person
- Being used for construction purposes
- Being mixed with any material or substance other than water, except in permitted circumstances

## Incidence

It is a tax on primary aggregates production – i.e. 'virgin' aggregates won from a source and used in a location within the UK territorial boundaries (land or sea). The tax is not levied on aggregates which are exported or on aggregates imported from outside the UK territorial boundaries.

It is levied at the point of sale.

**Exemption from tax**

An 'aggregate' is exempt from the levy if it is:

- Material which has previously been used for construction purposes
- Aggregate that has already been subject to a charge to the Aggregates Levy
- Aggregate which was previously removed from its originating site before the start date of the levy
- Aggregate which is being returned to the land from which it was won
- Aggregate won from a farm land or forest where used on that farm or forest
- Rock which has not been subjected to an industrial crushing process
- Aggregate won by being removed from the ground on the site of any building or proposed building in the course of excavations carried out in connection with the modification or erection of the building and exclusively for the purpose of laying foundations or of laying any pipe or cable
- Aggregate won by being removed from the bed of any river, canal or watercourse or channel in or approach to any port or harbour (natural or artificial), in the course of carrying out any dredging exclusively for the purpose of creating, restoring, improving or maintaining that body of water
- Aggregate won by being removed from the ground along the line of any highway or proposed highway in the course of excavations for improving, maintaining or constructing the highway otherwise than purely to extract the aggregate
- Drill cuttings from petroleum operations on land and on the seabed
- Aggregate resulting from works carried out in exercise of powers under the New Road and Street Works Act 1991, the Roads (Northern Ireland) Order 1993 or the Street Works (Northern Ireland) Order 1995
- Aggregate removed for the purpose of cutting of rock to produce dimension stone, or the production of lime or cement from limestone.
- Aggregate arising as a waste material during the processing of the following industrial minerals:
  - ball clay
  - barites
  - calcite
  - china clay
  - coal, lignite, slate or shale
  - feldspar
  - flint
  - fluorspar
  - fuller's earth
  - gems and semi-precious stones
  - gypsum
  - any metal or the ore of any metal
  - muscovite
  - perlite
  - potash
  - pumice
  - rock phosphates
  - sodium chloride
  - talc
  - vermiculite

However, the levy is still chargeable on any aggregates arising as the spoil or waste from or the by-products of the above exempt processes. This includes quarry overburden.

Anything that consists 'wholly or mainly' of the following is exempt from the levy (note that 'wholly' is defined as 100% but 'mainly' as more than 50%, thus exempting any contained aggregates amounting to less than 50% of the original volumes:



- clay, soil, vegetable or other organic matter
- coal, slate or shale
- china clay waste and ball clay waste

Relief from the levy either in the form of credit or repayment is obtainable where:

- it is subsequently exported from the UK in the form of aggregate
- it is used in an exempt process
- where it is used in a prescribed industrial or agricultural process
- it is waste aggregate disposed of by dumping or otherwise, e.g. sent to landfill or returned to the originating site

A new exemption for aggregate obtained as a by-product of railway, tramway and monorail improvement, maintenance and construction was introduced in 2007.

### Discounts

From 1 July 2005 the standard added water percentage discounts listed below can be used. Alternatively a more exact percentage can be agreed and this must be done for dust dampening of aggregates.

- washed sand 7%
- washed gravel 3.5%
- washed rock/aggregate 4%

### Impact

The British Aggregates Association suggests that the additional cost imposed by quarries is more likely to be in the order of £2.765 per tonne on mainstream products, applying an above average rate on these in order that by-products and low grade waste products can be held at competitive rates, as well as making some allowance for administration and increased finance charges.

With many gravel aggregates costing in the region of £16.00 to £18.00 per tonne, there is a significant impact on construction costs.

### Avoidance

An alternative to using new aggregates in filling operations is to crush and screen rubble which may become available during the process of demolition and site clearance as well as removal of obstacles during the excavation processes.

Example: Assuming that the material would be suitable for fill material under buildings or roads, a simple cost comparison would be as follows (note that for the purpose of the exercise, the material is taken to be 1.80 tonne per m<sup>3</sup> and the total quantity involved less than 1,000 m<sup>3</sup>):

<b>Importing fill material:</b>	<b>£/m<sup>3</sup></b>	<b>£/tonne</b>
Cost of 'new' aggregates delivered to site	31.23	17.35
Addition for Aggregates Tax	3.51	1.95
<b>Total cost of importing fill materials</b>	<b>34.74</b>	<b>19.30</b>

<b>Disposing of site material:</b>	<b>£/m<sup>3</sup></b>	<b>£/tonne</b>
Cost of removing materials from site materials	21.52	11.95

<b>Crushing site materials:</b>	<b>£/m<sup>3</sup></b>	<b>£/tonne</b>
Transportation of material from excavations or demolition to stockpiles	3.00	1.67
Transportation of material from temporary stockpiles to the crushing plant	4.00	2.22
Establishing plant and equipment on site; removing on completion	2.00	1.11
Maintain and operate plant	9.00	5.00
Crushing hard materials on site	13.00	7.22
Screening material on site	2.00	1.11
<b>Total cost of crushing site materials</b>	<b>33.00</b>	<b>18.33</b>

From the above it can be seen that potentially there is a great benefit in crushing site materials for filling rather than importing fill materials.

Setting the cost of crushing against the import price would produce a saving of £1.74 per m<sup>3</sup>. If the site materials were otherwise intended to be removed from the site, then the cost benefit increases by the saved disposal cost to £23.26 per m<sup>3</sup>.

Even if there is no call for any or all of the crushed material on site, it ought to be regarded as a useful asset and either sold on in crushed form or else sold with the prospects of crushing elsewhere.

<b>Specimen Unit rates</b>	<b>Unit</b>	<b>£</b>
Establishing plant and equipment on site; removing on completion		
crushing plant	trip	1,200.00
screening plant	trip	600.00
Maintain and operate plant		
crushing plant	week	7,200.00
screening plant	week	1,800.00
Transportation of material from excavations or demolition places to temporary stockpiles	m <sup>3</sup>	3.00
Transportation of material from temporary stockpiles to the crushing plant	m <sup>3</sup>	2.40
Breaking up material on site using impact breakers		
mass concrete	m <sup>3</sup>	14.00
reinforced concrete	m <sup>3</sup>	16.00
Brickwork	m <sup>3</sup>	6.00
Crushing material on site		
mass concrete not exceeding 1000m <sup>3</sup>	m <sup>3</sup>	13.00
mass concrete 1000 - 5000m <sup>3</sup>	m <sup>3</sup>	12.00
mass concrete over 5000m <sup>3</sup>	m <sup>3</sup>	11.00
reinforced concrete not exceeding 1000m <sup>3</sup>	m <sup>3</sup>	15.00
reinforced concrete 1000 - 5000m <sup>3</sup>	m <sup>3</sup>	14.00
reinforced concrete over 5000m <sup>3</sup>	m <sup>3</sup>	13.00
brickwork not exceeding 1000m <sup>3</sup>	m <sup>3</sup>	12.00
brickwork 1000 - 5000m <sup>3</sup>	m <sup>3</sup>	11.00
brickwork over 5000m <sup>3</sup>	m <sup>3</sup>	10.00
Screening material on site	m <sup>3</sup>	2.00

More detailed information can be found on the HMRC website ([www.hmrc.gov.uk](http://www.hmrc.gov.uk)) in Notice AGL 1 Aggregates Levy published in August 2004.

# Preliminaries and General Items

*This part deals with that portion of Civil Engineering costs not, or only indirectly, related to the actual quantity of work being carried out. It comprises a definition of Method Related Charges, a checklist of items to be accounted for on a typical Civil Engineering contract and a worked example illustrating how the various items on the checklist can be dealt with.*

## GENERAL REQUIREMENTS AND METHOD RELATED CHARGES

Although the more familiar terminology of Preliminaries and General Items is used in this book the principle of Method Related Charges separating non quantity related charges from quantity related charges is adopted. Generally the former are dealt with in this part, while the latter are dealt with in Part 4: Unit Costs. In this part non quantity related charges are further subdivided into those that are time related and those that are non time related.

The concept of METHOD RELATED CHARGES can be summarised as follows:

In commissioning Civil Engineering work the Employer buys the materials left behind, but only hires from the Contractor the men and machines which manipulate them, and the management skills to manipulate them effectively. It is logical to assess their values in the same terms as the origin of their costs. It is illogical not to do so if the Employer is to retain the right at any time to vary what is left behind and if the financial uncertainties affecting Employer and Contractors are to be minimised.

Tenderers have the option to define a group of bill items and insert charges against them to cover those expected costs which are not proportional to the quantities of Permanent Works. To distinguish these items they are called Method Related Charges. They are themselves divided into charges for recurrent or time related cost elements, such as maintaining site facilities or operating major plant, and charges for elements which are neither recurrent nor directly related to quantities, such as setting up, bringing plant to site and 'Temporary Works'.

Another hope expressed with the introduction of Method Related Charges was that they should accurately reflect the work described in the item and that they should not, as had become the practice with some of the vague general items frequently included in Civil Engineering Bills, be used as a home for lump sum tender adjustments quite unrelated to the item. Where cost information is given in the worked example presented at the end of this part of the book, therefore, it must be stressed that only direct and relevant costs are quoted.

Where no detailed information is available, it is suggested that when preparing a preliminary estimate an addition of between 15% and 25% of net contract value is made to cover Contractor's Site Oncosts, both time and non time related.

## CHECKLIST OF ITEMS

The following checklist is representative but not exhaustive. It lists and describes the major preliminary and general items which are included, implicitly or explicitly, in a typical Civil Engineering contract and, where appropriate, gives an indication of how they might be costed. Generally contract documents give detailed requirements for the facilities and equipment to be provided for the Employer and for the Engineer's representative and Bills of Quantities produced in conformity with CESMM3 Class A provide items against which these may be priced; no such items are provided for Contractor's site oncots or, usually, for temporary works and general purpose plant. For completeness a checklist of both types of item is given here under the following main headings:

Contractor's site oncots	time related non time related
Employer's and consultants' site requirements	time related non time related
site requirements	time related non time related
Other services, charges and fees	
Temporary works (other than those included in unit costs)	
General purpose plant (other than that included in unit costs)	

**CONTRACTOR'S SITE ONCOSTS TIME RELATED****Site staff salaries**

All nonproductive supervisory staff on site including: agent, subagent, engineers, general foremen, nonproductive section foremen, clerks, typists, timekeepers, checkers, quantity surveyors, cost engineers, security guards, etc. Cost includes salaries, subsistence allowance, National Health Insurance and Pension Scheme contributions, etc. Average cost approximately 3% to 5% of contract value.

**Site staff expenses**

Travelling, hotel and other incidental expenses incurred by staff. Average cost approximately 1% of staff salaries.

**Attendant labour**

Chainmen, storemen, drivers for staff vehicles, watchmen, cleaners, etc.

**General yard labour**

Labour employed on loading and offloading stores, general site cleaning, removal of rubbish, etc.

**Plant maintenance**

Fitters, electricians, and assistants engaged on general plant maintenance on site. This excludes drivers and banksmen who are provided for specifically in the Unit Costs Sections.

**Site transport for staff and general use**

Vehicles provided for use of staff and others including running costs, licence and insurance and maintenance if not carried out by site fitters.

**Transport for labour to and from site**

Buses or coaches provided for transporting employees to and from site including cost of drivers and running costs, etc., or charges by coach hire company for providing this service.

**Contractor's office rental**

This includes:

- rental charges for provision of offices for Contractor's staff
- main office
- section offices
- timekeepers, checkers and security
- laboratory, etc.
- an allowance of approximately 8 m<sup>2</sup> per staff member should be made

**Contractor's site huts**

Rental charges for stores and other general use site huts

**Canteen and welfare huts**

Rental charges for canteen and huts for other welfare facilities required under Rule XVI of the Working Rule Agreement

**Rates**

Chargeable by local authorities on any site, temporary buildings or quarry

**General office expenditure**

Provision of postage, stationery and other consumables for general office use

**Telecommunications**

Rental charges and charges for calls

**Furniture and equipment**

Rental charges for office furniture and equipment including photocopiers, calculators, personal computers and laser printers, etc.

**Surveying equipment**

Rental

**Canteen and welfare equipment**

Rental charges for canteen and other welfare equipment

**Radio communication equipment**

Rental

**Testing and laboratory equipment**

Rental

**Lighting and heating for offices and huts**

Electricity, gas or other charges in connection with lighting and heating site offices and hutting

**Site lighting electrical consumption**

Electricity charges in connection with general external site lighting

**Water consumption**

Water rates and charges

**Canteen operation**

Labour, consumables and subsidy costs in operating site canteens

**Carpenter's shop equipment**

Rental of building and mechanical equipment

**Fitter's shop equipment**

Rental of building and equipment

**Small tools**

Provision of small tools and equipment for general use on site. Average cost 5% of total labour cost

**Personal protective equipment**

Provision of protective clothing for labour including boots, safety helmets, etc. Average cost 2% of total labour cost

**Traffic control**

Hire and operation of traffic lights

**Road lighting**

Hire and operation of road lighting and traffic warning lights

**Cleaning vehicles**

Equipment and labour cleaning vehicles before entering public roads

**Cleaning roads and footpaths**

Equipment and labour cleaning public roads and footpaths

**Progress photographs for Contractor's records**

Cost of taking and processing photographs to demonstrate progress

**CONTRACTOR'S SITE ONCOSTS NON TIME RELATED****Rent of additional land**

For Contractor's use for erection of huts, storage of soil and other materials, etc.

**Staff removal expenses**

Costs of staff moving house to new location. Generally only applies on longerterm contracts.

**Erection of offices including drainage, paths, etc.**

Construction of foundations, drainage, footpaths and parking areas, erection of huts, installation of electric wiring, in situ fittings and decorating, etc.

**Dismantle offices and restore site on completion**

Dismantling and taking away huts and furniture, disconnecting and removing services, removing temporary foundations etc. and re-instating ground surface to condition prevailing before construction.

**Erection of general site huts**

Construction of foundations, drainage, footpaths and parking areas, erection of huts, installation of electric wiring, in situ fittings and decorating, etc.

**Dismantle general site huts**

Dismantling and taking away huts and furniture, disconnecting and removing services, removing temporary foundations etc. and re-instating ground surface to condition prevailing before construction

**Erection of canteen and welfare huts**

Construction of foundations, drainage, footpaths and parking areas, erection of huts, installation of electric wiring, in situ fittings and decorating, etc.

**Dismantle canteen and welfare huts**

Dismantling and taking away huts and furniture, disconnecting and removing services, removing temporary foundations etc. and re-instating ground surface to condition prevailing before construction

**Caravan site construction and clearance**

Construction of site for employees' caravans including provision for water, electricity and drainage, and subsequently clear away and restore site on completion, allow credit for any charges to be levied

**Telecommunications**

Charges for initial installation and removal

**Furniture and equipment**

Purchase costs of furniture and equipment, allow for residual sale value

**Survey equipment**

Purchase costs of survey equipment including pegs, profiles, paint, etc., for setting out

**Canteen and welfare equipment**

Purchase costs of equipment

**Testing and laboratory equipment**

Purchase cost of equipment

**Radio communication**

Installation costs

**Electrical connection and installation**

Initial charges for connections to mains supply

**Electrical connection site plant**

Connection to site mains supply and final disconnection and removal

**Electrical connection site lighting**

Connection to site mains supply and final disconnection and removal

**Water supply**

Installation on site and connection charges

**Haulage plant**

Cost of transport of plant and equipment to and from site

**Progress photographs****Depot loading and unloading charges****Carpenter's shop**

Erection of building, installation of equipment including electrical installation, etc. Dismantle and clear away on completion

**Fitter's shop**

Erection of building, installation of equipment including electrical installation, etc. Dismantle and clear away on completion

**Stores compound**

Erect and dismantle stores compound

**Notice boards and signs**

Supply, erect and remove Contractor's signboards, traffic control signs, etc.

**Insurances**

Payment of premiums for all Contractor's insurance obligations (see separate section on insurances and bond below)

**Bond**

Charges for provision of bond (see separate section on insurances and bond below)

**Plant erection**

Cost of erection of Contractor's plant on site including foundations, hardstandings, drainage, etc.

**Plant dismantling**

Cost of removal of Contractor's plant on site including foundations, hardstandings, drainage, etc.

**Clear site on completion including removal of rubbish and reinstatement****EMPLOYER'S AND CONSULTANTS' SITE REQUIREMENTS - TIME RELATED****Office and other huts**

Rental of office accommodation, suboffices, laboratory, etc.

**Office and site attendant labour**

Office cleaning, chainmen, laboratory assistants, etc.

**Site transport**

Rental for vehicles for use of client and engineer



**Telecommunications**

Rental and cost of calls (if to be borne by Contractor)

**Furniture and equipment**

Rental of office furniture and equipment

**Survey equipment**

Rental of surveying equipment

**Testing and laboratory equipment**

Rental of testing and laboratory equipment

**Radio communication equipment**

Rental and maintenance

**Office lighting and heating**

Cost of heating and lighting all offices and huts

**Office consumables**

Cost of office consumables to be provided by the Contractor

**EMPLOYER'S AND CONSULTANTS' SITE REQUIREMENTS - NON TIME RELATED**

**Erection of huts and offices**

Client's and engineer's offices and other huts including foundations, pathways, parking area, electrical installation and drainage, etc.

**Dismantling huts and offices**

Restoration of site on completion

**Telecommunications installation charges**

**Furniture and equipment purchase**

Purchase cost for furniture and equipment

**Survey equipment purchase**

**Testing and laboratory equipment purchase**

**Radio communication equipment installation**

**Progress photographs**

Cost of professional photographer and supplying prints as required

**OTHER SERVICES, CHARGES AND FEES**

**Design fees for alternative designs for permanent works**

Design and drawing office costs and charges for preparing alternative designs and specifications and bill of quantities for alternative designs for permanent works

**Design and design office charges for temporary works**

Design and drawing office costs and charges for preparing designs and drawings for temporary works

**Preparation of bending schedules**

Drawing office charges for preparation of bending schedules

**Fees to local authorities****Legal advice and fees**

Fees and charges from legal adviser

**TEMPORARY WORKS OTHER THAN THOSE INCLUDED IN UNIT COSTS**

**Fencing**

**Traffic diversions**

**Lighting**

**Traffic signs**

**Traffic control**

**Footpath diversions**

**Stream or river diversion**

**Cofferdam installation**

**Cofferdam removal**

**Support works**

**Jetties**

**Bridges**

**Dewatering**

**General pumping**

Including construction of collecting sumps, etc.

**Site access roads and maintenance**

**Scaffolding**

**GENERAL PURPOSE PLANT OTHER THAN THAT INCLUDED IN UNIT COSTS**

**Lorries and dumpers for general transport around site**

**Tractors and trailers**

**Craneage for general use**

**Compressed air plant**

**Pumps**

**Bowers for fuelling plant**

**Bowers for water supply**

**Non productive time for plant on site**

Obtained by comparing plant requirements as on programme with the plant time included in the build up of bill rates

**Note:** For all items of plant listed above the cost of drivers and other attendants must be allowed for together with consumables and other operating costs

**INSURANCES AND BOND**

Contractors are legally required to insure against liability which may be incurred when employees are injured at work and when individuals are injured by owners' vehicles. There is also a statutory requirement for certain types of machinery to be inspected at regular intervals. In addition to legal requirements, companies insure against possible loss due to fire, explosion, fraud, liability incurred as a result of damage to the property of others and through serious injury to individuals.

Certain risks are excluded from insurers' policies; these include war, revolution, etc, contamination by radioactivity and risks which arise from bad management.

Generally insurance companies take into account the claims record of a Contractor when assessing premiums payable on a particular contract or policy. Premiums are related to the risks involved and, on large Civil Engineering contracts, the insurers will require full details of the work, the methods of construction, plant used and risks involved due to flood, ground conditions, etc. Insurance companies or brokers should be consulted before submitting a tender for major Civil Engineering work.

The following gives an outline of the items to be allowed for in a tender.

**Employer's liability insurance**

This provides indemnity to the Employer against legal liability for death of or injury to employees sustained in the course of their employment. The cost is normally allowed for in the buildup of the 'allin' labour rate as a percentage addition to the gross cost. This will vary, depending on the Contractor's record. An allowance of 2% has been made in this book.

**Vehicle insurance**

This can cover individual vehicles or fleets. The cost is normally covered in the rate charged to the contract for the use of the vehicles.

**All risks insurance**

This provides for loss of or damage to permanent and/or temporary works being executed on the contract. It also covers plant, materials, etc. The cost is allowed for in the tender as a percentage of the total contract value. This will vary depending on the Contractor's record and type of contract undertaken and also on the value of excesses included in the policy.

**Public liability insurance**

This provides indemnity against legal liability which arises out of business activities resulting in bodily injury to any person (other than employees), loss of or damage to property (not owned or under the control of the company), obstruction, trespass or the like.

Such insurance can be extended to include labour-only subcontractors and self-employed persons if required. The cost is generally included with head office overheads.

**Professional indemnity insurance**

This provides against liability arising out of claims made against the conduct and execution of the business. This covers such items as design liability, etc. The cost may be with head office overheads where such insurance is considered desirable.

**Loss of money insurance**

This covers loss of money and other negotiable items and loss or damage to safes and strong rooms as a result of theft. It is necessary to cover cash in transit for wages, etc. The cost is included with head office overheads.

**Fidelity guarantee insurance**

This covers loss by reason of any act of fraud or dishonesty committed by employees. The cost is included with head office overheads.

**Other insurances**

Other insurances which may be carried by a Contractor include fire insurance on his permanent premises and contents, consequential loss insurance in relation to his permanent premises, personal accident insurance on a 24 hour per day basis for employees.

**Contract bond**

Where the contract calls for a bond to be provided, this is normally given by either banks or insurance companies. The total value of these guarantees available to any company is limited, depending on the goodwill and assets of the company. It will also affect the borrowing facilities available to the company and therefore, to some extent, can restrict his trading. An allowance should be made at a rate of 1½% per annum on the amount of the bond for the construction period plus a rate of ½% per annum for the maintenance period.

**Worked Example - Programme of Activities, Staffing and Plant****Preliminaries and General Items****WORKED EXAMPLE**

The example is of a contract for the construction of an Airport extension. The contract includes concrete surfaced aprons/runways, surface water drainage, construction of two concrete structures, minor accommodation works and two culverts. The Conditions of contract are ICE Standard conditions; the contract period is 12 months; and the approximate value is £11.0 million.

It is assumed that the main Contractor will sublet bulk earthworks and landscape, fencing, concrete surfacing, signs and lighting as well as waterproofing to structures. It is also taken that all materials are obtained off site (including concrete).

The worked example demonstrates a method of assessing preliminary costs and is based on the programme below together with an assessment of general purpose plant (a plant reconciliation is also given).

**CONTRACTOR'S SITE ONCOSTS TIME RELATED**

<b>Site staff salaries (see programme )</b>					£
Agent	54	wks at	£1800	97,200	
Senior Engineer	54	wks at	£1600	86,400	
Engineers	76	wks at	£950	72,200	
General foreman	52	wks at	£1000	52,000	
Office manager/cost clerk	52	wks at	£850	44,200	
Timekeeper/Storeman/Checker	44	wks at	£600	26,400	
Admin support	52	wks at	£450	23,400	
Security guard	52	wks at	£500	26,000	
Quantity Surveyor	52	wks at	£1000	52,000	
Fitter	42	wks at	£830	<u>34,860</u>	514,660
<b>Site staff expenses (1% staff salaries)</b>					5,146
<b>Attendant labour</b>					
Chainman	128	wks at	£570	72,960	
Driver	52	wks at	£610	31,720	
Office cleaner (part-time)	52	wks at	£165	<u>8,580</u>	113,260
<b>General yard labour</b>					
(Part-time involvement in loading and offloading, clearing site rubbish etc.)					
1 ganger	10	wks at	£610	6,100	
4 labourers	40	wks at	£580	<u>23,200</u>	29,300
<b>Plant maintenance (Contractor's own plant)</b>					
(Fitter included in Site Staff Salaries above)					
Fitter's mate	32	wks at	£570	<u>18,240</u>	18,240
Carried forward					<u>£ 680,606</u>

				Brought forward	680,606
<b>Site transport for staff and general use</b>					
QS/Agent's cars	54	wks at	£150	8,100	
Engineers' cars (contribution)	130	wks at	£90	11,700	
Land Rover or similar SWB	54	wks at	£360	19,440	39,240
<b>Site transport – Labour</b>	48	wks at	£600	<u>28,800</u>	28,800
Transport for labour to and from site					NIL
<b>Contractor's office rental</b>					
Mobile offices (10 staff x 8 m <sup>2</sup> ) = 80 m <sup>2</sup>	52	wks at	£205	10,660	
Section offices (2 nr at 10 m <sup>2</sup> ) = 20 m <sup>2</sup>	52	wks at	£50	<u>2,600</u>	13,260
<b>Contractor's site huts</b>					
Stores hut, 22 m <sup>2</sup>	52	wks at	£56	<u>2,912</u>	2,912
<b>Canteen and welfare huts</b>					
Canteen 70 m <sup>2</sup> (assume 70 men)	52	wks at	£180	9,360	
Washroom 30 m <sup>2</sup>	52	wks at	£70	3,640	
Staff toilets	52	wks at	£180	9,360	
Site toilets	52	wks at	£240	<u>12,480</u>	34,840
<b>Rates</b>					NIL
<b>General office expenditure etc.</b>					
Postage, stationery and other consumables	52	wks at	£130	6,760	
Telephone / fax calls / e-mail and rental	52	wks at	£140	7,280	
Furniture and equipment rental	52	wks at	£70	3,640	
Personal computers, laser printers, scanners rental	52	wks at	£140	7,280	
Surveying equipment rental	52	wks at	£60	3,120	
Canteen and welfare equipment rental	52	wks at	£80	4,160	
Photocopier rental	52	wks at	£120	6,240	
Testing equipment rental	52	wks at	£50	2,600	
Lighting and heating offices and huts (200m <sup>2</sup> )	52	wks at	£110	<u>5,720</u>	46,800
<b>Water consumption</b>					
2,250,000 litres at £2.50 per 5,000 litres	450	units at	£2.50	<u>1,125</u>	1,125
<b>Small tools</b>					
1% on labour costs of say £1,400,000					14,000
				Carried forward	<u>861,583</u>

				Brought forward	861,583
<b>Protective clothing</b>					
½% on labour costs of say £1,400,000					7,000
<b>Cleaning vehicles</b>					
<b>Cleaning roads</b>					
Towed sweeper (tractors elsewhere)	52	wks at	£150	7,800	
Brushes			say,	1,000	
Labour (skill rate 4)	52	wks at	£626	32,552	41,352
<b>Progress photographs</b>			say,		1,000
Total Contractor's site oncosts Time related					<u>£ 910,935</u>

**CONTRACTOR'S SITE ONCOSTS - NON TIME RELATED**

<b>Erect and dismantle offices</b>				£	£
Mobile	108	m <sup>2</sup>	£9.00	972	
Site works			say,	1,000	
Toilets			say,	300	
Wiring, water, etc.			say,	<u>750</u>	3,022
<b>Erect and dismantle other buildings</b>					
Stores and welfare	130	m <sup>2</sup>	£16.00	2,080	
Site works			say,	1,000	
Toilets			say,	<u>700</u>	3,780
<b>Telephone installation</b>					500
<b>Survey equipment and setting out</b>					
Purchase cost including pegs, profiles, paint ranging rods, etc					1,200
<b>Canteen and welfare equipment</b>					
Purchase cost less residual value					1,500
<b>Electrical installation</b>					2,500
<b>Water supply</b>					
Connection charges				1,000	
Site installation				<u>1,000</u>	
				Carried forward	<u>£ 14,502</u>

	Brought forward		14,502
Transport of plant and equipment			3,500
Stores compound and huts			1,000
Sign boards and traffic signs			1,000
Insurances (dependent on Contractor's policy and record)			
Contractor's all risks 2.5% on £7,800,000		195,000	
Allow for excesses		<u>20,000</u>	215,000
General site clearance			3,500
<b>Total Contractor's site oncosts Non time related</b>			<b><u>£ 238,502</u></b>

#### EMPLOYER'S AND CONSULTANTS' SITE REQUIREMENTS - TIME RELATED

(details of requirements will be defined in the contract documents)

Offices (50 m <sup>2</sup> )	52	wks at	£110	5,720
Site attendant labour ( man weeks)	150	wks at	£570	85,500
Site transport (2 Land Rovers or similar)	52	wks at	£720	37,440
Telephones and calls	52	wks at	£120	6,240
Furniture and equipment	52	wks at	£50	2,600
Survey equipment	52	wks at	£60	3,120
Office heating and lighting (50 m <sup>2</sup> )	52	wks at	£40	2,080
Office consumables (provided by Contractor)	52	wks at	£50	2,600
<b>Total employer's and consultants' requirements time related</b>				<b><u>£ 145,300</u></b>

#### EMPLOYER'S AND CONSULTANTS' SITE REQUIREMENTS - NON TIME RELATED

(details of requirements will be defined in the contract documents)

Erection and dismantling of huts and offices	50	m <sup>2</sup> at	£9.00	450
Site works, toilets, etc.				1,000
Telephone installation				500
Electrical installation				1,000
Furniture and equipment Purchase cost less residual value				750
Progress photographs	100	sets at	£40	4,000
<b>Total employer's and consultants' requirements - non time related</b>				<b><u>£ 7,700</u></b>



**OTHER SERVICES, CHARGES AND FEES**

Not applicable to this cost model.

**TEMPORARY WORKS – OTHER THAN THOSE INCLUDED IN UNIT COSTS****Temporary Fencing**

1200 mm chestnut fencing

Materials	5,000	m at	£6.94	34,700	
Labour	500	hrs at	£12.44	6,220	40,920
<b>Traffic diversions</b>					
Structure No. 1				8,000	
Structure No. 2				6,500	14,500
<b>Footpath diversion</b>					5,000
<b>Stream diversion</b>					15,500
<b>Site access roads</b>	400	m at	£120.00		48,000

**Total temporary works**

£ 123,920

**GENERAL PURPOSE PLANT – OTHER THAN THAT INCLUDED IN UNIT COSTS**

Description			Labour	Plant	Fuel etc.
<b>Wheeled tractor</b>					
hire charge	52	wks at	£580	30,160	30,160
driver (skill rate 4)	52	wks at	£570	29,640	29,640
consumables	52	wks at	£70		3,640
<b>Trailer</b>					
hire charge	52	wks at	£25	1,300	1,300
<b>10 t Crawler Crane</b>					
hire charge	40	wks at	£1,000	40,000	40,000
driver (skill rate 3)	40	wks at	£699	27,960	27,960
consumables	40	wks at	£35		1,400
<b>14.5 tonne hydraulic backacter</b>					
hire charge	6	wks at	£1,010	6,060	6,060
driver (skill rate 3)	6	wks at	£699	4,194	4,194
banksman (skill rate 4)	6	wks at	£626	3,756	3,756
consumables	6	wks at	£80		480
<b>Concrete vibrators ( two )</b>					
hire charge in total	24	wks at	£100	2,400	2,400
<b>D6 Dozer or similar</b>					
hire charge	4	wks at	£1,550	6,200	6,200
driver (skill rate 2)	4	wks at	£780	3,120	3,120
consumables	4	wks at	£180		720
<b>Towed roller BW6 or similar</b>					
hire charge	6	wks at	£350	2,100	2,100
consumables	6	wks at	£60		360
<b>Loading shovel Cat 939 or similar</b>					
hire charge	16	wks at	£1,100	17,600	17,600
driver (skill rate 2)	16	wks at	£780	12,480	12,480
consumables	16	wks at	£85		1,360
<b>Compressor 22.1m<sup>3</sup>/min (silenced)</b>					
hire charge	12	wks at	£492	5,904	5,904
consumables	12	wks at	£370		4,440

<b>Plate compactor (180 kg)</b>							
hire charge	12	wks at	£50	600		600	
consumables	12	wks at	£12		144	144	
<b>75 mm 750 l/min pumps</b>							
hire charge	25	wks at	£79	1,975		1,975	
consumables	25	wks at	£12		300	300	
<b>Total costs</b>			£	81,150	114,299	12,844	<u>208,293</u>

#### SUMMARY OF PRELIMINARIES AND GENERAL ITEMS

Contractor's site oncosts [Time related]	910,935
Contractor's site oncosts [Non time related]	238,502
Employer's and consultants' requirements on site [Time related]	145,300
Employer's and consultants' requirements on site [Non Time related]	7,700
Other services, charges and fees	
Temporary works not included in unit costs	123,920
General purpose plant and plant not included in unit costs	208,293
<b>Total of Preliminaries and General Items</b>	<u>£1,634,650</u>

## PART 3

# Resources

*This part comprises sections on labour, materials and plant for civil engineering work. These resources form the basis of the unit costs in Parts 4, 5, 7 and 8 and are given here so that users of the book may:*

*Calculate rates for work similar to, but differing in detail from, the unit costs given in Parts 4, 5, 7 and 8*

*Compare the costs given here with those used in their own organisation*

*Calculate the effects of changes in wage rates, material prices, etc.*

*Adjustments should be made to the rates shown to allow for time, location, local conditions, site constraints and any other factors likely to affect the cost of the specific scheme.*



## BASIS OF LABOUR RATES

### BASIS OF THIS SECTION

The following are brief details of the Construction Industry Joint Council agreement on pay and conditions for the Building and Civil Engineering Industry, which is effective from Monday June 30 2008.

Copies of the Working Rule Agreement may be obtained from:

Construction Industry Joint Council,  
55 Tufton Street,  
London,  
SW1P 3QL

Due to the current, May 2009, market situation it is anticipated that wage rates will not increase in the near future and as consequence no changes have been made to the 2009 rates.

### Rates of Pay (Rule WR.1)

The basic and additional hourly rates of pay are:

Labourer / General Operative	£7.75
Skill Rate 4	£8.35
Skill Rate 3	£8.85
Skill Rate 2	£9.46
Skill Rate 1	£9.82
Craft Operative	£10.30

### Additional Payment for Skilled Work (Rule WR.1.2.2)

Skilled Operative Additional Rate:

These rates were discontinued with effect from 26 June 2006.

### Additional Payment (Rule WR.1.4)

The WRA recognises an entitlement to additional payments to operatives employing intermittent skill, responsibility or working in adverse conditions, for each hour so engaged as defined in Schedule 2 as follows:

	Extra £/hr		
A	£0.17	Tunnels	Operatives (other than Tunnel Machine Operators, Tunnel Miners and Tunnel Miners' Mates) wholly or mainly engaged in work of actual construction including the removal and dumping of mined materials but excluding operatives whose employment in the tunnel is occasional and temporary.
B	£0.28	Sewer Work	Operatives working within a totally enclosed active surface water sewer of any nature or condition.
C	£0.37	Sewer Work	Operatives working outside existing sewers excavating or removing foul materials emanating from existing sewers.
D	£0.37	Working at Height	Operatives (including drivers of tower cranes, but excluding the drivers of power driven derricks on high stages and linesmen-erectors and their mates and scaffolders) employed on "detached work".
E	£0.42	Sewer Work	Operatives working within a totally enclosed active foul sewer of any nature or condition.
F	£0.64	Stone Cleaning	Operatives other than craft operatives dry-cleaning stonework by mechanical process for the removal of protective material and/or discolouration.

**Bonus (Rule WR.2)**

The Working Rule leaves it open to employers and employees to agree a bonus scheme based on measured output and productivity for any operation or operations on a job.

**Working Hours (Rule WR.3)**

Normal working hours are unchanged at 39 hour week - Monday to Thursday at 8 hours per day and Friday at 7 hours. The working hours for operatives working shifts are 8 hours per weekday, 40 hours per week.

**Rest/Meal Breaks (Rule WR.3.1)**

Times fixed by the employer, not to exceed 1 hour per day in aggregate, including a meal break of not less than half an hour.

**Overtime Rates (Rule WR.4)**

During the period of Monday to Friday, the first 4 hours after normal working day is paid at time and a half, after 4 hours double time shall be paid. Saturday is paid at time and a half until completion of the first four hours. Remainder of Saturday and all Sunday paid at double time.

**Daily Fare and Travelling Allowances (Rule WR.5)**

This applies only to distances from home to the site of between 15 and 75 km, giving rates of 99p to £7.53 for Travelling Allowance (taxed) and £3.60 to £12.74 for Fare Allowance (not taxed). For the one way distance of 15km used in the following example we have assumed a rate of £3.60 with effect from 30<sup>th</sup> June 2008.

**Rotary Shift Working (Rule WR.6)**

This relates to the situation where more than one shift of minimum 8 hours is worked on a job in a 24 hour period, and the operative rotates between the shifts either in the same or different pay weeks.

The basic rate shall be the operative's normal hourly rate plus 14%. Overtime beyond the 8 hour shift shall be at time and a half for the first 4 hours at normal rate plus 14% thereafter double normal rate.

**Night Work (Rule WR.7)**

Providing night work is carried out by a separate gang from those working during daytime, an addition of 25% shall be paid on top of the normal hourly rate.

Overtime payments: during the period of Monday to Friday, the first 4 hours after normal working day is paid at time and a half plus the 25% addition of normal hourly rate, after 4 hours double time shall be paid. All hours worked on Saturday and all Sunday paid at double time.

**Tide Work (Rule WR.9)**

Where the operative is also employed on other work during the day, additional time beyond the normal working day shall be paid in accordance with the rules for overtime payments.

Where the operative is solely involved in work governed by tidal conditions, he shall be paid a minimum of 6 hours at normal rates for each tide. Payment for hours worked in excess of 8 over two tides shall be calculated proportionately.

$$\frac{(\text{Total Hours Worked} - 8 \text{ hours}) \times \text{Total Hours Worked}}{8 \text{ hours}}$$

Work done after 4pm Saturday and during Sunday shall be at double time. Operatives are guaranteed 8 hours at ordinary rate for any time worked between 4pm and midnight on Saturdays and 16 hours for two tides worked on a Sunday.

**Tunnel Work (Rule WR.10)**

The first part of a shift equivalent to the length of the normal working day shall be paid at the appropriate normal rate, the first four hours thereafter at time and a half and thereafter at double time. In the case of shifts on a Saturday, the first 4 hours are at time and a half, thereafter at double time. All shifts on a Sunday at double time.  
*Resources –*

Saturday shifts extending into Sunday are at double time. Sunday shifts extending into Monday, time after midnight: first 4 hours at time and a half, thereafter at double time.

**Subsistence Allowance (Rule WR.15)**

The 2010 allowance will increase to £29.66 per night with effect from 30<sup>th</sup> June 2008.

**Annual Holidays Allowance (Rules WR.18 and 21)**

Annual and Public Holiday Pay is included in accordance with the Building & Civil Engineering Benefit Schemes (B&CE) Template Scheme. Allowances are calculated on total weekly earnings inclusive of overtime and bonus payments and the labour cost calculation assumes 21 days (4.2 weeks) annual and 8 days (1.6 weeks) public holidays.

**Easy Build Pension Contributions (Rule WR 21.3)**

The minimum employer contribution is £3.00 per week. Where the operative contributes between £3.01 and £10.00 per week the employer will increase the minimum contribution to match that of the operative up to a maximum of £10.00 per week. The calculations below assume 1 in 10 employees make contributions of £10.00 per week.

**LABOUR COSTS****CALCULATION OF LABOUR COSTS**

This section sets out a method used in calculating all-in labour rates used within this book. The calculations are based on the wage rates, plus rates and other conditions of the Working Rule Agreement (WRA); important points are discussed below. The calculations can be used as a model to enable the user to make adjustments to suit specific job conditions in respect of plus rate, bonus, subsistence and overhead allowances together with working hours etc. to produce alternative all-in rates which can be substituted for those printed.

All-in labour costs are calculated on the pages following for six categories of labour reflecting the different classifications set out in the WRA.

AVERAGE WORKING WEEK has been calculated to an equal balance between winter and summer (46.20 working weeks per year).

SUBSISTENCE PAYMENTS are included for key men only: for a stated percentage of the workforce.

TRAVELLING ALLOWANCES are based on rate payable for a journey of 15 Km at £3.60 per day. These allowances are adjusted to cater for operatives receiving Subsistence Payments.

BONUS PAYMENTS reflect current average payments in the industry.

WORKING HOURS & NON-PRODUCTIVE OVERTIME are calculated thus:  
SUMMER (hours worked 8.00 am - 6.00pm, half hour for lunch)

	Mon	Tue	Wed	Thu	Fri	Sat	Total Paid Hours	Deductions		Effective Total Hours
								Lost & Wet time	Paid Breaks	
Total hrs	9.50	9.50	9.50	9.50	9.50	4.00	51.50	0.50	1.00	<b>50.00</b>
Overtime	0.75	0.75	0.75	0.75	1.25	2.00	6.25			
<b>TOTAL</b>							PAID: <b>57.75</b>	EFFECTIVE		<b>50.00</b>

WINTER (hours worked 7.30 am - 4.30pm, half hour for lunch)

	Mon	Tue	Wed	Thu	Fri	Sat	Total Paid Hours	Deductions		Effective Total Hours
								Lost & Wet time	Paid Breaks	
Total hrs	8.50	8.50	8.50	8.50	7.50	4.00	45.50	1.50	-	<b>44.00</b>
Overtime	0.25	0.25	0.25	0.25	0.25	2.00	3.25	-	-	-
<b>TOTAL</b>							PAID: <b>48.75</b>	EFFECTIVE		<b>44.00</b>

AVERAGE TOTAL HOURS PAID (57.75 + 48.75 / 2) = 53.25 hours per week  
AVERAGE EFFECTIVE HOURS WORKED (50.00 + 44.00 / 2) = 47.00 hours per week

**Payment details (based on 2008 settlement)**

	Categories of Labour					
	general	skill rate 4	skill rate 3	skill rate 2	skill rate 1	craft rate
	£	£	£	£	£	£
Basic rate per hour	7.75	8.35	8.85	9.46	9.82	10.30
53.25 Hours Paid @ Total Rate	412.69	444.64	471.26	503.75	522.92	548.48
Weekly Bonus Allowance	30.39	30.39	60.78	61.08	91.47	121.85
<b>TOTAL WEEKLY EARNINGS</b>	<b>£ 443.08</b>	<b>475.03</b>	<b>532.04</b>	<b>564.83</b>	<b>614.39</b>	<b>670.33</b>
Travelling Allowances (say, 15km per day, i.e. £3.60 x 6 days)						
general, skill rate 4, skill rate 3	= 100%	21.60	21.60	21.60	-	-
skill rate 2, skill rate 1	= 80%	-	-	-	17.28	17.28
craft rate	= 90%	-	-	-	-	19.44
Subsistence allowance (Average 6.66 nights x £29.16, + 7.00% to cover periodic travel)						
general, skill rate 4, skill rate 3	= 0%	-	-	-	-	-
skill rate 2, skill rate 1	= 20%	-	-	-	41.56	41.56
craft rate	= 10%	-	-	-	-	20.78
<b>TOTAL WAGES</b>	<b>£ 464.68</b>	<b>496.63</b>	<b>553.64</b>	<b>623.67</b>	<b>673.23</b>	<b>710.55</b>
National Insurance contributions - (12.8% above Earnings Threshold except Fares)	43.91	48.00	55.30	61.71	71.16	75.66
Annual Holiday Allowance - 4.2 weeks @ Total Weekly Earnings over 46.2 weeks	40.28	43.18	48.37	51.35	55.85	60.94
Public Holidays with Pay - 1.6 weeks @ Total Weekly Earnings over 46.2 weeks	15.34	16.45	18.43	19.56	21.28	23.22
Easy Build pension contribution	4.00	4.00	4.00	4.00	4.00	4.00
CITB Levy (0.50% Wage Bill)	2.32	2.48	2.77	3.12	3.37	3.55
<b>TOTAL</b>	<b>£ 570.53</b>	<b>610.74</b>	<b>682.51</b>	<b>763.41</b>	<b>828.89</b>	<b>877.93</b>



Allowance - for Employer's liability & third party insurances, safety officer's time

QA policy / inspection and all other costs & overheads :

	14.26	15.27	17.06	19.09	20.72	21.95
TOTAL WEEKLY COST (47 HOURS)	£ 584.79	626.01	699.57	782.50	849.61	899.88
<b>COST PER HOUR</b>	£ <b>12.44</b>	<b>13.32</b>	<b>14.88</b>	<b>16.65</b>	<b>18.08</b>	<b>19.15</b>

**Plant Operators rates:** Addition to Cost per Hour for Rule WR.11 - plant servicing time (6 hrs)

	£	1.15	1.24	1.31	1.40	1.46	1.53
<b>COST PER HOUR</b>	£	<b>13.59</b>	<b>14.56</b>	<b>16.19</b>	<b>18.05</b>	<b>19.54</b>	<b>20.68</b>
<b>Additional Payments under WR 1.4 (see above)</b>			A	B	C	D	E
<b>Extra rate per hour</b>	£		<b>0.17</b>	<b>0.28</b>	<b>0.37</b>	<b>0.42</b>	<b>0.44</b>

\* The bonus levels have been assessed to reflect the general position as at May/June 2008 regarding bonus payments limited to key personnel, as well as being site induced.

## LABOUR CATEGORIES

Schedule 1 to the WRA lists "specified work establishing entitlement to the Skilled Operative Pay Rate 4, 3, 2, 1 or the "Craft Rate" as follows :

### General Operative

Unskilled general labour

### Skilled Operative Rate 4

supervision	Gangers + trade chargehands
plant	Contractors plant mechanics mate; Greaser
transport	Dumper <7t; Agricultural Tractor (towing use); Road going motor vehicle <10t; Loco driver
scaffolding	Trainee scaffolder
drilling	Attendee on drilling
explosives	Attendee on shot firer
piling	General skilled piling operative
tunnels	Tunnel Miner's mates; Operatives driving headings over 2 m in length from the entrance (inwith drain, cable & mains laying)
excavation	Banksman for crane / hoist / derrick; Attendee at loading / tipping; Drag shovel; Trenching machine (multi bucket) <30hp; Power roller <4t; Timberman's attendee
coal	Opencast coal washeries and screening plants
tools	Compressor/generator operator; Power driven tools (breakers, tamping machines etc.); Power-driven pumps; air compressors 10 KW+; Power driven winches
concrete	Concrete leveller/vibrator operator/screeder + surface finisher, concrete placer; Mixer < 21/14 or 400 litres; Pumps / booms operator
linesmen	Linesmen-erector's mate
timber	Carpentry 1st year trainee
pipes	Pipe layers preparing beds and laying pipes <300mm diameter; Pipe jointers, stoneware or concrete pipes; pipe jointers flexible or lead joints <300mm diameter
paving	Rolled asphalt, tar and/or bitumen surfacing: Mixing Platform Chargehand, Chipper or Tamperman; Paviers; Rammerman, kerb & paving jointer
dry lining	Trainee dry liners
cranes	Forklift truck <3t; Crane < 5t; Tower crane <2t; Mobile crane / hoists / fork-lifts <5t; Power driven hoist / crane

**LABOUR CATEGORIES - cont'd****Skilled Operative Rate 3**

transport	Road going motor vehicle 10t+
drilling	Drilling operator
explosives	Explosives/shot firer
piling	Piling ganger / chargehand; Pile frame winch driver
tunnels	Tunnel Miner (working at face/operating drifter type machine)
excavation	Tractors (wheeled / tracked with/without equipment) <100hp; Excavator <0.6m <sup>3</sup> bucket; Trenching machine (multi bucket) 30-70hp; Dumper 7-16t; Power roller 4t+; Timberman
concrete	Mixer 400-1500 litres; Mobile concrete pump with / without concrete placing boom; Hydraulic jacks & other tensioning devices in post-tensioning and / or prestressing
formwork	Formwork carpenter 2nd year trainee
masonry	Face pitching or dry walling
linesmen	Linesmen-erectors 2nd grade
steelwork	Steelwork fixing simple work; Plate layer
pipes	Pipe jointers flexible or lead joints (300-535mm diameter)
paving	Rolled asphalt, tar and/or bitumen surfacing: Raker, Power roller 4 t+, mechanical spreader operator/leveller
dry lining	Certified dry liners
cranes	Cranes with grabs fitted; Crane 3-10t; Mobile crane / hoist / fork-lift 4-10t; Overhead / gantry crane <10t; Power-driven derrick <20t; Tower crane 2-10t; Forklift 3t+

**Skilled Operative Rate 2**

plant	Maintenance mechanic; Tyre fitter on heavy earthmover
transport	Dumper 16-60t
scaffolding	Scaffolder < 2 years scaffolding experience and < 1 year as Basic Scaffolder
piling	Rotary or specialist mobile piling rig driver
tunnels	Face tunnelling machine
excavation	Tractors (wheeled/tracked with / without equipment) 100-400hp; Excavator 0.6-3.85m <sup>3</sup> bucket; Trenching machine (multi bucket) 70hp +; Motorised scraper; Motor grader
concrete	Mixer 1500 litres+; Mixer, mobile self-loading and batching <2500 litres
linesmen	Linesmen-erectors 1st grade
welding	Gas or electric arc welder up to normal standards
pipes	Pipe jointers flexible or lead joints over 535mm diameter
cranes	Mobile cranes / hoists / fork-lifts 5-10t; Power-driven derrick 20t+, with grab <20t; Tower crane 10-20t

**Skilled Operative Rate 1**

plant	Contractors plant mechanic
transport	LGV driver; Lorry driver Class C+E licence; Dumper 60-125t
excavation	Excavator 3.85-7.65m <sup>3</sup> ; Tractors (wheeled / tracked with / without equipment) 400-650hp
concrete	
linesmen	
steelwork	Steelwork assembly, erection and fixing of steel framed construction
welding	Electric arc welder up to highest standards for structural fabrication & simple pressure vessels (air receivers including CO <sub>2</sub> processes)
drilling	Drilling rig operator
cranes	Power-driven derrick with grab 20t +; Tower crane 20t+

**Craft Operative**

transport	Dumper 125t+
scaffolding	Scaffolder a least 2 years scaffolding experience and at least 1 year as Basic and Advanced Scaffolder
excavation	Excavator 7.65t + (see WR 1.2.2 above); Tractors (wheeled/tracked with / without equipment) 650hp+
concrete	Reinforcement bender & fixer
formwork	Formwork carpenter
welding	Electric arc welder capable of all welding processes on all weldable materials including working on own initiative from drawings
cranes	Crane 10t+; Mobile cranes / hoists / fork-lifts 10t +

## BASIS OF MATERIAL RATES

### BASIC MATERIAL PRICES

This section comprises a price list for materials which assumes that the materials would be in quantities as required for a medium sized civil engineering project of, say, £10 - 12 million and the location of the works would be neither city centre nor excessively remote.

The material prices have been obtained from manufacturers and suppliers and are generally those prevailing at the time of preparing this edition (May/June 2008). In view of the current high demand and raw materials prices, it is important to note that steel prices are based at May 2008. Prices are given for the units in which the materials are sold, which may not necessarily be the units used in the Unit Costs sections.

In effect these prices (except where noted) reflect the normal 'list price'; there are NO adjustments for the following:

- waste or loss or any offloading or distribution charges, unless specifically noted;
- trade discounts pertinent to the market, type of work involved and the relationship between contractor and supplier

In addition, all prices quoted throughout this book are exclusive of Value Added Tax.

<b>This section comprises:</b>	<b>Page</b>
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cast iron pipes and fittings	62
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concrete and cement	70
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concrete pipes and fittings	73
consumable stores	74
contractors' site equipment (purchased)	76
culverts	78
earth retention, including gabions, crib walling, etc	79
fencing (site boundary fencing)	81
geotextiles	83
gully gratings and frames to BS EN 124	85
interlocking steel sheet piling and universal bearing piles	86
joint fillers and waterstops	88
kerbs, edgings and paving slabs (precast concrete)	90
Landscaping / soiling	94
manhole covers and frames to BS EN 124	96
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septic tanks, cesspools and interceptors	112
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pvc-u drain pipes and fittings	130
pvc-u subsoil drainage pipes and fittings	135

## BRICKWORK AND BLOCKWORK

Grade 500C deformed reinforcing bars				Stainless steel reinforcing bars			
Dia (mm)	Unit	High Tensile Steel to BS 4449		Stainless steel to EN 1.4301		Stainless steel to EN 1.4462	
		Straight £	Bent £	Straight £	Bent £	Straight £	Bent £
8	t	510	550	3100	3200	3200	3300
10	t	505	545	3180	3280	3280	3380
12	t	495	535	3100	3200	3200	3300
16	t	490	530	3050	3150	3150	3250
20	t	490	530	2960	3060	3060	3160
25	t	490	530	2900	3000	3000	3100
32	t	495	535	2900	3000	3000	3100
40	t	500	540				

Welded fabric to BS 4483 in sheets 4.80 x 2.40 metres	Unit	£
A393 (6.16 kg per m <sup>2</sup> )	m <sup>2</sup>	4.34
A252 (3.95 kg per m <sup>2</sup> )	m <sup>2</sup>	2.77
A193 (3.02 kg per m <sup>2</sup> )	m <sup>2</sup>	2.13
A142 (2.22 kg per m <sup>2</sup> )	m <sup>2</sup>	1.56
A98 (1.54 kg per m <sup>2</sup> )	m <sup>2</sup>	1.51
B1131 (10.90 kg per m <sup>2</sup> )	m <sup>2</sup>	7.68
B785 (8.14 kg per m <sup>2</sup> )	m <sup>2</sup>	5.73
B503 (5.93 kg per m <sup>2</sup> )	m <sup>2</sup>	4.19
B385 (4.53 kg per m <sup>2</sup> )	m <sup>2</sup>	3.19
B283 (3.73 kg per m <sup>2</sup> )	m <sup>2</sup>	2.65
B196 (3.05 kg per m <sup>2</sup> )	m <sup>2</sup>	2.15
C785 (6.72 kg per m <sup>2</sup> )	m <sup>2</sup>	4.71
C636 (5.55 kg per m <sup>2</sup> )	m <sup>2</sup>	3.93
C503 (4.34 kg per m <sup>2</sup> )	m <sup>2</sup>	3.07
C385 (3.41 kg per m <sup>2</sup> )	m <sup>2</sup>	2.42
C283 (2.61 kg per m <sup>2</sup> )	m <sup>2</sup>	1.85
D49 (0.77 kg per m <sup>2</sup> )	m <sup>2</sup>	1.65

The prices shown above include delivery but a charge of £30.00 is applicable for each delivery of under 8 tonnes

<b>Black annealed tying wire</b>		
16 swg tying wire (coil)	25 kg	44.39
16 swg tying wire (coil)	2 kg	7.52
<b>Stainless steel tying wire</b>		
18 swg tying wire (coil)	25 kg	166.79
For reinforcement bar couplers refer to ROM Lenton reinforcement couplers detailed on page 97		

**BRICKWORK AND BLOCKWORK**

	Unit	£
<b>Clay bricks to BS EN 771-1</b>		
Commons		
flettons	1000	234 - 275
non-flettons	1000	175 - 240
Facings		
flettons, pressed, sand-faced	1000	250 - 395
machine moulded	1000	285 - 460
extruded wire-cut	1000	225 - 520
pressed, repressed	1000	380 - 510
hand-made	1000	460 - 900
Engineering, Class A		
perforated	1000	290 - 350
solid	1000	400 - 475
solid facing	1000	460 - 575
Engineering, Class B		
perforated	1000	200 - 275
solid	1000	350 - 400
solid facing	1000	450 - 530
<b>Concrete bricks to BS EN 771-3</b>		
Commons	1000	225 - 290
Facings	1000	340 - 400
Engineering	1000	160 - 190
<b>Calcium silicate bricks to BS EN 771-2</b>		
Commons	1000	230 - 290
Facings	1000	290 - 330
<b>Glazed bricks to BS EN 771-1</b>		
Stretcher face only	1000	2600 - 4300
Stretcher and header faces	1000	3300 - 5200
Refractory bricks	1000	3600 - 6200
Note: Prices are ex-works for full loads		

**BRICKWORK AND BLOCKWORK**

	Unit	£
<b>Concrete blocks to BS EN 771-3</b>		
Aerated concrete blocks		
(Strength 2.8 N/m <sup>2</sup> )		
100 mm	m <sup>2</sup>	13.00 - 14.50
140 mm	m <sup>2</sup>	16.00 - 18.00
190 mm	m <sup>2</sup>	21.00 - 23.00
(Strength 4.0 N/m <sup>2</sup> )		
100 mm	m <sup>2</sup>	10.00 - 12.50
140 mm	m <sup>2</sup>	13.50 - 16.50
190 mm	m <sup>2</sup>	20.00 - 22.50
(Strength 7.0 N/m <sup>2</sup> )		
100 mm	m <sup>2</sup>	14.50 - 16.00
140 mm	m <sup>2</sup>	18.50 - 21.00
190 mm	m <sup>2</sup>	26.50 - 28.00
Lightweight aggregate medium density blocks		
(Strength 3.5 N/m <sup>2</sup> )		
100 mm	m <sup>2</sup>	10.00 - 12.00
140 mm	m <sup>2</sup>	14.00 - 16.00
190 mm	m <sup>2</sup>	20.00 - 22.00
Dense aggregate blocks		
(Strength 7.01 N/m <sup>2</sup> )		
100 mm	m <sup>2</sup>	9.00 - 11.00
140 mm	m <sup>2</sup>	13.00 - 15.00
190 mm	m <sup>2</sup>	18.00 - 20.00
Coloured dense concrete masonry blocks		
Hollow		
100 mm	m <sup>2</sup>	23.50 - 29.00
140 mm	m <sup>2</sup>	28.50 - 36.00
190 mm	m <sup>2</sup>	32.00 - 46.00
Solid		
100 mm	m <sup>2</sup>	27.00 - 35.50
140 mm	m <sup>2</sup>	35.50 - 50.00
190 mm	m <sup>2</sup>	54.50 - 68.50
Note: Prices are for full loads delivered to site		

## CAST IRON PIPES AND FITTINGS

	Unit	£	£	£	£	£	£
Diameter in mm		50	70	100	125	150	200
Lengths in m		3	3	3	3	3	3
<b>Cast and ductile iron above ground pipes and fittings to BS EN 877, Ensign joints</b>							
Plain ended cast iron pipes	m	4.29	5.12	5.95	7.87	9.79	49.96
Cast iron couplings complete with stainless steel nuts and bolts and synthetic rubber gaskets	nr	5.53	6.08	7.92	9.83	15.86	35.48
Pipe brackets - ductile iron	nr	5.17	5.17	5.96		11.05	41.01
Bends, short radius	nr	9.68	13.55	16.04	22.43	28.81	91.72
Access bends, short radius, 88°	nr		20.85	30.47		53.61	
Bends, long radius	nr			43.73		131.09	
Access bends, long radius, 88°	nr			39.42		95.76	
Branches, single (equal)	nr	15.34	16.19	20.63	44.53	49.36	133.30
Branches, double	nr			29.67		115.52	160.12
Taper pipes	nr		18.52	21.78	31.79	41.80	102.31
Trap, 'P', plain	nr			23.65			
Branch trap	nr			85.71			
<b>Cast and ductile iron below ground pipes and fittings to BS EN 877, Timesaver joints</b>							
Diameter in mm				100	150	250	
Lengths in m				3	3	3	
Plain ended cast iron pipes	m			21.88	43.60	108.34	
Cast iron couplings complete with stainless steel nuts and bolts and synthetic rubber gaskets	nr			11.19	22.83	64.15	
Bends, long radius, 87.5°	nr			34.73	104.10		
Access bends, back door 87.5°	nr			45.93	106.11		
Heel rest bend	nr			43.14	106.11		
Branches, 45 or 87.5°, equal	nr			26.55	90.26	298.37	
Inspection chamber	nr			151.46	249.07		
Double branches, 87.5°, equal	nr			38.02			
Pipe access, rect access	nr			65.92	103.11	336.38	
Pipes taper	nr			35.48	62.81	129.29	
Note: as fittings are spigot ended Timesaver Couplings are required at each joint							



## CAST IRON PIPES AND FITTINGS

	Unit	£	£	£	£	£	£
Diameter in mm	Unit	700	800	900	1000	1200	
<b>Ductile spun iron pipe to BS EN 545 with Stantyte joints for potable water applications</b>							
Spigot and socket pipes	m	299.08	392.29	POA	POA	POA	
Stantyte gasket	nr	107.95	118.98	POA	POA	POA	
Stantyte tee, equal	nr	6999.60	11271.71	POA	POA	POA	
Stantyte bend, 90°	nr	5703.25	9891.32	POA	POA	POA	
Stantyte bend, 45°	nr	4664.94	5465.28	POA	POA	POA	
<b>Ductile spun iron pipe to BS EN 545 with Tyton joints</b>							
Spigot and socket pipes	m	32.72	41.49	73.39	113.55	134.32	244.01
Tyton gasket	nr	8.22	8.84	16.72	39.90	47.51	72.50
Tyton tee, equal	nr	89.90	186.80	522.83	880.73	880.73	3715.81
Flange on Tyton tee, equal	nr	91.86	178.92	519.93	1095.41	1637.71	4510.42
Tyton bend, 90°	nr	60.55	139.40	411.24	577.18	847.23	2657.43
Tyton bend, 45°	nr	56.94	89.14	265.03	449.52	588.47	1615.28
Tyton duckfoot bend, 90°	nr	164.17	377.07	712.34			
Tyton taper	nr	65.89	123.05	232.56	516.38	665.97	1834.09
Diameter in mm		100	150	250	350	450	
<b>Couplings on BS EN 545 ductile spun iron pipe</b>							
Viking Johnson Maxifit couplings	nr	57.11	76.12	134.38	360.16	410.02	
uLink couplings	nr	74.93	110.64	235.39			
Diameter in mm		600	800	1000	1200		
GS LINK couplings	nr	363.77	528.21	664.38	774.34		
Size in mm			100 x 75		125 x 75		
<b>Cast iron rainwater gutters and fittings; Classical (primed)</b>							
1830 mm length	nr		24.10		35.33		
union clips	nr		11.80		11.80		
fascia brackets	nr		10.79		13.43		
angles, 90° and 135°	nr		11.80		14.30		
running outlets	nr		11.80		14.30		
drop end with socket	nr		9.50		11.83		
stop ends	nr		11.80		13.54		

**CAST IRON PIPES AND FITTINGS**

	Unit	£	£	£	£	£	£
Diameter in mm			65		75		
<b>Cast iron rainwater pipes and fittings; Classical (primed)</b>							
single socket, 1830 mm length	nr		22.93		22.93		
bends, 92.5° and 112.5°	nr		15.85		19.24		
offsets, 75 mm projection	nr		24.26		24.26		
offsets, 230 mm projection	nr		28.25		28.25		
offsets, 455 mm projection	nr		77.88		77.28		
shoe	nr		22.43		22.43		

## CLAYWARE PIPES AND FITTINGS

	Unit	£	£	£	£	£	£	£
Diameter in mm		150	225	300	375	400	450	500
Standard pipe length in m		1.40	1.60	1.60	1.50	1.50	1.50	2.00
<b>Vitrified clay socketed pipes and fittings to BS EN 295</b>								
Straight pipes	m	6.57	16.22	37.16	56.79	91.02	150.06	240.10
Short length pipes (0.6 m)	nr	9.86	24.33	55.74	85.19	136.53	225.09	360.14
Bends								
11.25, 22.5, 45, 90°	nr	37.09	85.98	145.04	245.12	404.37	532.49	0.00
Rest bends	nr	44.24	99.96	173.09				
Saddles								
oblique/square (Main diameter stated)	nr	27.38	101.86	177.26				
oblique 45°	nr	48.73	113.79	234.58				
curved square 90°	nr			265.44	568.18	603.74	722.25	1024.16
tumbling bay/drop back	nr	54.82	128.76	318.52	742.72	843.40	1014.42	
Tapers								
reducers/increasers	nr	99.04	202.50	314.98				
Stoppers (with polyester spigot)	nr	0.00	0.00	0.00	0.00			
<b>Plain ended vitrified clay sewer pipes and fittings with sleeve joints to BS EN 295, including 1 nr coupling per length pipe</b>								
Diameter in mm		100	150	225	300			
Standard pipe length in m		1.60	1.75	1.75	1.75			
<b>Straight pipes</b>								
with Polypropylene coupling	m	10.06	22.88	47.68	105.04			
without coupling	m	5.21	10.52	34.01	53.63			
Bends								
15, 30, 45, 90°	nr	6.76	17.20	63.70	127.04			
Rest bends	nr	3.07	22.96	99.96	173.09			
Saddles								
oblique/square	nr	18.40	27.38	101.86	177.26			
couplings (nitrile)	nr	7.55	14.26	26.48	47.72			
Taper pipes								
100 - 150 mm	nr	18.60						
150 - 225 mm	nr	69.04						
225 - 300 mm	nr	149.00						

## CLAYWARE PIPES AND FITTINGS

	Unit	£	£	£	£	£	£	£
<b>Junctions</b>								
oblique 45°/curved square 90°								
Main x Arm diameter								
100 x 100 mm	nr	22.92						
150 x 100 mm	nr	22.92						
150 x 150 mm	nr	26.24						
225 x 100 mm	nr	93.08						
225 x 150 mm	nr	93.08						
225 x 225 mm	nr	93.08						
300 x 100 mm	nr	192.67						
300 x 150 mm	nr	192.67						
300 x 225 mm	nr	192.67						
300 x 300 mm	nr	192.70						
<b>Low back traps</b>								
100 x 100 mm diameter 'P'								
trap (plain)	nr	12.54						
150 x 150 mm diameter 'P'								
trap (plain)	nr	28.70						
Diameter in mm		100	150	225	300	375	400	450
<b>Vitrified clay Half Section channel pipes and fittings to BS EN295</b>								
Channel pipes (1.0m long)	nr	5.43	9.73	30.44	63.14	0.00	0.00	0.00
Channel bends								
11.25, 22.5, 45, 90	nr	9.15	10.50	50.38	102.72	0.00	0.00	0.00
Branch Channel bends								
half section	nr	17.30	28.66	82.54	201.74			
three quarter section	nr	25.95	42.99	123.81	302.61			
Channel Junctions								
oblique/square								
single	nr	14.63	24.10	69.14	164.69			
double	nr	21.94	36.68	111.50				
breeches	nr	21.94	36.68	111.50				
Channel Tapers								
increaser/reducer								
100 - 150 mm	nr	38.07						
150 - 225 mm	nr	84.94						
225 - 300 mm	nr	167.11						
300 - 375 mm	nr	242.36						
375 - 450 mm	nr	326.59						

## CLAYWARE PIPES AND FITTINGS

	Unit	£	£	£	£	£	£	£
Diameter in mm		100	150					
Standard pipe length in m		1.6	1.75					
<b>Unglazed dense-vitrified clay plain ended cable conduit to BS EN 295, including 1 nr coupling per length (Deduct)</b>								
Straight conduits	m	8.31	17.77					
Bends/Bellmouths	nr	9.51	19.54					
Diameter in mm		75	100	150	225			
Standard pipe length in m		0.3	0.3	0.3	0.3			
<b>Land drain to BS 1196 (Hepworth)</b>								
Straight pipes	nr	1.56	2.68	5.48	14.13			
Junctions	nr	17.73	23.54	28.98				
	Unit			£	£	£	£	£
Diameter in mm				150	225	300	400	450
Standard pipe length in m				1.75	1.8	2.0	2.0	2.0
<b>Vitrified clay drainage with sealing rings (Superseal, Hepseal)</b>								
Straight pipes				S/seal	S/seal	S/seal	Hepseal	Hepseal
Bends				24.03	48.02	73.67	165.07	214.40
90°	nr			38.94	87.10	165.42	471.51	620.88
45°	nr			38.94	87.10	165.42	336.77	443.47
30°	nr			38.94	87.10	165.42		
15°	nr			38.94	87.10	165.42		
22.5°	nr						235.79	310.45
Standard pipe length in m				1.75	2.0	2.0	2.5	2.5
<b>Vitrified clay drainage with sealing rings (Superseal, Hepseal)</b>								
Rest bends				S/seal	S/seal	S/seal	Hepseal	Hepseal
Stopper				25.76	125.37	277.73		
Double collar				14.36	23.09	48.23		
Saddles				41.73	89.88	146.07		
oblique	nr			33.89	123.35	214.68		
square	nr			33.89	123.35	214.68		
reducers	nr			24.06	66.69	180.05		
enlargers	nr			71.69	193.55			
Adaptors to SuperSleve				22.31				
Adaptors to Hepsleve				22.31	42.86	84.24		

## CLAYWARE PIPES AND FITTINGS

	Unit	£	£	£	£	£	£	£
			Oblique S/Sleve H/Sleve Plus	Oblique S/Seal H/Seal	Square S/Sleve H/Sleve Plus	Square S/Seal H/Seal	Tumbling Bay Square	Tumbling Bay Square
<b>Junctions</b>								
100 x 100 mm	nr		27.73		27.73			
150 x 100 mm	nr		23.74	47.00	23.74	47.00		
150 x 150 mm	nr		26.06	53.07	26.06	53.07	53.07	53.07
225 x 100 mm	nr		120.73	126.76	120.73	126.76		
225 x 150 mm	nr		120.73	126.76	120.73	126.76		
225 x 225 mm	nr		153.63	161.30	153.63	161.30	161.30	161.30
300 x 100 mm	nr			265.53	265.53	265.53		
300 x 150 mm	nr			265.53	265.53	265.53		
300 x 225 mm	nr							
300 x 300 mm	nr				337.74		337.74	337.74
400 x 100 mm	nr			495.14				
400 x 150 mm	nr			495.14				
400 x 400 mm	nr						695.64	695.64
450 x 100 mm	nr			592.33				
450 x 150 mm	nr			592.33		592.33		
500 x 150 mm	nr			744.35				
Diameter in mm			100	150	225			
Standard pipe length in m			1.6	1.75	1.75			
<b>Plain end vitrified clay pipes with sleeved joints BS EN 295 (SuperSleve/Hepsleve)</b>								
Straight pipes		m	6.13	12.38	40.01			
Couplings								
standard seal ring	nr		5.28	9.59	18.40			
EPDM/Nitrile seal ring	nr		8.36	15.78	26.80			
Bends 15°, 30°, 45°, 90°		nr	8.26	17.02	82.95			
Rest Bends		nr	20.74	25.76	104.56			
Saddles								
oblique	nr		23.83	33.89	123.35			
square	nr		23.83	33.89	123.35			
Adaptors Hepseal/SuperSleve		nr	8.33	22.31	18.48			
Taper pipe								
100 to 150 mm SuperSleve	nr		28.72					
150 to 225 mm SuperSleve	nr		71.69					
225 to 300 mm Hepsleve	nr		193.55					

## CLAYWARE PIPES AND FITTINGS

	Unit	£	£	£	£	£	£	£
Junctions, oblique/square								
100 x 100 mm	nr		18.61					
150 x 100 mm	nr		23.74					
150 x 150 mm	nr		26.06					
225 x 100 mm	nr		120.73					
225 x 150 mm	nr		120.73					
225 x 225 mm	nr		153.63					
300 x 100 mm	nr		252.89					
300 x 150 mm	nr		252.89					
300 x 225 mm	nr		303.14					
300 x 300 mm	nr		321.65					
Diameter in mm			100	150	225	300	400	450
Standard pipe length in m			1.60	1.75	1.75	2.00	2.50	2.50
<b>Perforated vitrified clay pipes (Hepline)</b>								
Straight pipes	m		11.95	19.59	36.97	72.00	0.00	0.00
Vitrified clay road gullies, round with rodding eye and stopper								
600 mm deep x 300 mm diameter, outlet diameter 100 mm	nr		107.38					
600 mm deep x 300 mm diameter, outlet diameter 150 mm	nr		109.96					
75 mm deep x 400 mm diameter, outlet diameter 150 mm	nr		127.52					
900 mm deep x 450 mm diameter, outlet diameter 150 mm	nr		178.84					
Vitrified clay yard gullies, round with domestic duty grating and frame (upto 1 tonne)								
225 mm diameter x 585 mm deep, 100 mm outlet diameter	nr		177.51					
225 mm diameter x 585 mm deep, 150 mm outlet diameter	nr		182.69					
Vitrified clay yard gullies, round with medium duty grating and frame (upto 5 tonnes)								
225 mm diameter x 585 mm deep, 100 mm outlet diameter	nr		230.64					
225 mm diameter x 585 mm deep, 150 mm outlet diameter	nr		235.13					
Universal grease traps with metal tray and lid								
600 x 450 x 550 mm deep	nr		998.44					
Spare filter basket and spatula	nr		156.09					

**CONCRETE AND CEMENT**

Ready mixed concrete supplied in full loads delivered to site within 5 miles (8 km) radius of concrete mixing plant. The figures below include for the incidence of the Aggregate Tax, levied from 1 April 2002

<b>Designed mixes</b>					<b>Standard mixes</b>		
		Aggregate size					
		10 mm	20 mm	40 mm			
	Unit	£	£	£		Unit	£
Grade C7.5	m <sup>3</sup>	78.42	76.89	76.40	ST1	m <sup>3</sup>	74.72
Grade C10	m <sup>3</sup>	79.16	77.63	76.77	ST2	m <sup>3</sup>	75.16
Grade C15	m <sup>3</sup>	79.56	78.01	77.13	ST3	m <sup>3</sup>	75.53
Grade C20	m <sup>3</sup>	79.95	78.37	77.51	ST4	m <sup>3</sup>	78.48
Grade C25	m <sup>3</sup>	82.13	80.56	79.67	ST5	m <sup>3</sup>	79.79
Grade C30	m <sup>3</sup>	77.12	80.93	88.16			
Grade C40	m <sup>3</sup>	88.49	80.06				
Grade C50	m <sup>3</sup>	88.73	87.00		<b>Readymix</b>		
Grade C60	m <sup>3</sup>	88.92	88.65		Roadfill 6-1 HAM	m <sup>3</sup>	72.53
					Voidfill 20-1 HAM	m <sup>3</sup>	62.39
<b>Prescribed mixes</b>							
Add to the above designated mix prices approximately £5.00/m <sup>3</sup>							

	Unit	£
Add to the above prices for		
rapid-hardening cement to BS EN 197-1	m <sup>3</sup>	3.61
sulphate resisting cement to BS 4027	m <sup>3</sup>	8.76
polypropylene fibre additive	m <sup>3</sup>	9.67
distance per mile in excess of 5 miles (8 km)	m <sup>3</sup>	1.55
air entrained concrete	m <sup>3</sup>	5.04
water repellent additive	m <sup>3</sup>	5.09
part loads per m <sup>3</sup> below full load	m <sup>3</sup>	25.18
waiting time (in excess of 6 mins. / m <sup>3</sup> unloading norm)	hr	67.20
returned concrete	m <sup>3</sup>	119.56
	bulk £ / t	bagged £/25 kg
<b>Cements</b>		
ordinary portland to BS EN 197-1	90.00	3.33
high alumina	633.53	17.83
sulphate resisting	90.99	3.35
rapid hardening	90.00	3.45
white portland	283.96	7.87
masonry	120.77	3.27



**CONCRETE AND CEMENT**

	Unit		£
Cement admixtures			
Febtone colourant, brown / black	kg		10.10
Febproof waterproofer	5 l		15.34
Febspeed frostproofer	5 l		7.69
Febbond PVA bonding agent	5 l		21.62
Febmix plus plasticiser	5 l		7.31

**CONCRETE MANHOLES**

	Unit	£
<b>Shaft and chamber rings</b>		
900 mm diameter - unreinforced	m	45.91
1050 mm diameter - unreinforced	m	48.48
1200 mm diameter - unreinforced	m	59.06
1350 mm diameter - reinforced	m	87.93
1500 mm diameter - reinforced	m	98.48
1800 mm diameter - reinforced	m	138.00
2100 mm diameter - reinforced	m	271.14
2400 mm diameter - reinforced	m	349.00
2700 mm diameter - reinforced	m	407.80
3000 mm diameter - reinforced	m	573.03
Short length surcharge on 250 mm depth - 100%		
Short length surcharge on 500 mm depth - 50%		
Double steps (built-in)	nr	5.75
<b>Soakaway perforations (75 mm dia)</b>	nr	4.80
<b>Reducing slabs (900 mm diameter access)</b>		
1350 mm diameter	nr	140.46
1500 mm diameter	nr	162.02
1800 mm diameter - 1200 mm diameter access, 250 mm deep	nr	215.65
2100 mm diameter - 1200 mm diameter access, 250 mm deep	nr	460.51
2400 mm diameter - 1200 mm diameter access, 250 mm deep	nr	605.10
2700 mm diameter - 1200 mm diameter access, 250 mm deep	nr	987.62
3000 mm diameter - 1200 mm diameter access, 250 mm deep	nr	1259.32
<b>Landing slabs (900 mm diameter access)</b>		
1500 mm diameter	nr	162.02
1800 mm diameter	nr	215.27
2100 mm diameter	nr	460.15
2400 mm diameter	nr	605.10
2700 mm diameter	nr	987.62
3000 mm diameter	nr	1259.32
<b>Cover slabs (heavy duty)</b>		
900 mm diameter, 600 mm square access	nr	55.00
1050 mm diameter, 600 mm square access	nr	59.14
1200 mm diameter, 600 or 750 mm square access	nr	71.63
1350 mm diameter, 600 or 750 mm square access	nr	108.60
1500 mm diameter, 600 or 750 mm square access	nr	124.55
1800 mm diameter, 600 or 750 mm square access	nr	182.40

## CONCRETE PIPES AND FITTINGS

	Unit	£	£	£	£	£	£
<b>Concrete pipes with flexible joints to EN 1916 :</b>							
<b>2002, Straight pipes (pipe length 2.5m)</b>							
Diameter in mm		300	375	450	525	750	900
Class L	m	15.90	19.60	23.50	30.30	73.20	98.00
Bends (22.5 or 45°)							
Class L	nr	95.38	120.52	151.39	180.10	459.02	659.71
Lubricant	kg	4.00					
<b>Concrete pipes with flexible joints to EN 1916 :</b>							
<b>2002, Straight pipes (pipe length 2.5m)</b>							
Diameter in mm		1200	1500	1800	2100		
Class L	m	168.90	298.30	414.70	516.59		
Bends (22.5°)							
Class L	nr	1036.97	1968.79	2419.54	3473.55		
Bends (45°)							
Class 120	nr	1.16	1.16				
Class L	nr	1415.21	2648.25	3389.16	4482.04		
<b>Junctions (extra over)</b>							
300mm	nr	47.70					
375mm	nr	58.80					
375 x 150mm	nr	58.80					
450mm	nr	70.50					
450 x 150mm	nr	70.50					
525mm	nr	90.90					
525 x 150mm	nr	90.90					
750mm	nr	219.60					
750 x 150mm	nr	219.60					
900mm	nr	294.00					
<b>Concrete road gullies to BS 5911-6 : 2004</b>							
375 x 150 x 750mm deep	nr	37.60					
450 x 150 x 750mm deep	nr	39.20					
450 x 150 x 900mm deep	nr	42.50					
450 x 150 x 1050mm deep	nr	45.80					
Universal connector to 150mm dia pipe	nr	2.50					

## CONSUMABLE STORES

	Unit	£
<b>Abrasive discs</b>		
for disc cutters (230 x 6mm)	nr	3.04
for angle grinders (115 x 6mm)	nr	1.28
for floorsaws (230mm) - diamond blade	nr	8.80
<b>Bushing heads</b>		
¾" hex shaft	nr	28.99
<b>Hilti gun</b>		
cartridges for Hilti gun (DXA40/41 & DX460) (100 Box)	nr	11.47
Hilti nails 32 x 8mm (100 Box)	nr	13.44
Hilti nails 52 x 8mm (100 Box)	nr	15.80
Stone / Mass Concrete cutting disc for Stihl (or equal) saw (300mm)	nr	1.40
<b>Diamond blades</b>		
asphalt / green concrete, 300mm x 20mm	nr	52.95
concrete, 300mm x 20mm	nr	24.95
<b>Gas refills</b>		
propane 47 kg (fuel only)	nr	65.00
propane 19 kg (fuel only)	nr	30.37
butane 15 kg (fuel only)	nr	25.14
oxygen 87 kg cylinder (gas only)	nr	17.40
acetylene 83 kg cylinder (gas only)	nr	55.99
<b>Lubrication/Oils for site vehicle use</b>		
crankcase (25 litres)	l	1.94
transmission (25 litres)	l	2.05
hydraulic (25 litres)	l	1.77
grease (12.5 kg)	kg	2.97
two stroke (25 litres)	l	1.96
airline oil (25 litres)	l	2.14
cutting oil (25 litres)	l	2.44
<b>Ropes and hawsers</b>		
Rope (polypropelene)		
6 mm	220 m	14.20
8 mm	30 m	4.52
10 mm	30 m	6.62
12 mm	30 m	9.80
Drawcord rope		
6 mm	220 m	17.92

## CONSUMABLE STORES

	Unit	£
<b>Chains</b>		
4 x 26 mm link, galvanised	m	1.95
6 x 42 mm link, galvanised	m	3.38
<b>Hessian</b>		
198g 1.37 x 45 m roll	nr	14.25
<b>Dewatering disposables</b>		
semi rigid riser pipe	6m	4.75
flexible riser pipe	m	0.78
65 mm x 0.5 m cocos	each	3.17
65 mm x 1.0 m cocos	each	3.17
jointing tape	roll	3.17
<b>Pneumatic breakers, steels (hex shank)</b>		
MP1 (moil point)	nr	14.95
MP4	nr	12.11
NC1 (narrow chisel)	nr	15.95
NC4	nr	12.67
CS1 (clay spade)	nr	47.85
CS4	nr	49.81
AC1 (asphalt cutter)	nr	31.95
AC3	nr	40.28
DC1 (digging chisel)	nr	49.45
DC3	nr	50.14
P1 (Plugs)	nr	43.90
F1 (Feathers)	nr	40.95
ET1/ET2 (combined 7 inchs tampers)	nr	104.28
SM1 (speediburst demolition/rock steel)	nr	31.20
CP9 (point)	nr	7.58
CP9 (chisel)	nr	7.58
FL22 square	nr	14.53
FL22 round	nr	15.77
Kango K9 Hammer point x 300mm	nr	3.35
Kango K9 Hammer point x 600mm	nr	5.37
Kango K9 Hammer 50mm wide chisel	nr	3.30
Kango K9 Hammer 75mm wide chisel	nr	5.13
Bosch 11304 Hammer Tarmac Cutter	nr	27.38
Bosch 11304 Hammer Asphalt Cutter	nr	36.51

**CONTRACTORS' SITE EQUIPMENT (PURCHASED)**

	Unit	£
<b>Traffic cones and cylinders</b>		
thermoplastic cone 18 inches with reflective sleeve	nr	2.95
thermoplastic cone 30 inches with reflective sleeve	nr	3.95
medium density polyethylene cone 30 inches with reflective sleeve	nr	3.95
high visibility motorway cone 1 m	nr	6.95
verge post complete with metal fixing stack	nr	12.95
KINGPIN traffic cylinder 30 inches with twist and lock base	nr	5.95
"No waiting" cones (standard Mk 111)	nr	2.95
"No waiting" cones (police Mk 111)	nr	3.25
Pendant barrier markers on 26 m cord	nr	3.95
<b>Crowd barrier</b>		
fencing 1m x 50m roll, non corrodible, reusable	nr	14.95
thermoplastic fencing foot, 720 x 230 x 160 mm	nr	11.95
galvanised crowd contro; barrier 2.5 x 1.1 m high	nr	34.95
<b>Temporary road signs and frames</b>		
triangular 600 mm	nr	13.56
rectangular 1050 x 750 mm	nr	26.15
circular 1050 mm	nr	43.51
Ecolite road lamp	nr	8.45
Battery operated "Unilamp", flashing	nr	8.45
Battery operated "Unilite", photocell flashing	nr	8.95
Heavy duty ballasted traffic barrier 400mm x 1.0m high, 2.0m long, red/white	nr	195.00
Water ballasted traffic separator 650 x 550 mm, 1.0 m long, red / white	nr	36.95
Hydrant stand pipe	nr	28.50
Hydrant key	nr	6.50
<b>Drain stoppers</b>		
100 mm steel with plastic cap	nr	3.75
150 mm steel with plastic cap	nr	5.85
225 mm steel with plastic cap	nr	14.65
300 mm steel with plastic cap	nr	23.20
500 mm aluminium with metal cap	nr	79.00
525 mm aluminium with metal cap	nr	81.60
675 mm aluminium with metal cap	nr	142.45

**CONTRACTORS' SITE EQUIPMENT (PURCHASED)**

	Unit	£
<b>Air bag stopper</b>		
100 mm	nr	9.70
150 mm	nr	11.20
225 mm	nr	12.80
300 mm	nr	18.35
<b>Drain testing manometer kit (air gauge)</b>	nr	31.51
<b>Bolt croppers centre cut</b>		
900mm (16mm capacity)	nr	43.16
high tensile cut 42 inches (16mm capacity)	nr	154.01
Soil pipe cutter (spun pipes or cast) 2 to 12 inches	nr	503.48
Debris netting (scaffolding net, 50 x 3 m roll, standard)	nr	34.95
Scaffold sheeting (weather sheet, 45 x 2 m roll)	nr	247.40
<b>Water hose</b>		
Rubber 3/4 inch bore x 40 m	nr	60.51
PVC 1/2 inch bore x 50 m	nr	19.56
<b>Compressor hose (with quick release couplings)</b>		
15m x 19mm	nr	47.70
<b>Portable electricity supply transformer, 3Kva, two outlet sockets</b>	nr	61.85
<b>Temporary lighting</b>		
Fixed stand with single tungsten 500 W halogen fitting	nr	20.44
Fixed stand with twin tungsten 500 W halogen fittings	nr	25.44
<b>Ladders</b>		
Builders pole ladder, 15 rungs, 4.00 m long	nr	83.00
Builders pole ladder, 27 rungs, 7.00 m long	nr	149.40
Youngman, or equal, 2 part push up ladder, 5.11 m extended height	nr	100.00
Youngman, or equal, 2 part push up ladder, 7.43 m extended height	nr	113.00
Youngman, or equal, 3 part push up ladder, 7.43 m extended height	nr	129.00
Youngman, or equal, 3 way combination ladder, 7.38 m extended height	nr	149.99
<b>Ground stabilisation</b>		
Tenax Turf Reinforcement Mesh 22 x 27 mm mesh, 2 x 30 m roll, std. grade	nr	149.50
Tenax Grass Protection Mesh 15 x 15 mm mesh, 2 x 20 m roll ( Green )	nr	258.75
Tenax Ground Stabilisation Mesh 75 x 50 mm mesh, 2 x 50 m roll (Grey)	nr	181.13

## CULVERTS

	Unit	£	£	£	£
<b>Asset International corrugated steel, galvanised bitumen coated culverts, supplied in 3, 4, and 6m lengths</b>					
Diameter in mm		1000	1600	2000	2200
1.6 mm thick	m	85.94	131.22	560.64	691.39
coupling	nr	22.87	40.01		
2.0 mm thick	m	104.68	160.93	351.55	396.87
coupling	nr	23.90	44.39	50.52	53.56
<b>Precast concrete rectangular culverts</b>					
1000 x 500 mm x 2.0 m long (MC. 10.05)	nr	550.00			
1500 x 1000 mm x 2.0 m long (MC. 15.10)	nr	900.00			
1500 x 1500 mm x 2.0 m long (MC. 15.15)	nr	1050.00			
2000 x 1000 mm x 2.0 m long (MC. 20.10)	nr	1150.00			
2000 x 1500 mm x 2.0 m long (MC. 20.15)	nr	1300.00			
2500 x 1000 mm x 2.0 m long (MC. 25.10)	nr	1750.00			
2500 x 1750 mm x 1.5 m long (MC. 25.17)	nr	1550.00			
3000 x 2000 mm x 1.0 m long (MC. 30.20)	nr	1500.00			
3000 x 2750 mm x 1.0 m long (MC. 30.27)	nr	1700.00			
4000 x 2500 mm x 1.0 m long (MC. 40.25)	nr	2000.00			



## EARTH RETENTION INCLUDING GABIONS, CRIB WALLING, ETC.

<b>Woven wire mesh gabions in mesh size 75 x 75mm, wire diameter 2.7 mm galvanised to BS EN 10244</b>			
PVC coated galvanised wire; overall diameter 3.2 mm		Galvanised only	
Unit size	£/each	Unit size	£/each
1.5 x 1 x 1 m	40.37	1.5 x 1 x 1 m	30.76
2 x 1 x 1 m	54.89	2 x 1 x 1 m	42.06
3 x 1 x 1 m	77.80	3 x 1 x 1 m	59.27
2 x 1 x 0.5 m	38.82	2 x 1 x 0.5 m	30.02
<b>Reno woven wire mattresses, wire galvanised to BS EN 10244</b>			
PVC coated galvanised wire 2.2 mm diameter, overall diameter 2.7 mm, mesh size 75 x 75 mm diameter 2.7 mm,		PVC coated galvanised wire 2.2 mm diameter, overall diameter 2.7 mm, Mesh size 75 x 75 mm	
Units size	£/each	Unit size	£/each
6 x 2 x 0.17 m	111.82	6 x 2 x 0.30 m	135.92
6 x 2 x 0.23 m	122.99		
Galvanised wire 3.0 mm diameter			
6 x 2 x 0.15 m	116.35		
6 x 2 x 0.23 m	124.51		
6 x 2 x 0.30 m	132.65		
<b>Terramesh (woven wire mesh units with 1 m x 1 m gabion type face in mesh size 80 x 100 wire core diameter 2.70 mm, PVC coated o.d. 3.70 m)</b>			
4 x 2 x 1 m	76.65		
6 x 2 x 1 m	93.75		
4 x 2 x 0.5 m	56.80		
6 x 2 x 0.5 m	71.66		
<b>Green Terramesh (as for standard Terramesh but with sloping face lined with Biomac or Macmat and an inner lining of galvanised mesh and two reinforcing bars to give correct angle).</b>			
4 x 2 x 0.6 m	90.31		
6 x 2 x 0.6 m	107.39		
<b>Precast concrete crib units</b>			Unit
Andacrib super maxi system			£
Andacrib maxi system			m <sup>2</sup>
			99.62
			m <sup>2</sup>
			79.70
<b>Timber crib walling system</b>			
Permacrib 1050 for retaining walls upto 3.5 m high			m <sup>2</sup>
			86.35
Permacrib 1650 for retaining walls upto 5.9 m high			m <sup>2</sup>
			98.76
<b>Precast concrete wall units</b>			
1000 mm high x 1000 mm long			nr
			83.96
1250 mm high x 1000 mm long			nr
			117.24
1500 mm high x 1000 mm long			nr
			130.56
1750 mm high x 1000 mm long			nr
			140.64
2400 mm high x 1000 mm long			nr
			205.90
2690 mm high x 1000 mm long			nr
			258.32
3000 mm high x 1000 mm long			nr
			272.33
3750 mm high x 1000 mm long			nr
			406.94

**EARTH RETENTION INCLUDING GABIONS, CRIB WALLING, ETC.**

	Unit	Toe £	Heel £
<b>Filler units</b>			
for 1000 mm high wall unit	nr	42.79	34.56
for 1500 mm high wall unit	nr	42.79	42.49
for 1750 mm high wall unit	nr	42.79	55.26
for 2400 mm high wall unit	nr	42.79	83.68
for 3000 mm high wall unit	nr	42.79	116.80
for 3600 mm high wall unit	nr	42.79	155.72
<b>Mild steel straps and bolts for filler units</b>			
1000 to 3000 mm high units	nr	124.84	140.09
3600 mm high units	nr	124.84	210.06
Extra over for sulphate resisting cement = 10 %			

**FENCING (SITE BOUNDARY FENCING)**

	Unit	£
<b>Chainlink fencing (25 m rolls), including line wire</b>		
galvanised mild steel, wire 3.55 mm thick, 50 mm mesh, 1800 mm high	nr	176.00
plastic coated bright steel, wire 2.44/3.15 mm thick, 50 mm mesh, 1800 mm high	nr	181.00
plastic coated galvanised mild steel, wire 3.00/4.00 mm thick, 50 mm mesh, 1800 mm high	nr	186.00
plastic coated galvanised mild steel, wire 3.00/4.00 mm thick, 50 mm mesh, 2400 mm high	nr	248.00
<b>Concrete posts</b>		
1800 mm without leanover arms		
standard	nr	32.62
strainer	nr	56.32
end	nr	56.32
corner	nr	81.77
1800 mm with leanover arms		
standard	nr	38.17
strainer	nr	63.62
end	nr	63.62
corner	nr	89.07
2400 mm without leanover arms		
standard	nr	43.38
strainer	nr	68.83
end	nr	68.83
corner	nr	94.28
2400 mm with leanover arms		
standard	nr	50.75
strainer	nr	76.20
end	nr	76.20
corner	nr	101.65
<b>Wire</b>		
barbed wire (200 m roll)	nr	31.84
barbed tape		
single strand (200 m roll)	nr	47.80
concertina (14 m roll)	nr	35.46
flat/wrap (14 m roll)	nr	45.12
<b>Chestnut pale fencing (9.1m roll)</b>		
900 mm wide	nr	35.51
1200 mm wide	nr	49.12
<b>Chestnut posts</b>		
posts for 900 mm high fencing	nr	1.83
posts for 1200 mm high fencing	nr	2.56

**FENCING (SITE BOUNDARY FENCING)**

	Unit	£
<b>Treated softwood fencing</b>		
100 x 100 mm posts	m	4.70
75 x 75 mm posts	m	2.64
75 x 25 mm rails	m	0.88
100 x 25 mm rails	m	1.18
125 x 25 mm rails	m	1.47
50 x 38 mm rails	m	0.89
75 x 38 mm rails	m	1.34
150 x 38 mm feather edge rails	m	2.68

## GEOTEXTILES

	Unit	£
<b>Tensar</b>		
SS20 (50 x 4 m roll) for weak soils	nr	420.00
SS30 (50 x 4 m roll) for very weak soil - Discontinued	nr	0.00
SSLA20 (50 x 4 m roll) for trafficked areas	nr	565.21
SS40 (30 x 4 m roll) for over mine workings - Discontinued	nr	0.00
AR-G (50 x 3.8 m roll) for reinforcement of asphalt pavement - Discontinued	nr	0.00
GM4 (40 x 4.5 m roll) for rock fall protection - Discontinued	nr	0.00
TX160 geogrid; (75 x 4 m roll)	nr	561.00
TX170 geogrid (50 x 4 m roll)	nr	478.00
TX160 Mat 400 (30 x 3.0 m roll) for erosion protection	nr	322.07
<b>Lotrak permeable membrane (100 x 4.5 m rolls)</b>		
1800	nr	207.67
2800	nr	385.05
50R (100 x 5 m rolls)	nr	701.74
HF550 monofilament (100 x 4.4m roll)	nr	419.30
<b>Aztex</b>		
W100 (100 X 4.5m roll)	nr	136.61
NW100 (100 X 4.5m roll)	nr	159.57
WD625 drainage (25 x 2m roll)	nr	189.80
<b>Terram</b>		
Advantage (100 x 4.5 m roll)	nr	197.11
700 (150 x 4.5 m roll)	nr	409.40
1000 (100 x 4.5 m roll) permeable membranes	nr	258.25
1500 (100 X 4.5 m roll)	nr	1.52
2000 (100 x 4.5 m roll)	nr	1.52
<b>Terram laminated filter drainage membrane (25 x 2 m roll)</b>		
Terram 1B1	nr	1.46
Terram 1BZ	nr	1.46
<b>Fabric for fin drains</b>		
fabric, core and fixing staples (50 m <sup>2</sup> roll)	nr	1.49
<b>Bontec</b>		
NW6 (5.25 x 100 m roll)	nr	162.89
NW7 (1.8 x 56 m roll)	nr	56.13
NW8 (4.5 x 100 m roll)	nr	184.82
NW9 (4.5 x 100 m roll)	nr	198.39
NW14 (5.25 x 100 m roll)	nr	365.46

## GEOTEXTILES

	Unit	£
<b>Alderprufe</b>		
1500 tanking membrane (15.5 m <sup>2</sup> roll)	nr	1.43
2000 tanking membrane (15 m <sup>2</sup> roll)	nr	1.43
GRA methane barrier (105 m <sup>2</sup> roll)	nr	1.43
MR50 methane barrier (16.5 m <sup>2</sup> roll)	nr	1.43
Gastite tape (15 m roll, 100 mm wide)	nr	1.43
Backerboard (1.9 m <sup>2</sup> sheet)	nr	1.43
Primer	5 l	1.43
Primer	25 l	1.43
<b>Visqueen polyethylene damp proof membrane to PIFA Standard 6/83A</b>		
250 micron 1000 gauge, black (25 x 4 m roll)	nr	75.94
300 micron 1200 gauge, black (25 x 4 m roll)	nr	91.55
500 micron 1200 gauge, blue (25 x 4 m roll)	nr	97.46
<b>Visqueen polyethylene temporary protective cover</b>		
light duty, clear (25 x 4 m roll)	nr	25.37
medium duty, clear (50 x 4 m roll)	nr	32.43
heavy duty, clear (25 x 4 m roll)	nr	31.28

## GULLEY GRATINGS AND FRAMES TO BS EN 124

	Unit	£
<b>Group 4; ductile iron, heavy duty pattern</b>		
370 x 430 x 100 mm depth; hinged, non-rocking; D400	nr	115.00
450 x 450 x 100 mm depth; non-rocking; D400	nr	165.50
600 x 600 x 100 mm depth; D400	nr	403.00
600 diameter x 100 mm depth; D400	nr	261.00
<b>Group 3; ductile iron, non-rocking</b>		
400 x 432 x 75 mm depth; C250	nr	172.00
400 x 380 x 75 mm depth; C250	nr	106.50
<b>Group 3; ductile iron, hinged</b>		
325 x 312 x 75 mm depth; C250	nr	99.00
325 x 437 x 75 mm depth; C250	nr	111.50
400 x 432 x 75 mm depth; C250	nr	124.50
370 x 305 x 100 mm depth; C250	nr	123.00
510 x 360 x 100 mm depth; C250	nr	123.00
370 x 430 x 100 mm depth; C250	nr	123.00
<b>Group 3; ductile iron, lockable, steel sping clips</b>		
325 x 312 x 75 mm depth; C250	nr	145.50
325 x 437 x 75 mm depth; C250	nr	158.50
400 x 432 x 75 mm depth; C250	nr	172.00
370 x 305 x 100 mm depth; C250	nr	170.00
510 x 360 x 100 mm depth; C250	nr	170.00
370 x 430 x 100 mm depth; C250	nr	170.00
<b>Group 3; ductile iron, pedestrian grating</b>		
325 x 312 x 75 mm depth; C250	nr	163.00
<b>Group 3; ductile iron, pavement gratings</b>		
250 x 250 x 39 mm depth; C250	nr	68.01
300 x 300 x 39 mm depth; C250	nr	87.41
400 x 400 x 39 mm depth; C250	nr	101.46
700 x 700 x 39 mm depth; C250	nr	308.64
<b>Group 3; ductile iron, pavement gratings, concave</b>		
300 x 300 x 58 mm depth; C250	nr	93.89
400 x 400 x 63 mm depth; C250	nr	123.02
500 x 500 x 68 mm depth; C250	nr	186.68
600 x 600 x 73 mm depth; C250	nr	287.07
700 x 700 x 78 mm depth; C250	nr	327.67
<b>Group 3; ductile iron, kerb type pattern - to suit standard kerb profile</b>		
385 x 502 mm; 37 deg kerb profile, C250.	nr	212.50

**INTERLOCKING STEEL SHEET PILING AND UNIVERSAL BEARING PILES**

The following prices are ex works in lots of 25 tonnes at one time, for delivery from one works to one destination  
Carriage from Mill to destination is included on CIP terms

<b>INTERLOCKING STEEL SHEET PILING</b>			
Section	Unit	EN10248-1995 Grade S270GP £	EN10248-1995 Grade S355GP £
<b>Arcelor Mittal Hot Rolled</b>			
AZ 12, 13, 13 10/10, 14, 17	t	856.00	860.00
AZ 18, 18 10/10, 19, 25, 26, 28	t	856.00	860.00
AZ 46, 48, 50	t	867.00	860.00
AZ 12-770, 13-770, 14-770, 14-770 10/10	t	856.00	860.00
AZ 17-700, 18-700, 19-700, 20-700, 24-700,	t	856.00	860.00
AZ 26-700, 28-700, 36-700, 38-700, 40-700	t	856.00	860.00
AU 14, 16, 17, 18, 20, 21, 23, 25, 26	t	856.00	860.00
PU 12, 18-1, 18, 22-1, 22	t	856.00	860.00
PU 28-2, 28, 32-1, 32	t	856.00	860.00
PU 6R, 7R, 8R, 9R, 10R	t	856.00	860.00
PU 11R, 13R, 14R, 15R	t	856.00	860.00
GU 7, 8, 9, 12, 13, 15, 16, 18	t	856.00	860.00
AS500-9.5, 11.0, 12.0, 12.5, 12.7	t	856.00	860.00
<b>Arcelor Mittal Cold Formed</b>		<b>EN10249-1 Grade S275 JRC</b>	
PAL 30 30, 40, 50	t	788.00	
PAL 31 30, 40, 50	t	788.00	
PAL32 60, 70, 80, 90	t	788.00	
PAU 22 40, 50, 60	t	788.00	
PAU 24 40, 50, 60	t	788.00	
PAU 27 70, 80	t	788.00	
PAZ 44 50, 60, 70	t	788.00	
PAZ 55 60, 70, 80	t	788.00	
RC 8 600, 8 700, 8 800	t	788.00	
Steel piling sections supplied in lengths of 7.5m to 13.6m			
Add to the above prices for:			
<b>U Sections Hot Rolled and Z Sections Hot Rolled</b>			
Length 2 - 4 m	£40.00 extra per tonne		
Length 4 - 7.5 m	£35.00 extra per tonne		
Length 7.5 - 13.6 m	Nil		
Length 14 - 18 m	£10.00 extra per tonne		



## INTERLOCKING STEEL SHEET PILING AND UNIVERSAL BEARING PILES

UNIVERSAL BEARING PILES (UKBP)				
Size mm	Weight Kg/m	Unit	EN10025-2: 2004	EN10025-2: 2004
			Grade S275JR £	Grade S355JO £
356 x 368	174	t	1293.00	1333.00
356 x 368	152	t	1293.00	1333.00
356 x 368	133	t	1293.00	1333.00
356 x 368	109	t	1293.00	1333.00
305 x 305	223	t	1273.00	1313.00
305 x 305	186	t	1273.00	1313.00
305 x 305	149	t	1273.00	1313.00
305 x 305	126	t	1273.00	1313.00
305 x 305	110	t	1273.00	1313.00
305 x 305	95	t	1273.00	1313.00
305 x 305	88	t	1273.00	1313.00
305 x 305	79	t	1273.00	1313.00
254 x 254	85	t	1253.00	1293.00
254 x 254	71	t	1253.00	1293.00
254 x 254	63	t	1253.00	1293.00
203 x 203	54	t	1243.00	1283.00
203 x 203	45	t	1243.00	1283.00
Steel piling sections supplied in lengths of 5 to 15 metres Material ex basing point - Middlesborough Railway Station - Scunthorpe Railway Station				

Add to the above prices for:		Unit	£
<b>Quantity</b>	under 5 tonnes	t	25.00
	under 10 tonnes to 5 tonnes	t	10.00
	over 10 tonnes	t	basis
<b>Quality</b>	copper content between 0.20% and 0.35%	t	10.00
	copper content over 0.35% not exceeding 0.50%	t	15.00
<b>Size</b>	length 3 m to under 9 m	t	15.00
	length over 18.5 m to 24 m	t	5.00
	length over 24 m	t	POA
<b>Holes</b>	lifting holes	nr	10.00

## JOINT FILLERS AND WATERSTOPS

	Unit	£
<b>Flexible epoxy resin joint sealant (Expoflex 800)</b>		
2 litre tin	nr	43.69
<b>Cold applied waterproofing membrane (Mulseal DP)</b>		
5 litre bucket	nr	15.77
25 litre drum	nr	51.82
200 litre drum	nr	330.98
<b>Hot bonded reinforced bitumen sheet waterproofing membrane (Famguard GS100)</b>		
1 m x 8 m roll	nr	70.48
<b>Non absorbent joint filler (Hydrocell XL)</b>		
sheet 10 x 1000 x 2000 mm	nr	38.82
sheet 15 x 1000 x 2000 mm	nr	45.31
sheet 20 x 1000 x 2000 mm	nr	51.80
sheet 25 x 1000 x 2000 mm	nr	64.79
<b>Polysulphide sealant (Thioflex 600)</b>		
grey gun grade	l	14.68
black gun grade	l	14.68
mahogany gun grade	l	14.68
stone gun grade	l	14.68
off white gun grade	l	14.68
brick red gun grade	l	14.68
grey pouring grade	l	15.31
<b>Hot applied sealant</b>		
hand applied, Plastijoint (5 litre)	nr	40.24
poured, low extension grade, Pliastic N2 (15 kg sack)	nr	42.60
poured, hard grade, Pliastic 77 (15 kg sack)	nr	43.44
<b>Epoxy resin mortars (Expocrete)</b>		
UA (13.5 litre pack)	nr	288.29
<b>High duty elastomeric pavement sealant (Colpor 200PF)</b>	l	11.14
<b>Non extruding expansion joint filler (Fibreboard)</b>		
sheet 12.5 x 2440 x 1200 mm	nr	16.48
sheet 20 x 2440 x 1200 mm	nr	28.22
sheet 25 x 2440 x 1200 mm	nr	34.20

## JOINT FILLERS AND WATERSTOPS

	Unit	£
<b>Flexible expansion joint strip membrane (Expoband H45)</b>		
100 mm x 25 m roll	nr	219.63
200 mm x 25 m roll	nr	333.59
<b>Bituthene rolls</b>		
2000 grade (20 m <sup>2</sup> - over 75 Rolls)	m <sup>2</sup>	3.71
3000 grade (20 m <sup>2</sup> - over 75 Rolls)	m <sup>2</sup>	5.23
4000 grade (20 m <sup>2</sup> - over 75 Rolls)	m <sup>2</sup>	6.89
8000 grade (20 m <sup>2</sup> - over 75 Rolls)	m <sup>2</sup>	7.40
B2 Primer (5 litre can) over 40 cans	nr	18.82
Primer No 3 (5 litre)	nr	28.71
MR dpc (30 m x 600 mm wide)	m	13.85
<b>Biodegradation resistant sealant (Nitoseal 12)</b>		
sealant (2 litre tin) gun grade	nr	46.41
accelerator (50ml tin) gun grade	nr	12.97
<b>Cold applied bituminous sheet waterproofing membrane (Proofex)</b>		
3000, non reinforced (20m <sup>2</sup> roll)	nr	136.53
3000MR, reinforced (20m <sup>2</sup> roll)	nr	204.17
primer (5 litre can)	nr	24.17
<b>Servi-dek STD (22.5 litre unit ) over 168 units</b>	nr	90.91
<b>Serviseal Pilecap(7.5 m coil - over 80 coils)</b>		
angles (factory labour)	m	13.89
	nr	80.01
<b>PVC waterstops</b>		
Supercast 150 centre bulb (15m coil)	nr	70.92
Supercast 200 centre bulb (15 m coil)	nr	98.44
Supercast 250 centre bulb (12 m coil)	nr	100.58
Supercast rearguard S150 (12 m coil)	nr	62.46
Supercast rearguard S200 (12 m coil)	nr	98.44
Supercast rearguard S250 (12 m coil)	nr	133.38
Supercast rearguard TS250 (12 m coil) complete	nr	415.29
<b>Hydrophilic waterstops</b>		
Supercast SW10 (15 m roll)	nr	93.55
Supercast SW20 (5 m roll)	nr	94.91
ADCOR 500S 25 mm x 20 mm strip (5 m coil) 6 coils per box; over 6 boxes	nr	233.96
Servistrip AH 205 20 mm x 5 mm strip (10 m coil); over 80 coils	nr	62.94

**PRECAST CONCRETE KERBS, EDGINGS AND PAVING SLABS**

	Unit	£	
<b>Hydraulically pressed kerbs (914 mm lengths)</b>			
150 x 305 mm bullnosed	nr	5.48	
150 x 305 mm battered	nr	5.48	
150 x 305 mm half battered	nr	5.48	
125 x 255 mm bullnosed	nr	3.12	
125 x 255 mm battered	nr	3.12	
125 x 255 mm half battered	nr	3.12	
125 x 255 mm square	nr	3.12	
125 x 150 mm bullnosed	nr	2.30	
125 x 150 mm battered	nr	2.30	
125 x 150 mm half battered	nr	2.30	
125 x 150 mm square	nr	2.30	
150 x 100 mm square	nr	2.27	
<b>Extra over for dished channel</b>			
125 x 255 mm radius and dropper	nr	4.76	
125 x 150 mm radius	nr	3.95	
255 x 125 mm radius and dropper	nr	4.76	
150 x 125 mm radius	nr	3.95	
<b>Quadrants</b>	nr	7.92	
<b>Angles</b>	nr	6.34	
<b>Transitions</b>			
125 x 255 mm	nr	6.34	
Offlets (weir kerbs) laid flat radius and other transitions	nr	10.58	
	Unit	Natural £	Coloured £
<b>Block kerbs</b>			
main kerb 200 mm lengths	m	8.64	8.64
external angle	nr	4.91	4.91
internal angle	nr	4.91	4.91
radius unit	nr	4.91	4.91
crossover unit	nr	5.53	5.53
	Unit	£	
<b>Crane off load</b>			
crane off load	load	35.00	
	Full Load	Up to 50 km	

**PRECAST CONCRETE KERBS, EDGINGS AND PAVING SLABS**

	Unit	£
<b>Beany block type kerbs</b>		
Standard Unit Comprising A+C+D	nr	53.15
Deep Unit Comprising A+C+E	nr	66.44
Shallow Unit Comprising A+C+F	nr	50.38
Standard Curved Unit Comprising G+H+I	nr	74.41
Deep Curved Unit Comprising G+H+J	nr	93.01
Shallow Curved Unit Comprising G+H+K	nr	70.53
Base Block Depth Tapers	nr	55.36
<b>Ellis Trief Safety Kerb</b>		
Ellis Trief; Kerb 415mm x 380mm	nr	46.32
<b>Standard 12.5 mm galvanised steel cover plates</b>		
plates, 500 mm long	nr	38.20
cover plate bend, 45°	nr	56.66
cover plate bend, 90°	nr	50.51
cover plate bend, special	nr	80.29
offset cover plate	nr	54.94
cover plate, splay cut one end for standard radius work	nr	54.94
	Unit	£
<b>Standard capacity slot units (914 mm long)</b>		
250 x 250 mm, 125 mm bore unit	nr	33.27
250 x 250 mm, 125 mm bore unit with cast iron insert	nr	59.25
<b>Standard capacity grid units (914 mm long)</b>		
250 x 250 mm, 125 mm bore unit with pressed steel grid	nr	52.05
250 x 250 mm, 125 mm bore unit with cast iron grid	nr	99.23
<b>Cast iron silt box for standard capacity units</b>	nr	232.45
<b>Large capacity slot units (914 mm long)</b>		
305 x 305 mm, 150 mm bore unit	nr	71.56
<b>Large capacity grid units (914 mm long)</b>		
305 x 305 mm, 150 mm bore unit with pressed steel grid	nr	84.46
305 x 305 mm, 150 mm bore unit with cast iron grid	nr	127.62
<b>Cast iron silt box for large capacity units</b>	nr	413.69
<b>Charcon clearway (400 mm long)</b>		
324 x 257 mm, slot unit	m	88.88
324 x 257 mm, grid unit	m	144.16
silt box top	m	366.71

**PRECAST CONCRETE KERBS, EDGINGS AND PAVING SLABS**

	Unit	£	
<b>Standard capacity kerb units (914 mm long)</b>			
250 x 320 mm and 250 x 350 mm units, 125 mm bore	nr	49.46	
inspection units	nr	138.93	
transition units	nr	58.34	
type K manhole covers	nr	500.09	
	Unit	£	
<b>Hydraulically pressed edgings (3 feet lengths)</b>			
50 x 150 mm square	nr	2.25	
50 x 150 mm bullnosed	nr	2.25	
50 x 205 mm square	nr	3.36	
50 x 205 mm bullnosed	nr	3.36	
50 x 255 mm square	nr	3.54	
50 x 255 mm bullnosed	nr	3.54	
<b>Vibrated path edgings</b>			
50 x 150 mm round top (straight)	nr	2.59	
50 x 150 mm radius	nr	2.60	
50 x 200 mm round top (straight)	nr	2.60	
50 x 200 mm radius	nr	2.60	
50 x 255 mm round top (straight)	nr	2.60	
50 x 255 mm radius	nr	2.60	
	Unit	Natural £	Coloured £
<b>Paving flags BS 7263-1</b>			
450 x 600 x 50 mm	nr	2.19	3.30
600 x 600 x 50 mm	nr	3.68	5.03
750 x 600 x 50 mm	nr	3.80	5.80
900 x 600 x 50 mm	nr	4.16	6.19
600 x 300 x 50 mm	nr	2.22	
450 x 600 x 63 mm	nr	3.52	
600 x 600 x 63 mm	nr	3.84	
750 x 600 x 63 mm	nr	4.30	
900 x 600 x 63 mm	nr	4.72	
900 x 300 x 50 mm	nr	2.72	

## PRECAST CONCRETE KERBS, EDGINGS AND PAVING SLABS

	Unit	Natural £	Coloured £	Brindle £
<b>Block paving BS 6717: 2001</b>				
rectangular block paving (Charcon Europa)				
200 x 100 x 60 mm	m <sup>2</sup>	11.89	12.68	12.68
200 x 100 x 80 mm	m <sup>2</sup>	14.35	14.88	14.88
<b>Deterrent paving (Charcon Elite)</b>				
format 1				
200 x 144 x 80 mm	m <sup>2</sup>	51.47		
format 2				
298 x 132 x 80 mm	m <sup>2</sup>	65.03		
format 3				
298 x 132 x 80 mm	m <sup>2</sup>	54.46		
	Unit	Natural £	Coloured £	
<b>Block starter units</b>				
herringbone 65 mm thick	pack of 80	90.75	110.55	
herringbone 80 mm thick	pack of 80	114.38	118.83	
interlocking 65 mm thick	pack of 98	60.67	70.73	
interlocking 80 mm thick	pack of 98	66.70		
<b>Landscape paving</b>				
textured (exposed aggregate finish)				
400 x 400 x 65 mm	nr	4.19	4.83	
450 x 450 x 70 mm	nr	4.32	4.89	
600 x 600 x 50 mm	nr	6.23	7.24	
ground (smooth finish)				
400 x 400 x 65 mm	nr	4.32	4.70	
600 x 600 x 50 mm	nr	8.77	9.15	
non slip (pimpled finish)				
400 x 400 x 50 mm	nr		3.49	
	Unit	£		
<b>Grassgrid</b>				
366 x 274 x 100 mm	m <sup>2</sup>	20.96		
<b>Stone paving</b>				
granite setts new 100 x 100 mm (approx)	t	178.17		
granite setts reclaimed random sized	t	102.21		
granite setts reclaimed 100 x 100 mm sorted	t	120.90		
random size cobbles reclaimed	t	78.62		

**LANDSCAPING/SOILING**

For a more detailed appraisal of landscaping prices, please refer to Spons External Works and Landscape Price Book

<b>CULTIVATED TURF</b>		Unit	Over 1200 £		
Rolawn RB Medallion		m <sup>2</sup>	3.79		
Inturf Inturf SS2 Standard Turf		m <sup>2</sup>	2.92		
<b>IMPORTED TOPSOIL</b>					
The price for topsoil is so variable depending on site location, quantity available, season, etc. The following prices are a guide for use in the unit cost build ups and reflect reasonable quality soils from a single source delivered to site in 20 tonne tipper trucks, within a 20 km radius of source.					
		Unit	Under 1000 £	1000 to 5000 £	Over 5000 £
Subsoil		m <sup>3</sup>	6.96	5.56	5.56
Reasonable quality topsoil for seeding and general, sward establishment (1.6 t/m <sup>3</sup> )		m <sup>3</sup>	17.89	16.10	15.30
Better quality topsoil for species planting and for use in raised beds, planters, etc. (1.6 t/m <sup>3</sup> )		m <sup>3</sup>	35.11	28.09	25.28
<b>GROWING MEDIUMS/SOIL IMPROVERS</b>			Unit	£	
Mulches (delivered in 70 m <sup>3</sup> loads) :					
Graded bark flakes		m <sup>3</sup>		38.51	
Bark nuggets		m <sup>3</sup>		35.11	
Ornamental bark mulch		m <sup>3</sup>		39.74	
Amenity bark mulch		m <sup>3</sup>		20.95	
Forest biomulch		m <sup>3</sup>		18.79	
Decorative biomulch		m <sup>3</sup>		21.88	
Rustic biomulch		m <sup>3</sup>		26.52	
Mulchip		m <sup>3</sup>		23.61	
Pulverised bark		m <sup>3</sup>		21.79	
Woodland mulch		m <sup>3</sup>		15.79	
Woodfibre mulch		m <sup>3</sup>		19.98	



## LANDSCAPING/SOILING

GRASS SEEDS/FERTILIZERS ETC.	Unit	£
<b>Soil ameliorants:</b>		
Landscape amenity	m <sup>3</sup>	20.00
Spent Mushroom Compost	m <sup>3</sup>	8.97
Super humus	m <sup>3</sup>	15.87
Topgrow	m <sup>3</sup>	18.47
<b>Grass seed mixtures, British Seed Houses</b>		
(Reclamation) BSH ref. A15, sowing rate 15-25 g/m <sup>2</sup>	20kg	89.40
(Country Park) BSH ref. A16, sowing rate 8-20 g/m <sup>2</sup>	20 kg	97.40
(Road Verges) BSH ref. A18, sowing rate 6 g/m <sup>2</sup>	20 kg	96.28
(Landscape) BSH ref. A3, sowing rate 25-50 g/m <sup>2</sup>	20 kg	92.73
(Parkland) BSH ref. A4, sowing rate 17-35 g/m <sup>2</sup>	20 kg	94.80
<b>Fertilisers</b>		
Fisons PS5 pre-seeding fertiliser	25 kg	11.00
Fisons "Ficote" fertiliser (per 10 kg)	10 kg	34.70
BSH amenity granular and slow release fertilisers		
BSH 1 pre-seeding granular (reasonable) 6-9-6	25 kg	21.05
BSH 2 pre-seeding granular (impoverished) 10-15-10	25 kg	24.68
BSH 4 pre-seeding mini granular (spring/summer) 11-5-5	25 kg	21.68
BSH 5 pre-seeding granular (spring/summer) 9-7-7	25 kg	21.39
BSH 7 pre-seeding mini granular (autumn/winter) 3-10-5.2	25 kg	23.00
BSH 8 outfield granular (autumn/winter fertiliser) 3-12-12	25 kg	22.37
Growmore granular fertiliser (per 25 kg)	25 kg	15.00
<b>Compost</b>		
tree planting and mulching compost	m <sup>3</sup>	22.44
seeding	m <sup>3</sup>	17.60
<b>Selective weedkiller</b>	25 l	198.95
Hydroseeding - specialist process; refer to unit cost landscaping section for typical specification and situation		

## MANHOLE COVERS AND FRAMES TO BS EN 124

<b>Manhole covers and frames (all dimensions are clear opening sizes)</b>		
	Unit	£
<b>Group 5, ductile iron</b>		
600 x 600 x 150 mm depth; Super Heavy Duty; E600	nr	341.91
1210 x 685 x 150 mm depth; Super Heavy Duty; E600	nr	569.38
1825 x 685 x 150 mm depth; Super Heavy Duty; E600	nr	1211.96
<b>Group 4, ductile iron, double triangular</b>		
600 x 600 x 100 mm depth; D400	nr	180.11
600 x 600 x 100 mm depth; ventilated; D400	nr	214.64
675 x 675 x 100 mm depth; D400	nr	249.59
<b>Group 4, ductile iron, double triangular, hinged, lockable</b>		
600 x 600 x 100 mm depth; D400	nr	167.99
<b>Group 4, ductile iron, double triangular</b>		
600 mm diameter x 100 mm depth; D400	nr	137.09
600 x 600 x 100 mm depth; D400	nr	159.60
675 mm diameter x 100 mm depth; D400	nr	216.54
675 x 675 x 100 mm depth; D400	nr	224.69
900 x 600 x 100 mm depth; D400	nr	343.49
900 x 900 x 125 mm depth; D400	nr	563.09
1250 x 675 x 100 mm depth; D400	nr	364.79
<b>Group 4, ductile iron, single triangular, hinged</b>		
600 mm x 120 mm depth; D400	nr	261.34
<b>Group 4, ductile iron, circular cover, hinged</b>		
600 mm diameter x 100 mm depth; square frame; D400	nr	132.00
<b>Group 2, ductile iron, single seal</b>		
600 x 450 x 75 mm depth; B125	nr	97.51
600 x 600 x 75 mm depth; B125	nr	121.28
<b>Group 2, ductile iron, single seal, ventilated</b>		
600 x 450 x 75 mm depth: B125	nr	136.20
600 x 600 x 75 mm depth: B125	nr	190.20
<b>Group 2, ductile iron, double seal, single piece cover</b>		
600 x 600 mm; B125	nr	256.79
<b>Group 2, ductile iron, double seal, single piece cover, recessed</b>		
600 x 450 mm; B125	nr	196.19
600 x 600 mm; B125	nr	236.40
<b>MANHOLE STEP IRONS</b>		
Step irons, galvanised malleable iron	nr	3.51

## MISCELLANEOUS AND MINOR ITEMS

	Unit	£	
<b>Concrete spacer blocks for reinforcement</b>			
bars; 30 mm cover	500	29.29	
bars; 50 mm cover	200	17.22	
bars; 75 mm cover	50	9.47	
mesh; 50 mm cover	100	20.72	
<b>Wire spacers</b>			
60 mm height	m	1.37	
90 mm height	m	1.41	
120 mm height	m	1.46	
150 mm height	m	1.58	
180 mm height	m	1.87	
<b>Tying wire; 16 gauge black annealed</b>	20 kg coil	27.26	
	Coupler A £ / each	Coupler P £ / each	Thread bar (at factory) £ / end
<b>ROM Lenton reinforcement couplers (Coupler A for use where one bar can be rotated, Coupler P where neither can be)</b>			
12 mm diameter bar	3.14	18.90	2.75
16 mm diameter bar	4.06	22.02	2.94
20 mm diameter bar	7.26	24.09	3.44
25 mm diameter bar	11.33	27.93	3.90
32 mm diameter bar	15.47	37.47	5.45
40 mm diameter bar	22.39	56.90	6.98
	Unit	£	
<b>Dowel bars round</b>			
16 x 800 mm	nr	1.42	
20 x 800 mm	nr	2.23	
25 x 800 mm	nr	3.47	
32 x 800 mm	nr	5.70	
<b>Expansion dowel caps</b>			
12 x 100 mm	100	28.00	
16 x 100 mm	100	31.00	
20 x 100 mm	100	36.00	
25 x 100 mm	100	36.00	
32 x 100 mm	100	47.00	
<b>Debonding sleeves for dowel bars</b>			
12 x 450 mm	100	32.50	
16 x 200 mm	100	34.91	
20 x 300 mm	100	35.81	
25 x 300 mm	100	46.93	
32 x 375 mm	100	62.28	

## MISCELLANEOUS AND MINOR ITEMS

	Unit	£
<b>Debonding compound</b>	5 l	20.61
<b>Crack inducers (5 m lengths)</b>		
10 mm wide x 50 mm deep top type (two piece)	5m	10.05
10 mm wide x 75 mm deep top type (two piece)	5m	16.85
10 mm wide x 40 mm deep bottom Y type	5m	7.60
10 mm wide x 75 mm deep bottom Y type	5m	14.28
<b>Silver sand (bagged)</b>	25kg	4.17
<b>Formwork release agents</b>		
General purpose mould oil	25 l	28.89
Chemical release agent	25 l	28.19
ROMLEASE chemical release agent (35-50 m <sup>2</sup> /l)	25 l	31.86
<b>Retarders</b>		
ROMTARD CF retarder, subsequently brush to expose aggregate/form key (5m <sup>2</sup> /l)	25 l	80.92
ROMTARD MA retarder, apply to face of formwork (15-16 m <sup>2</sup> /l)	25 l	161.10
<b>Surface hardeners and sealers</b>		
ROMTUF concrete surface hardener and dustproofer (2 coats, 6m <sup>2</sup> /l/coat)	15 l	42.40
ROMCURE Sealer RS resin based concrete floor sealer (2 coats, 5.5 m <sup>2</sup> /l/coat)	25 l	102.13
ROMCURE Standard, resin based curing membrane (5.5 m <sup>2</sup> /l)	25 l	55.10
<b>Mortars and grouts</b>		
Epoxy grout high density	kg	4.68
Epoxy mortar general purpose	kg	5.20
Non-shrink grout	kg	4.64
ROMGROUT grout admixture for infilling bolt boxes (1 packet / 50 kg OPC)	20 packets	51.92
<b>Air entraining agents</b>		
Extra for Air Entrained concrete	kg	5.38
Rockbond Admix RB A2001, flowing/air entraining	kg	5.05
<b>Resin bonded anchors :</b>		
<b>Resin capsules</b>		
R-HAC 8mm (10 per box)	100	137.80
R-HAC 10mm (10 per box)	100	146.06
R-HAC 12mm (10 per box)	100	176.38
R-HAC 16mm (10 per box)	100	219.43
R-HAC 20mm (6 per box)	100	252.70
R-HAC 24mm (6 per box)	100	314.51
R-HAC 30mm (6 per box)	100	601.52

## MISCELLANEOUS AND MINOR ITEMS

	Unit	£
<b>Zinc plated steel threaded rod with nut and washer</b>		
8 x 110 mm (10 per box)	100	64.02
10 x 130 mm (10 per box)	100	99.87
12 x 165 mm (10 per box)	100	156.21
16 x 190 mm (10 per box)	100	288.09
20 x 250 mm (6 per box)	100	559.53
24 x 300 mm (6 per box)	100	1037.12
30 x 380 mm (6 per box)	100	2916.88
<b>Stainless steel threaded rod with nut and washer</b>		
8 x 110 mm (10 per box)	100	162.03
10 x 130 mm (10 per box)	100	247.23
12 x 165 mm (10 per box)	100	396.69
16 x 190 mm (10 per box)	100	834.24
20 x 250 mm (6 per box)	100	1522.51
24 x 300 mm (6 per box)	100	2873.15
<b>Rawl SafetyPlus Anchors</b>		
<b>Loose Bolt Anchors</b>		
M8 15L (50 per box)	100	132.91
M8 40L (50 per box)	100	158.21
M10 40L (50 per box)	100	205.04
M12 25L (25 per box)	100	268.35
M16 25L (10 per box)	100	534.10
M16 50L (10 per box)	100	618.84
M20 30L (10 per box)	100	1040.50
<b>Bolt Projecting type Anchors</b>		
M8 15P (50 per box)	100	154.40
M10 20P (50 per box)	100	207.57
M12 25P (25 per box)	100	298.71
M12 50P (25 per box)	100	339.24
M16 25Pm (10 per box)	100	607.54
M16 50P (10 per box)	100	688.51
M20 30P (10 per box)	100	1139.19
<b>Hyrib permanent formwork system</b>		
ref. 2411	m <sup>2</sup>	22.23
ref. 2611	m <sup>2</sup>	17.42
ref. 2811	m <sup>2</sup>	16.27

**MISCELLANEOUS AND MINOR ITEMS**

	Unit	£
<b>Exmet galvanised brickwork reinforcement (20 m rolls)</b>		
65 mm wide	m	0.71
115 mm wide	m	1.22
175 mm wide	m	1.91
225 mm wide	m	2.45
305 mm wide	m	3.09
<b>Expamet stainless steel bed joint brickwork reinforcement (3050 mm rolls)</b>		
65 mm wide	m	1.23
115 mm wide	m	2.07
175 mm wide	m	3.34
225 mm wide	m	4.55
<b>Polystyrene sheets</b>		
sheet 25 x 2440 x 1220mm	nr	4.39
sheet 50 x 2440 x 1220mm	nr	8.78
sheet 75 x 2440 x 1220mm	nr	13.17
sheet 100 x 2440 x 1220mm	nr	17.55
sheet 150 x 2440 x 1220mm	nr	26.33

## PAINT/STAINS/PROTECTIVE COATINGS

	Unit	£
<b>Trade gloss</b>		
magnolia/ brilliant white	5 l	23.45
white	5 l	23.45
colours	5 l	30.71
<b>Trade undercoat</b>		
white	5 l	22.35
colours	5 l	29.92
<b>Trade eggshell</b>		
magnolia	5 l	34.68
colours	5 l	42.25
<b>Trade matt emulsion</b>		
magnolia and brilliant white	5 l	24.25
white	5 l	23.18
colours	5 l	31.71
<b>Trade silk emulsion</b>		
magnolia and brilliant white	5 l	29.36
white	5 l	27.95
colours	5 l	33.30
<b>Trade masonry paint, colours</b>	5 l	27.15
<b>Trade Timberguard</b>	5 l	33.92
<b>Creosote; dark / light</b>	25 l	17.31
<b>Wood preservers</b>		
wood preservers	25 l	103.75
Exterior Wood; garden shed + fence preservers	25 l	48.40
<b>Woodstains</b>		
Select Woodstain; matt finish - semi-transparent	2.5 l	33.57
Select Woodstain; matt finish - coloured	5 l	54.70
Premier Woodstain; satin finish - semi-transparent	1 l	11.46
Premier Woodstain; satin finish - coloured	5 l	
5 Year QD woodstain	25l	224.50
5 Star wood treatment	25 l	124.76
<b>Trade varnishes</b>		
Gloss varnish	5 l	55.24
Trade varnish; clear gloss	5 l	53.75
<b>Primers</b>		
alkali resisting plaster primer	5 l	31.85
oil based non-toxic wood primer	5 l	31.39
acrylic wood primer	5 l	32.30
aluminium wood primer	5 l	40.37
calcium plumbate metal primer	5 l	48.25
red oxide metal primer	5 l	48.60
acrylic primer sealer undercoat	5 l	31.77
stabilising primer, pigmented	5 l	30.44

## PAINT/STAINS/PROTECTIVE COATINGS

	Unit	£	
<b>Anti-condensation paint</b>	5 l	59.45	
<b>Road marking paint, white/yellow</b>	5 l	74.11	
<b>Sadolin</b>			
high performance clear varnish, internal woodwork	5 l	34.39	
Classic, translucent matt finish, external woodwork	5 l	41.81	
Extra, translucent, semi-gloss for all external joinery	5 l	49.60	
Superdec, opaque, semi gloss, waterborne for all external joinery	5 l	48.61	
Supercoat wood stain	5 l	57.02	
<b>Masonry paint</b>			
masonry, coloured	5 l	27.15	
All Seasons masonry, coloured	5 l	34.11	
Fine Textured masonry, coloured	5 l	30.38	
masonry stabilising solution	5 l	26.62	
masonry fungicidal solution	5 l	25.75	
<b>Sandtex masonry paint</b>			
Matt Exterior / Hi Cover Smooth, coloured	5 l	23.51	
fungicidal	5 l	17.36	
stabilising solution, clear	5 l	22.39	
Solignum Architectural wood stain	5 l	59.18	
Aluminium paint	5 l	65.10	
Heat resisting aluminium paint	5 l	66.23	
Anti condensation paint	5 l	59.45	
Red oxide paint	5 l	48.59	
General purpose bituminous paint	5 l	16.05	
Concrete and floor paint	5 l	40.75	
<b>PROTECTIVE COATINGS</b>			
	Unit	£	Price per theoretical m <sup>2</sup>
For fabricated steel, lighting columns, parapets and guard railings, etc.			
<b>Prefabrication primers</b>			
Metagard G280 primer	l	6.84	0.63
Metagard K232 zinc rich epoxy blast primer	l	17.16	0.82
Metagard L574 blast primer	l	8.36	0.72



## PAINT/STAINS/PROTECTIVE COATINGS

	Unit	£	Price per theoretical m <sup>2</sup>
<b>Alkyd primers</b>			
Leighs L489 zinc phosphate primer	l	8.27	1.07
Leighs M583 quick drying alkyd primer	l	9.14	1.14
Leighs M600 quick drying zinc phosphate primer	l	7.10	1.25
<b>Alkyd intermediates &amp; top coats</b>			
Leighs C530 QD high gloss finish	l	11.94	0.70
Metagrip L654 MIO paint	l	8.78	1.10
Leighs M671 undercoat	l	7.70	0.52
<b>Protective finishes - alkyd</b>			
Leighs M155 matt protection finish	l	12.19	1.69
Leighs M255 gloss protective finish	l	14.91	2.76
<b>Protective finishes - epoxy</b>			
Epigrip M455 sheen protective finish	l	17.32	2.17
Epigrip M555 HB sheen protective finish	l	20.31	4.23
<b>Fire protection</b>			
Firetex FX1000/FX2000 intumescent coating	l	28.84	Varies
Firetex FX3000/FX4000 intumescent coating	l	28.72	Varies
<b>Concrete protection</b>			
RIW liquid asphaltic composition (two coats) (25 litre drum)	l	4.56	4.00
RIW Heviseal (two coats) (20 litre drum)	l	5.20	6.62
RIW hydrocoat (25 litre drum)	l	2.09	0.60
RIW bitumen protection board, 1.625 x 1.285 m x 3 mm thick sheet	nr	12.93	
RIW sheet seal, grade 9000/300, 20 x 0.3 m roll	nr	81.82	

## POLYMER CHANNELS AND FITTINGS

	Unit	£	
<b>ACO S100 interlocking, stepped channel with locked ductile iron grating; Class F900</b>			
length 1000 mm	nr	98.90	
length 500 mm	nr	70.00	
<b>ACO N100KS interlocking, pre-sloped channel with stainless steel frame; Class C250</b>			
length 1000 mm	nr	57.85	
length 500 mm	nr	41.20	
<b>ACO ParkDrain one piece polymer concrete channel system with integral grating; Class C250</b>			
length 500 mm	nr	40.43	
<b>ACO KerbDrain 305 one piece polymer concrete combined kerb drainage system; Class D400</b>			
length 500 mm	nr	32.75	
access unit	nr	104.50	
drop kerb unit	nr	104.40	
mitre unit	nr	35.95	
endcaps; closing	nr	15.42	
	Unit	S100 & S100K (heavy duty Class F) £	N100K (normal duty Class A-C) £
<b>ACO end caps</b>			
end cap	nr	10.70	19.50
outlet end cap	nr	18.75	26.15
inlet end cap	nr	18.75	26.15
	Unit	£	£
<b>ACO universal gullies complete with grating and galvanised bucket gully</b>	nr		310.50
<b>ACO sump units with galvanised steel bucket</b>			
for S100 channel with ductile iron grating	nr		173.20
for N100KS channel with stainless steel frame	nr		125.25
for KerbDrain 305 deep trapped gully base	nr		104.50
<b>ACO Quicklock composite grating; Class C250</b>			
galvanised steel perforated, length 500mm	nr		41.20

## POLYMER CHANNELS AND FITTINGS

	Unit	£
<b>ACO KerbDrain 480; Class D400</b>		
length 500mm	nr	29.85
access unit	nr	98.00
drop kerb unit; length 915mm	nr	56.50
mitre unit	nr	32.75
endcaps	nr	15.42
<b>ACO RoadDrain interlocking channel system</b>		
RoadDrain 100; length 500mm	nr	65.50
RoadDrain 200; length 500mm	nr	84.10
<b>End caps</b>		
RoadDrain 100	nr	12.30
RoadDrain 200	nr	26.35
Step connectors	nr	11.25
Sump unit c/w sediment bucket	nr	132.25
<b>PVC accessories</b>		ACO
110 mm drain union	nr	2.70
160 mm drain union	nr	12.10
200 mm drain union	nr	16.22
160 mm oval to round union	nr	13.49
110 mm foul air trap	nr	20.84
160 mm foul air trap	nr	39.31
<b>Channel gratings</b>		
Class C ductile iron, slotted, 500 mm long	nr	17.62
Class E ductile iron, slotted, 500 mm long	nr	19.57
Class A galvanised steel, slotted, 500 mm long	nr	9.75
Class A galvanised steel, slotted, 1000 mm long	nr	18.19
Class C galvanised steel, mesh, 500 mm long	nr	18.85
Class C galvanised steel, mesh, 1000 mm long	nr	25.60
Class A stainless steel, slotted, 500 mm long	nr	32.50
Class A stainless steel, slotted, 1000 mm long	nr	49.12
Class C perforated stainless steel, 500 mm long	nr	54.10
Class C perforated stainless steel, 1000 mm long	nr	106.10
Ductile iron or steel locking bar and mild steel bolt	nr	3.08
Steel locking bar to suit mesh gratings	nr	3.08

## POLYMER CHANNELS AND FITTINGS

	Unit	£
<b>ACO Mini ParkDrain</b>		
length 1000 mm	nr	76.95
access, length 1000 mm	nr	94.95
endcap	nr	10.56
<b>ACO LightWeight Kerb</b>		
length 915 mm	nr	10.90
drop unit, length 915 mm	nr	12.05
centre stone unit, length 915 mm	nr	12.05

**QUARRY PRODUCTS, AGGREGATES, ETC.**

Cost per tonne delivered to site within a 20 mile radius of quarry or production centres, cost based on most economically available materials, minimum order 5,000 tonnes (average prices – see note on [p. 109](#)).

	Scotland, North, and Wales	Midlands and South West	South General
<b>Graded granular material</b>			
natural gravels (HA class 1 A, B, or C) general fill	10.25	11.10	11.20
crushed gravel or rock ditto	11.90	14.20	14.90
<b>Reclaimed material (HA class 2E)</b>			
blast furnace slag; general fill	7.00	8.20	10.10
quarry waste	9.55	10.40	12.50
quarry waste from processing of Aggregate Tax excluded minerals	7.05	8.35	10.40
<b>Well graded granular material</b>			
natural gravel or sand (HA class 6A) fill below water	11.95	13.40	12.45
crushed gravel or rock; ditto (free draining)	11.55	14.60	16.95
<b>Selected granular material</b>			
natural gravel (HA class 6F) capping layers	10.50	12.00	12.80
crushed rock; ditto	11.75	13.45	18.35
<b>Selected uniformly graded material</b>			
natural gravel or crushed rock (HA class 6I,J) fill to reinforced earth-blinding material	10.55	10.95	11.65
pea gravel fill on bridges and other structures	21.20	22.25	22.25
<b>Selected graded material</b>			
natural gravel (HA class 6N, P) fill to structure	10.45	12.95	13.57
natural rock; ditto	12.60	16.55	15.40
<b>Selected graded material</b>			
natural gravel (HA class 6C) rock fill	12.10	12.90	15.40
crushed gravel; ditto	12.40	13.25	16.25
<b>Wet cohesive materials</b>			
natural boulder clay (HA class 2A) general fill	10.75	11.85	11.85
Oxford clays; ditto	13.00	13.80	13.80
<b>Dry cohesive materials</b>			
natural boulder clay (HA class 2B) general fill	10.75	11.85	11.85
Oxford clays; ditto	13.00	13.80	13.80
<b>Chalk fill</b>			
chalk & associated materials (HA class 3) general fill			10.05

## QUARRY PRODUCTS, AGGREGATES, ETC.

	Scotland, North, and Wales	Midlands and South West	South General
<b>Rock fill</b>			
crushed rock, core fill, rock punching	8.35	9.10	16.00
<b>Armour stone single size (minimum costs) sea defence shore protection</b>			
0.5 tonne	18.15	21.15	21.15
1 tonne	26.60	34.45	34.45
3 tonne	42.10	43.25	43.25
<b>Granular material single sized aggregate</b>			
natural gravel (HA Clause NG503) pipe bedding/haunching	12.55	12.95	14.85
crushed rock; ditto	12.25	12.35	17.20
<b>Filter material</b>			
natural or crushed other than unburned slag or chalk (HA Clause NG505) backfill to drain trenches and filter drains			
type A	10.85	13.05	21.20
type B	9.85	12.65	18.70
type C	11.15	13.60	22.25
<b>Graded granular material</b>			
crushed rock	12.00	14.40	14.30
natural sand or gravels (HA Clauses NG803/804) sub base type ½	14.20	16.95	16.80
crushed concrete (reclaimed)	6.85	9.20	10.05
<b>Coated roadstone products</b>			
DBM roadbases (HA Class 903) carriageway construction	49.85	40.30	45.05
HRM base and wearing; carriageway construction	59.80	48.10	50.30
<b>Bitumen Macadam</b>			
40 mm aggregate	40.20	44.05	45.70
20 mm aggregate	41.30	45.15	46.95
10 mm aggregate	43.70	48.30	50.30
<b>Concrete aggregates</b>			
all in aggregate			
10 mm for concrete production	12.90	14.40	15.35
20 mm for concrete production	12.50	13.45	16.35
40 mm for concrete production	12.90	14.40	16.70
fine screen sharp sand for concrete production	11.55	13.05	14.40

**QUARRY PRODUCTS, AGGREGATES, ETC.**

PLEASE NOTE

The above prices are indicative, and are based on typical supplier's quotations. An average of these prices is used in Parts 4 and 5 (Unit Cost compilation), and provides a reasonable guide as to comparative costs of common or HA Specification materials.

It must be remembered that transport costs form a high proportion of delivered stone prices: if a 20 tonne tipper costs £40.00 per hour to operate then it follows that for each hour journey time £2.00 will be added to each tonne delivered.

The above costs are based on approximately £3.00 per tonne transport cost. Minimum 16 tonne loads.

Allow 15-20p / tonne per mile adjustment to 20 mile inclusion if required.

Market conditions and commercial considerations could also affect these prices to a surprising degree - up to double for the more selective materials. We have included such variations only where we feel that there is a sound reason for them and so have attempted to produce a reasonable guide to market conditions.

If specific requirements are known then local quarries are usually helpful with information and guide prices.

Refer to section dealing with the Aggregate Levy on page 29. The above costs exclude the tax.

## SCAFFOLDING AND PROPS

	Unit	£
<b>Scaffold tube</b>		
black tube	ft	1.00
galvanised tube	ft	1.00
alloy tube	ft	2.00
<b>Scaffold fittings</b>		
double	nr	1.65
single	nr	1.10
swivel	nr	1.85
sleeve	nr	1.60
joint pin	nr	1.50
baseplate	nr	0.40
<b>Scaffold boards</b>		
grade A selected (3.97 m long)	nr	8.00
grade A selected (3.00 m long)	nr	7.00
<b>Scaffold towers, alloy, coming with ladder access</b>		
2.5 x 1.35 x 6.20 m platform height	nr	1197.00
2.5 x 1.35 x 8.2 m platform height	nr	1591.00
<b>Adjustable struts</b>		
size 0	nr	18.00
size 1	nr	22.00
size 2	nr	25.00
size 3	nr	27.00
<b>Adjustable props</b>		
size 0	nr	27.00
size 1	nr	32.00
size 2	nr	31.00
size 3	nr	33.00
size 4	nr	40.00
<b>Lightweight stagings</b>		
3.60 m	nr	149.00
4.20 m	nr	169.00
4.80 m	nr	223.00
5.40 m	nr	249.00
6.10 m	nr	281.00
6.70 m	nr	309.00
7.30 m	nr	337.00



## SCAFFOLDING AND PROPS

	Unit	£
<b>Reinforced timber pole ladders</b>		
4 m	nr	83.00
5 m	nr	100.00
6 m	nr	120.00
7 m	nr	140.00
8 m	nr	160.00
9 m	nr	180.00
10 m	nr	200.00
<b>Health &amp; Safety Signs</b>	nr	5.00 - 50.00
<b>Trench sheeting</b>		
standard overlapping	m	11.00
L8 interlocking	m	18.00
<b>Fence panels</b>		
anti-climb, 2m high x 3.5m with block and coupler	nr	70.00

## SEPTIC TANKS, CESSPOOLS AND INTERCEPTORS

	Unit	£
<b>Klargester 'Alpha' GRP septic tanks excluding cover and frame</b>		
2800 litre capacity; 1000 mm invert	nr	615.00
2800 litre capacity; 1500 mm invert	nr	665.00
3800 litre capacity; 1000 mm invert	nr	835.00
3800 litre capacity; 1500 mm invert	nr	885.00
4600 litre capacity; 1000 mm invert	nr	945.00
4600 litre capacity; 1500 mm invert	nr	995.00
pedestrian cover and frame	nr	65.00
<b>Klargester GRP cesspools including covers and frames</b>		
18200 litre capacity; 1000mm invert	nr	2240.00
<b>Klargester 3 stage GRP petrol interceptors</b>		
2000 litre capacity	nr	975.00
2500 litre capacity	nr	1225.00
4000 litre capacity	nr	1415.00
<b>Klargester Biodisc; self contained sewage treatment plant</b>		
population equivalent of 6, 450 mm invert	nr	2935.00
population equivalent of 6, 750 mm invert	nr	3025.00
population equivalent of 6, 1250 mm invert	nr	3080.00
population equivalent of 12, 450 mmm invert	nr	3825.00
population equivalent of 12, 750 mm invert	nr	3915.00
population equivalent of 12, 1250 mm invert	nr	3980.00
population equivalent of 18, 600 mm invert	nr	4885.00
population equivalent of 18, 1100 mm invert	nr	5315.00
<b>Klargester Single Effluent Pump Stations, GRP sump and cover</b>		
1000 mm diameter, 1.0 m invert, 2340 mm total depth	nr	720.00
<b>Klargester Bypass Interceptors, suitable for areas of low risk such as car parks</b>		
NSB3 160 mm pvc bypass separator; 1,670 m <sup>2</sup> drainage area	nr	720.00
NSB4 160 mm pvc bypass separator; 2,500 m <sup>2</sup> drainage area	nr	812.00
NSB6 300 mm grp bypass separator; 3,335 m <sup>2</sup> drainage area	nr	865.00
NSB8 300 mm grp bypass separator; 4,445 m <sup>2</sup> drainage area	nr	1060.00

## SHUTTERING, TIMBER AND NAILS

			Unit	£
<b>Finnish Birch faced plywood exterior WBP size 1220 x 2440 mm, full pallets</b>				
6.5 mm thick			m <sup>2</sup>	5.71
12 mm thick			m <sup>2</sup>	9.44
18 mm thick			m <sup>2</sup>	14.15
24 mm thick			m <sup>2</sup>	18.86
<b>Far Eastern Redwood faced plywood exterior WBP size 1220 x 2440 mm, full pallets</b>				
4.0 mm thick			m <sup>2</sup>	6.00
6.0 mm thick			m <sup>2</sup>	7.00
12.0 mm thick			m <sup>2</sup>	10.00
18.0 mm thick			m <sup>2</sup>	13.00
25.0 mm thick			m <sup>2</sup>	16.00
<b>Coated shuttering plywood. Phenolic film faced, edges sealed ext WBP, Finnish Birch faced (Combi)</b>				
size 1220 x 2440 x 12.0 mm			m <sup>2</sup>	14.05
size 1220 x 2440 x 18.0 mm			m <sup>2</sup>	19.28
<b>Coated shuttering plywood. Phenolic film faced, edges sealed ext WBP, Eastern European Birch throughout</b>				
size 1220 x 2440 x 12.0 mm			m <sup>2</sup>	13.00
size 1220 x 2440 x 18.0 mm			m <sup>2</sup>	18.00
<b>Resin impregnated overlay edges sealed Pourform/Ultraform/ B Matte/ Channelform</b>				
size 1220 x 2440 x 17.5 mm			m <sup>2</sup>	14.50
Thickness	£/m 25 mm	£/m 38 mm	£/m 50 mm	£/m 75 mm
<b>Sawn softwood random lengths (used); good quality timber for formwork, falseworks, temporary works and trench supports, delivered to site</b>				
50 mm wide	0.40		0.79	1.19
75 mm wide	0.59		1.19	1.78
100 mm wide	0.79		1.59	2.38
150 mm wide	1.19		2.38	3.57
<b>Wrought (planed) timber; European softwood (new)</b>				
25 mm wide	0.27	0.40	0.53	0.80
50 mm wide	0.53	0.81	1.07	1.60
75 mm wide	0.80	1.21	1.60	2.40
100 mm wide	1.07	1.62	2.13	3.20
125 mm wide	1.33	2.02	2.66	3.99
150 mm wide	1.60	2.43	3.20	4.79
175 mm wide	1.86	2.83	3.73	5.59
200 mm wide	2.13	3.24	4.26	6.39
225 mm wide	2.40	3.64	4.79	7.19

## SHUTTERING, TIMBER AND NAILS

	Unit	New £		Used £
<b>Structural softwood graded SC3 / 4</b>				
100 x 75 mm	m <sup>3</sup>	267.95		
150 x 75 mm	m <sup>3</sup>	267.95		
200 x 100 mm	m <sup>3</sup>	320.85		
200 x 200 mm	m <sup>3</sup>	379.50		
300 x 200 mm	m <sup>3</sup>	402.50		
300 x 300 mm	m <sup>3</sup>	414.00		
	Unit	Greenheart £	Opepe £	Ekki £
<b>Construction hardwood (for piers, jetties, groynes, dolphins, etc.)</b>				
Note: Medium price shown, actual can vary considerably dependent on quantity and specification; larger sizes may prove difficult if not impossible to obtain				
50mm thick	m <sup>2</sup>	10.75	14.00	12.00
75mm thick	m <sup>2</sup>	16.96	20.00	18.00
100mm thick	m <sup>2</sup>	23.29	26.50	24.50

	Unit	£	£
<b>Prime Parana pine</b>			
50 x 300 mm	m <sup>3</sup>	525	
38 x 300 mm	m <sup>3</sup>	525	
38 x 300 mm (planed)	m <sup>3</sup>	635	
32 x 300 mm	m <sup>3</sup>	560	
32 x 300 mm (planed)	m <sup>3</sup>	670	
25 x 300 mm	m <sup>3</sup>	500	
25 x 300 mm (planed)	m <sup>3</sup>	605	
<b>Used timber</b>			
beams, baulks, pit props (used for kerbing timbers, temporary barriers, plant supports, etc)	m <sup>3</sup>	130 - 160	
<b>Nails; steel</b>		bright	sherardised
annular ring shank			
100 mm long	kg	1.40	
50 mm long	kg	1.44	
round plain head			
150 mm long	kg	1.14	
100 mm long	kg	1.18	
oval lost head			
50 mm long	kg	1.40	
75 mm long	kg	1.25	

## SHUTTERING, TIMBER AND NAILS

	Unit	£	£
oval brad head			
150 mm long	kg	1.68	
100 mm long	kg	1.53	
clout, plain head nails			
75 mm long	kg	2.46	
panel pins			
20 mm long	kg	3.80	
40 mm long	kg	3.80	
		Unit	£
<b>Coach screws; stainless steel; hexagon head</b>			
M6 x 70 mm		100	4.63
M8 x 70 mm		100	5.62
M8 x 100 mm		100	7.42
M10 x 100 mm		50	6.08
M10 x 160 mm		50	7.65
<b>Metric mild steel bolts and nuts</b>			
M6 x 50 mm		100	5.20
M6 x 100 mm		100	9.24
M8 x 50 mm		100	8.23
M8 x 100 mm		100	14.05
M10 x 50 mm		100	12.71
M10 x 100 mm		100	21.67
M12 x 50 mm		100	17.87
M12 x 100 mm		100	28.38
M12 x 200 mm		100	74.75
M12 x 300 mm		100	133.32
M16 x 50 mm		100	32.11
M16 x 100 mm		100	47.45
M16 x 200 mm		100	109.55
M16 x 300 mm		100	184.82
M20 x 50 mm		100	55.67
M20 x 100 mm		100	78.00
M20 x 200 mm		100	162.50
M20 x 300 mm		100	261.92
M24 x 50 mm		100	122.81
M24 x 100 mm		100	146.90
M24 x 200 mm		100	239.20
M24 x 300 mm		100	377.56
M30 x 100 mm		100	396.42
M30 x 150 mm		100	454.52
M30 x 200 mm		100	512.62

## SHUTTERING, TIMBER AND NAILS

	Unit	£
<b>Washers for metric mild steel bolts and nuts</b>		
M8 Washer	100	1.00
M10 Washer	100	2.00
M12 Washer	100	3.00
M16 Washer	100	5.00
M20 Washer	100	7.00
M24 Washer	each	12.00
M30 Washer		12.00
<b>Metric mild steel setscrews</b>		
M6 x 25 mm	100	3.60
M6 x 60 mm	100	4.73
M8 x 25 mm	100	5.29
M8 x 40 mm	100	5.74
M10 x 20 mm	100	6.53
M10 x 100 mm	100	16.20
M12 x 50 mm	100	7.63
M12 x 75 mm	100	20.26
M16 x 50 mm	100	28.14
M16 x 100 mm	100	46.84
M20 x 50 mm	100	50.44
M20 x 60 mm	100	60.76
M24 x 50 mm	100	72.91
M24 x 80 mm	100	116.66
<b>Stainless steel straps</b>		
30 x 2.50 mm vertical; stainless steel; restraint strap		
800 mm girth	nr	6.90
1000 mm girth	nr	8.53
1200 mm girth	nr	10.08
1600 mm girth	nr	13.18
30 x 2.5 mm lateral; stainless steel; restraint strap		
800 mm girth	nr	10.66
1000 mm girth	nr	13.33
1200 mm girth	nr	16.00
1600 mm girth	nr	21.39
<b>Joist fittings (galvanised)</b>		
<b>Splice plate</b>		
400 x 57 x 18 mm	each	1.22
550 x 82 x 18 mm	each	1.34
560 x 98 x 18 mm	each	2.00

## SHUTTERING, TIMBER AND NAILS

	Unit	£
<b>Junction clip</b>		
dry wall construction	250	85.00
<b>Toothplate single sided timber connector (galvanised)</b>		
50 mm diameter	200	10.00
63 mm diameter	150	111.00
75 mm diameter	100	108.00
<b>Joist fittings (galvanised) - continued</b>		
<b>Toothplate double sided timber connector (galvanised)</b>		
50mm diameter	200	112.00
63mm diameter	150	121.50
75mm diameter	100	113.00
<b>Split ring connector (galvanised)</b>		
63mm diameter x 5mm thick	100	236.00
101mm diameter x 5mm thick	100	630.00
<b>Shear plate connector (galvanised)</b>		
67mm diameter x 4mm thick	150	567.00
101mm diameter x 6mm thick	50	818.50
<b>Bonded polystyrene void formers circular in section</b>		
225 mm diameter	m	1.01
300 mm diameter	m	1.79
450 mm diameter	m	4.04
600 mm diameter	m	7.18
750 mm diameter	m	11.22
<b>Expanded polystyrene in blocks</b>	m <sup>3</sup>	20.31

## STEEL PIPES AND FITTINGS

	Unit	£	£	£	£	£	£
Diameter in mm		100	125	150	200	250	300
<b>Steel pipe to BS EN 10216 or equivalent</b>	m	25.00	33.50	38.50	40.50	51.00	58.50
<b>Fittings to BS 1640, standard strength</b>							
90° bend, long radius	nr	22.00	49.00	53.50	106.50	193.50	285.50
45° bend, long radius	nr	16.50	35.00	40.00	84.00	152.00	205.00
single junction, equal	nr	55.50	98.00	100.50	197.50	377.00	588.00
single junction, 100 mm branch	nr			116.00	236.00		
single junction, 150 mm branch	nr				236.00		
single junction, 200mm branch	nr						
concentric reducers, reducing to 100 mm	nr			30.00	70.50		
concentric reducers, reducing to 150 mm	nr				46.50	85.50	
concentric reducers, reducing to 200 mm	nr					76.50	134.00
concentric reducers, reducing to 250 mm	nr						135.00
	Unit	£	£	£	£	£	£
Diameter in mm		75	110	160	200		
<b>Stainless steel pipe, grade AISI 316</b>	m	28.00	40.00	62.00	92.00		
<b>Fittings</b>							
90° bend	m	35.50	45.00	114.00	257.00		
45° bend	m	26.00	34.50	97.00	183.50		
90° branch	m	38.50	49.00	117.50	173.00		
	Unit	£	£	£	£	£	£
Diameter in mm		100	150	200	250	300	
<b>Fusion bonded epoxy coated steel pipe</b>	m	99.00	169.50	191.00	242.50	311.00	
<b>Fittings</b>							
90° bend; flanged	nr	219.00	266.00	401.00	932.50	821.00	
45° bend; flanged	nr	135.00	240.00	921.00	542.00	684.00	
Single junctions; flanged							
branch size 100 mm	nr		366.00	427.00	563.00	690.00	
branch size 150 mm	nr		90.00	510.00	658.00	722.00	
branch size 200 mm	nr			564.00	709.50	842.50	
branch size 250 mm	nr				791.00	926.00	
branch size 300 mm	nr					997.00	



## STRUCTURAL STEELWORK

**Note: The following basic prices are for basic quantities of BS EN10025-2 grade 275 JR steel (over 10 tonnes of one quality, one serial size of section and one thickness in lengths between 9 m and 18.5 m, for delivery to one destination). In view of firming prices in the steel market, we would note that these prices are based at June 2008 and may be subject to surcharge. Transport charges are additional.**

See [page 121](#) for other extra charges

Based on delivery Middlesborough/Scunthorpe Railway Stations - refer to supplier for section availability at each location.

See [page 129](#) for guide delivery charges.

	£/tonne		£/tonne
<b>Universal Beams, UKB (kg/m)</b>			
1016 x 305 mm (222,249,272,349,393,438,487)	1278.00	406 x 178 mm (54,60,67,74,85)*	1213.00
914 x 419 mm (343,388)	1268.00	406 x 140 mm (39,46)	1213.00
914 x 305 mm (201,224,253,289)	1263.00	356 x 171 mm (45,51,57,67)	1213.00
838 x 292 mm (176,194,226)	1258.00	356 x 127 mm (33,39)	1213.00
762 x 267 mm (134,147,173,197)	1258.00	305 x 165 mm (40,46,54)	1208.00
686 x 254 mm (125,140,152,170)	1258.00	305 x 127 mm (37,42,48)	1208.00
610 x 305 mm (149,179,238)	1248.00	305 x 102 mm (25,28,33)	1208.00
610 x 229 mm (101,113,125,140)	1233.00	254 x 146 mm (31,37,43)	1223.00
<b>610 x 178 mm (82,92,100)*</b>	1233.00	254 x 102 mm (22,25,28)	1223.00
<b>533 x 312 mm (150,182,219,272)*</b>	1218.00	203 x 133 mm (25,30)	1223.00
533 x 210 mm (82,92,101,109,122,138)*	1218.00	203 x 102 mm (23)	1223.00
<b>533 x 165 mm (66,74,85)*</b>	1218.00	178 x 102 mm (19)	1223.00
457 x 191 mm (67,74,82,89,98,106,133,161)*	1208.00	152 x 89 mm (16)	1223.00
457 x 152 mm (52,60,67,74,82)	1208.00	127 x 76 mm (13)	1223.00
<b>* New section sizes</b>			
<b>Universal Columns,UKC (kg/m)</b>			
356 x 406 mm (235,287,340,393,467,551,634)	1268.00	254 x 254 mm (73,89,107,132,167)	1213.00
356 x 368 mm (129,153,177,202)	1268.00	203 x 203 mm (46,52,60,71,86)	1213.00
305 x 305 mm (97,118,137,158,198,240,283)	1233.00		
<b>Parallel Flange Channels, UKPFC (kg/m)</b>			
430 x 100 mm (64.4)	1263.00	200 x 90 mm (29.7)	1233.00
380 x 100 mm (54.0)	1263.00	200 x 75 mm (23.4)	1198.00
300 x 100 mm (45.5)	1233.00	180 x 90 mm (26.1)	1233.00
300 x 90 mm (41.4)	1233.00	180 x 75 mm (20.3)	1198.00
260 x 90 mm (34.8)	1233.00	150 x 90 mm (23.9)	1233.00
260 x 75 mm (27.6)	1233.00	150 x 75 mm (17.9)	1198.00
230 x 90 mm (32.2)	1233.00	125 x 65 mm (14.8)	1198.00
230 x 75 mm (25.7)	1233.00	100 x 50 mm (10.2)	1198.00

## STRUCTURAL STEELWORK

	£/tonne		£/tonne
<b>Asymmetric Slimflor Beams, ASB (S355JR)</b>			
280 ASB 74 (73.6)	1253.00	300 ASB 155 (155.4)	1253.00
280 ASB 100 (100.3)	1253.00	300 ASB 185 (184.6)	1253.00
280 ASB 124 (123.9)	1253.00	300 ASB 196 (195.5)	1253.00
280 ASB 136 (136.4)	1253.00	300 ASB 237 (237.1)	1253.00
300 ASB 153 (152.8)	1253.00	300 ASB 249 (249.2)	1253.00

	£/tonne		£/tonne		£/tonne
<b>Equal angles, UKA</b>					
200 x 200 x 16 mm	900.00	150 x 150 x 18 mm	895.00	100 x 100 x 12 mm	885.00
200 x 200 x 18 mm	900.00	120 x 120 x 8 mm	900.00	100 x 100 x 15 mm	885.00
200 x 200 x 20 mm	900.00	120 x 120 x 10 mm	900.00	90 x 90 x 6 mm	885.00
200 x 200 x 24 mm	900.00	120 x 120 x 12 mm	900.00	90 x 90 x 8 mm	885.00
150 x 150 x 10 mm	900.00	120 x 120 x 15 mm	900.00	90 x 90 x 10 mm	885.00
150 x 150 x 12 mm	900.00	100 x 100 x 8 mm	885.00	90 x 90 x 12 mm	885.00
150 x 150 x 15 mm	895.00	100 x 100 x 10 mm	885.00		
<b>Unequal angles, UKA</b>					
200 x 150 x 12 mm	915.00	150 x 90 x 12 mm	895.00	125 x 75 x 12 mm	885.00
200 x 150 x 15 mm	915.00	150 x 90 x 15 mm	895.00	100 x 75 x 8 mm	885.00
200 x 150 x 18 mm	915.00	150 x 75 x 10 mm	885.00	100 x 75 x 10 mm	885.00
200 x 100 x 10 mm	910.00	150 x 75 x 12 mm	885.00	100 x 75 x 12 mm	885.00
200 x 100 x 12 mm	910.00	150 x 75 x 15 mm	885.00	100 x 65 x 7 mm	885.00
200 x 100 x 15 mm	910.00	125 x 75 x 8 mm	885.00	100 x 65 x 8 mm	885.00
150 x 90 x 10 mm	895.00	125 x 75 x 10 mm	885.00	100 x 65 x 10 mm	885.00

Add to the aforementioned prices for:

## STRUCTURAL STEELWORK

	Unit	£
<b>Universal beams, columns, channels and angles non-standard sizes</b>		25.00t
<b>Quantity</b>		
under 10 tonnes to 5 tonnes	t	10.00
under 5 tonnes to 2 tonnes	t	25.00
under 2 tonnes	t	50.00
orders under 1 tonne are not normally accepted		
<b>Size</b>		
lengths 3,000 mm to under 9,000 mm in 100 mm increments	t	15.00
lengths over 18,500 mm to 24,000 mm in 100 mm increments	t	5.00
lengths over 24,000 mm are subject to referral	t	POA
<b>Tees cut from universal beams and columns and joists</b>		
weight per metre of rolled section before splitting		
up to 25 kg per metre	t	150.00
25 - 40 kg per metre	t	120.00
40 - 73 kg per metre	t	100.00
73 - 125 kg per metre	t	90.00
125 kg + per metre	t	85.00
impact testing within the specification	t	10.00
<b>Shotblasting and priming</b>		
Epoxy Zinc Phosphate primer to universal beams and columns	m <sup>2</sup>	2.60
Epoxy Zinc Phosphate primer to channels and angles	m <sup>2</sup>	2.70
Zinc rich epoxy primer to universal beams and columns	m <sup>2</sup>	3.60
Zinc rich epoxy primer to channels and angles	m <sup>2</sup>	3.50
<b>Surface quality</b>		
Specification of class D in respect of EN 10163-3: 2004	t	40.00

## STRUCTURAL STEELWORK

Note: The following prices **include end user discounts at April 2008** for quantities of 10 tonnes and over in one size, thickness, length, steel grade and surface finish and include delivery to mainland of Great Britain to one destination. Additional costs for variations to these factors vary between sections and should be ascertained from the supplier.

The following lists are not fully comprehensive and for other sections manufacturer's price lists should be consulted.

Hot formed structural hollow section		Approx metres per tonne (m)	S355J2H Grade 50D £/100m
<b>Circular</b>	kg/m		
26.9 x 3.2 mm	1.87	534.8	224
33.7 x 3.2 mm	2.41	414.9	289
33.7 x 4.0 mm	2.93	341.3	352
42.4 x 3.2 mm	3.09	323.6	371
42.4 x 4.0 mm	3.79	263.9	455
48.3 x 3.2 mm	3.56	280.9	427
48.3 x 4.0 mm	4.37	228.8	524
48.3 x 5.0 mm	5.34	187.3	641
60.3 x 3.2 mm	4.51	221.7	541
60.3 x 4.0 mm	5.55	180.2	666
60.3 x 5.0 mm	6.82	146.6	818
76.1 x 3.2 mm	5.75	173.9	690
76.1 x 4.0 mm	7.11	140.6	853
76.1 x 5.0 mm	8.77	114.0	1052
88.9 x 3.2 mm	6.76	147.9	811
88.9 x 4.0 mm	8.38	119.3	1006
88.9 x 5.0 mm	10.30	97.1	1236
114.3 x 3.6 mm	9.83	101.7	1180
114.3 x 5.0 mm	13.50	74.1	1620
114.3 x 6.3 mm	16.80	59.5	2016
139.7 x 5.0 mm	16.60	60.2	1992
139.7 x 6.3 mm	20.70	48.3	2484
139.7 x 8.0 mm	26.00	38.5	3120
139.7 x 10.0 mm	32.00	31.3	3840
168.3 x 5.0 mm	20.10	49.8	2412
168.3 x 6.3 mm	25.20	39.7	3024
168.3 x 8.0 mm	31.60	31.6	3792
168.3 x 10.0 mm	39.00	25.6	4680
193.7 x 5.0 mm	23.30	42.9	2796
193.7 x 6.3 mm	29.10	34.4	3492
193.7 x 8.0 mm	36.60	27.3	4392
193.7 x 10.0 mm	45.30	22.1	5436
219.1 x 5.0 mm	26.40	37.9	3168
219.1 x 6.3 mm	33.10	30.2	3972

**STRUCTURAL STEELWORK**

<b>Hot formed structural hollow section</b>		Approx metres per tonne (m)	S355J2H Grade 50D £/100m
219.1 x 8.0 mm	41.60	24.0	4992
219.1 x 10.0 mm	51.60	19.4	6192
219.1 x 12.5 mm	63.70	15.7	7644
244.5 x 8.0 mm	46.70	21.4	5604
244.5 x 10.0 mm	57.80	17.3	6936
244.5 x 12.5 mm	71.50	14.0	8580
244.5 x 16.0 mm	90.20	11.1	10824
273.0 x 6.3 mm	41.40	24.2	4968
273.0 x 8.0 mm	52.30	19.1	6276
273.0 x 10.0 mm	64.90	15.4	7788
273.0 x 12.5 mm	80.30	12.5	9636
273.0 x 16.0 mm	101.00	9.9	12120
323.9 x 6.3 mm	49.30	20.3	5916
323.9 x 8.0 mm	62.30	16.1	7476
323.9 x 10.0 mm	77.70	12.9	9324
323.9 x 12.5 mm	96.00	10.4	11520
323.9 x 16.0 mm	121.00	8.3	14520
355.6 x 16.0 mm	134.00	7.5	16080
406.4 x 10.0 mm	97.80	10.2	11736
406.4 x 12.5 mm	121.00	8.3	14520
406.4 x 16.0 mm	154.00	6.5	18480
457.0 x 10.0 mm	110.00	9.1	13200
457.0 x 12.5 mm	137.00	7.3	16440
457.0 x 16.0 mm	174.00	5.7	20880
508.0 x 10.0 mm	123.00	8.1	14760
508.0 x 12.5 mm	153.00	6.5	18360
508.0 x 16.0 mm	194.00	5.2	23280
<b>Square</b>	kg/m		
40 x 40 x 3.0 mm	3.41	293.3	409
40 x 40 x 3.2 mm	3.61	277.0	433
40 x 40 x 4.0 mm	4.39	227.8	527
40 x 40 x 5.0 mm	5.28	189.4	634
50 x 50 x 3.2 mm	4.62	216.5	554
50 x 50 x 4.0 mm	5.64	177.3	677
50 x 50 x 5.0 mm	6.85	146.0	822
50 x 50 x 6.3 mm	8.31	120.3	997
60 x 60 x 3.0 mm	5.29	189.0	635
60 x 60 x 3.2 mm	5.62	177.9	674
60 x 60 x 4.0 mm	6.90	144.9	828
60 x 60 x 5.0 mm	8.42	118.8	1010

## STRUCTURAL STEELWORK

Hot formed structural hollow section		Approx metres per tonne (m)	S355J2H Grade 50D £/100m
60 x 60 x 6.3 mm	10.30	97.1	1236
60 x 60 x 8.0 mm	12.50	80.0	1500
70 x 70 x 3.6 mm	7.40	135.1	888
70 x 70 x 5.0 mm	9.99	100.1	1199
70 x 70 x 6.3 mm	12.30	81.3	1476
70 x 70 x 8.0 mm	15.00	66.7	1800
80 x 80 x 3.6 mm	8.53	117.2	1024
80 x 80 x 5.0 mm	11.60	86.2	1392
80 x 80 x 6.3 mm	14.20	70.4	1704
80 x 80 x 8.0 mm	17.50	57.1	2100
90 x 90 x 5.0 mm	13.10	76.3	1572
90 x 90 x 6.3 mm	16.20	61.7	1944
90 x 90 x 8.0 mm	20.10	49.8	2412
100 x 100 x 4.0 mm	11.90	84.0	1428
100 x 100 x 5.0 mm	14.70	68.0	1764
100 x 100 x 6.3 mm	18.20	54.9	2184
100 x 100 x 8.0 mm	22.60	44.2	2712
100 x 100 x 10.0 mm	27.40	36.5	3288
120 x 120 x 5.0 mm	17.80	56.2	2136
120 x 120 x 6.3 mm	22.20	45.0	2664
120 x 120 x 8.0 mm	27.60	36.2	3312
120 x 120 x 10.0 mm	33.70	29.7	4044
120 x 120 x 12.5 mm	40.90	24.4	4908
140 x 140 x 5.0 mm	21.00	47.6	2520
140 x 140 x 6.3 mm	26.10	38.3	3132
140 x 140 x 8.0 mm	32.60	30.7	3912
140 x 140 x 10.0 mm	40.00	25.0	4800
140 x 140 x 12.5 mm	48.70	20.5	5844
150 x 150 x 5.0 mm	22.60	44.2	2712
150 x 150 x 6.3 mm	28.10	35.6	3372
150 x 150 x 8.0 mm	35.10	28.5	4212
150 x 150 x 10.0 mm	43.10	23.2	5172
150 x 150 x 12.5 mm	52.70	19.0	6324
160 x 160 x 5.0 mm	24.10	41.5	2892
160 x 160 x 6.3 mm	30.10	33.2	3612
160 x 160 x 8.0 mm	37.60	26.6	4512
160 x 160 x 10.0 mm	46.30	21.6	5556
160 x 160 x 12.5 mm	56.60	17.7	6792
180 x 180 x 6.3 mm	34.00	29.4	4080
180 x 180 x 8.0 mm	42.70	23.4	5124

## STRUCTURAL STEELWORK

Hot formed structural hollow section		Approx metres per tonne (m)	S355J2H Grade 50D £/100m
180 x 180 x 10.0 mm	52.50	19.0	6300
180 x 180 x 12.5 mm	64.40	15.5	7728
180 x 180 x 16.0 mm	80.20	12.5	9624
200 x 200 x 5.0 mm	30.40	32.9	3648
200 x 200 x 6.3 mm	38.00	26.3	4560
200 x 200 x 8.0 mm	47.70	21.0	5724
200 x 200 x 10.0 mm	58.80	17.0	7056
200 x 200 x 12.5 mm	72.30	13.8	8676
200 x 200 x 16.0 mm	90.30	11.1	10836
250 x 250 x 6.3 mm	47.90	20.9	5748
250 x 250 x 8.0 mm	60.30	16.6	7236
250 x 250 x 10.0 mm	74.50	13.4	8940
250 x 250 x 12.5 mm	91.90	10.9	11028
250 x 250 x 16.0 mm	115.00	8.7	13800
300 x 300 x 6.3 mm	57.80	17.3	6936
300 x 300 x 8.0 mm	72.80	13.7	8736
300 x 300 x 10.0 mm	90.20	11.1	10824
300 x 300 x 12.5 mm	112.00	8.9	13440
300 x 300 x 16.0 mm	141.00	7.1	16920
350 x 350 x 8.0 mm	85.40	11.7	10248
350 x 350 x 10.0 mm	106.00	9.4	12720
350 x 350 x 12.5 mm	131.00	7.6	15720
350 x 350 x 16.0 mm	166.00	6.0	19920
400 x 400 x 10.0 mm	122.00	8.2	14640
400 x 400 x 12.5 mm	151.00	6.6	18120
400 x 400 x 16.0 mm	191.00	5.2	22920
<b>Rectangular</b>	kg/m		
50 x 30 x 3.2 mm	3.61	277.0	433
60 x 40 x 3.0 mm	4.35	229.9	522
60 x 40 x 4.0 mm	5.64	177.3	677
60 x 40 x 5.0 mm	6.85	146.0	822
80 x 40 x 3.2 mm	5.62	177.9	674
80 x 40 x 4.0 mm	6.90	144.9	828
80 x 40 x 5.0 mm	8.42	118.8	1010
80 x 40 x 6.3 mm	10.30	97.1	1236
80 x 40 x 8.0 mm	12.50	80.0	1500
90 x 50 x 3.6 mm	7.40	135.1	888
90 x 50 x 5.0 mm	9.99	100.1	1199
90 x 50 x 6.3 mm	12.30	81.3	1476
100 x 50 x 3.0 mm	6.71	149.0	805

## STRUCTURAL STEELWORK

Hot formed structural hollow section		Approx metres per tonne (m)	S355J2H Grade 50D £/100m
100 x 50 x 3.2 mm	7.13	140.3	856
100 x 50 x 4.0 mm	8.78	113.9	1054
100 x 50 x 5.0 mm	10.80	92.6	1296
100 x 50 x 6.3 mm	13.30	75.2	1596
100 x 50 x 8.0 mm	16.30	61.3	1956
100 x 60 x 3.6 mm	8.53	117.2	1024
100 x 60 x 5.0 mm	11.60	86.2	1392
100 x 60 x 6.3 mm	14.20	70.4	1704
100 x 60 x 8.0 mm	20.10	49.8	2412
120 x 60 x 3.6 mm	9.70	103.1	1164
120 x 60 x 5.0 mm	13.10	76.3	1572
120 x 60 x 6.3 mm	16.20	61.7	1944
120 x 60 x 8.0 mm	17.50	57.1	2100
120 x 80 x 5.0 mm	14.70	68.0	1764
120 x 80 x 6.3 mm	18.20	54.9	2184
120 x 80 x 8.0 mm	22.60	44.2	2712
120 x 80 x 10.0 mm	27.40	36.5	3288
150 x 100 x 5.0 mm	18.60	53.8	2232
150 x 100 x 6.3 mm	23.10	43.3	2772
150 x 100 x 8.0 mm	28.90	34.6	3468
150 x 100 x 10.0 mm	35.30	28.3	4236
150 x 100 x 12.5 mm	42.80	23.4	5136
160 x 80 x 4.0 mm	14.40	69.4	1728
160 x 80 x 5.0 mm	17.80	56.2	2136
160 x 80 x 6.3 mm	22.20	45.0	2664
160 x 80 x 8.0 mm	27.60	36.2	3312
200 x 100 x 5.0 mm	22.60	44.2	2712
200 x 100 x 6.3 mm	28.10	35.6	3372
200 x 100 x 8.0 mm	35.10	28.5	4212
200 x 100 x 10.0 mm	43.10	23.2	5172
200 x 100 x 12.5 mm	52.70	19.0	6324
250 x 150 x 5.0 mm	30.40	32.9	3648
250 x 150 x 6.3 mm	38.00	26.3	4560
250 x 150 x 8.0 mm	47.70	21.0	5724
250 x 150 x 10.0 mm	58.80	17.0	7056
250 x 150 x 12.5 mm	72.30	13.8	8676
250 x 150 x 16.0 mm	90.30	11.1	10836
300 x 200 x 6.3 mm	47.90	20.9	5748
300 x 200 x 8.0 mm	60.30	16.6	7236
300 x 200 x 10.0 mm	74.50	13.4	8940



## STRUCTURAL STEELWORK

Hot formed structural hollow section		Approx metres per tonne (m)	S355J2H Grade 50D £/100m
300 x 200 x 12.5 mm	91.90	10.9	11028
300 x 200 x 16.0 mm	115.00	8.7	13800
400 x 200 x 8.0 mm	72.80	13.7	8736
400 x 200 x 10.0 mm	90.20	11.1	10824
400 x 200 x 12.5 mm	112.00	8.9	13440
400 x 200 x 16.0 mm	141.00	7.1	16920
450 x 250 x 8.0 mm	85.40	11.7	10248
450 x 250 x 10.0 mm	106.00	9.4	12720
450 x 250 x 12.5 mm	131.00	7.6	15720
450 x 250 x 16.0 mm	166.00	6.0	19920
500 x 300 x 10.0 mm	122.00	8.2	14640
500 x 300 x 12.5 mm	151.00	6.6	18120
500 x 300 x 16.0 mm	191.00	5.2	22920
<b>Ovals (kg/m)</b>			
150 x 75 x 5.0 mm	13.30	75.2	1596
200 x 100 x 6.3 mm	22.30	44.8	2676
250 x 125 x 8.0 mm	34.40	29.1	4128
300 x 150 x 10 mm	53.00	18.9	6360
400 x 200 x 12.5 mm	88.60	11.3	10632
400 x 200 x 16.0 mm	112.00	8.9	13440
500 x 250 x 12.5 mm	112.00	8.9	13440
500 x 250 x 16 mm	142.00	7.0	17040
Add to the aforementioned prices for:			Percentage extra (%)
<b>Quantity</b> <b>- Work despatches</b> Orders for the following hollow sections of one size, thickness, length, steel grade and surface finish. (a) circular hollow sections over 200 mm diameter (b) square hollow sections over 150 x 150 mm (c) rectangular hollow sections over 600 mm girth 4 tonnes to under 10 tonnes 15% 2 tonnes to under 4 tonnes 20% 1 tonne to under 2 tonnes 25% orders under 1 tonne are not supplied			
<b>- Warehouse despatches</b> Orders for the following hollow sections in one steel grade, for delivery to one destination in one assignment.			

**STRUCTURAL STEELWORK**

Add to the aforementioned prices for:	Percentage extra (%)
(a) circular hollow sections less than 200 mm diameter	
(b) square hollow sections up to and including 150 x 150 mm	
(c) rectangular hollow sections up to and including 600 mm girth	
10 tonnes and over	7.5%
4 tonnes to under 10 tonnes	10%
2 tonnes to under 4 tonnes	12.5%
1 tonne to under 2 tonnes	17.5%
500 kg to under 1 tonne	23%
250 kg to under 500 kg	35%
100 kg to under 250 kg	50%
under 100 kg	100%
(a) circular hollow sections over 200 mm diameter	
(b) square hollow sections over 150 x 150 mm	
(c) rectangular hollow sections over 600 mm girth	
10 tonnes and over	12.5%
4 tonnes to under 10 tonnes	15%
2 tonnes to under 4 tonnes	20%
1 tonne to under 2 tonnes	25%
500 kg to under 1 tonne	45%
250 kg to under 500 kg	75%
<b>Finish</b>	
Self colour is supplied unless otherwise specified.	
Transit primer painted (All sections except for circular hollow sections over 200 mm dia)	5%
<b>Test Certificates</b>	
Test certificates will be charged at a rate of "price on application"	

## GUIDE TRANSPORT CHARGES BASED ON RADIAL DISTANCES AND QUANTITIES

RADIAL DISTANCES MILES FROM BASING POINT	0 - under 5 tonnes £/tonne	5 - under 10 tonnes £/tonne	10 - under 20 tonnes £/tonne	20 tonnes and over £/tonne
<b>Structural Sections and Steel Bearing Piles</b>				
up to 10	9.00	6.00	4.50	4.00
over 10 up to 15	10.00	6.50	5.00	4.50
over 15 up to 20	10.50	7.00	6.00	5.00
over 20 up to 25	11.00	7.50	6.00	6.00
over 25 up to 30	12.00	8.00	6.50	6.00
over 30 up to 35	12.00	9.00	7.00	6.50
over 35 up to 40	13.00	9.00	7.50	7.00
over 40 up to 45	13.50	10.00	8.00	7.50
over 45 up to 50	14.00	10.50	8.50	8.00
over 50 up to 60	16.00	11.00	9.00	8.50
over 60 up to 70	16.50	12.00	10.00	9.50
over 70 up to 80	17.50	13.00	11.00	10.50
over 80 up to 90	19.00	14.00	12.00	11.00
over 90 up to 100	20.00	15.00	13.00	12.00
over 100 up to 110	23.00	15.50	13.50	13.00
over 110 up to 120	23.50	16.50	14.50	14.00
over 120 up to 130	24.50	17.50	15.50	14.50
over 130 up to 140	25.00	18.00	16.00	15.50
over 140 up to 150	25.50	19.00	17.00	16.00
over 150 up to 160	28.00	20.00	17.50	17.00
over 160 up to 170	29.00	20.50	18.50	18.00
over 170 up to 180	30.00	21.50	19.50	18.50
over 180 up to 190	31.00	22.50	20.00	19.50
over 190 up to 200	32.00	23.00	21.00	20.00
over 200 up to 210	35.00	24.00	21.50	20.50
over 210 up to 220	36.00	24.50	22.50	21.50
over 220 up to 230	37.00	25.50	23.00	22.00
over 230 up to 240	38.00	26.00	23.50	22.50
over 240 up to 250	39.00	27.00	24.50	23.00
over 250 up to 275	43.50	28.00	25.50	24.50
over 275 up to 300	45.50	30.00	27.00	26.00
over 300 up to 325	48.00	31.50	28.50	27.50
over 325 up to 350	50.50	33.50	30.00	29.00
over 350 up to 375	53.00	35.00	31.00	30.50
over 375 up to 400	55.20	36.39	32.25	31.80

**Note: The minimum charge will normally be as for 2 tonnes**

Lengths over 14 metres and up to 18 metres may be subject to a surcharge of 20%

Lengths over 18 metres and up to 24 metres may be subject to a surcharge of 40%

Lengths over 24 metres may be subject to a surcharge of 70%

Collection by customer from works will incur an extra cost (POA) in addition to any additional transport charges between the basing point and the producing works.

## PVC-U DRAIN PIPES AND FITTINGS

	Unit	£	£	£
Diameter in mm		82	110	160
<b>Plain ended pipes (Osmadrain)</b>				
3 m lengths	m	14.05	8.59	19.75
6 m lengths	m	14.05	8.59	19.75
<b>Couplers</b>				
for jointing pipes	nr	11.12	11.48	16.68
for new branch entry connections	nr	17.56	15.48	30.86
<b>Reducers, single socket</b>	nr		21.28	27.38
<b>Junctions, equal, single socket</b>				
87.5°	nr	29.30	31.98	104.40
45°	nr		33.38	95.41
<b>Short radius bends, single socket</b>				
up to 30°	nr		19.32	57.80
45 to 90°	nr	23.84	22.65	57.90
Suspended bracketing system adjustable pipe bracket assembly (pack containing threaded bracket, bracket plate and pipe/socket bracket)	nr		27.68	39.46
Adjustable socket bracket and brace assembly (pack containing threaded rod, threaded bracket, bracket plate, two adjustable braces and pipe/socket bracket)	nr		56.96	66.88
<b>Marley underground drainage system</b>				
<b>Straight pipes</b>				
ring seal socket 6 m	m		9.13	24.32
ring seal socket 3 m	m	14.20	9.87	27.43
double spigot 6 m	m		8.41	21.20
double spigot 3 m	m		8.41	
<b>Couplings</b>				
double ring seal straight, polypropylene	nr	9.36	7.77	25.86
loose pipe socket	nr	9.36	7.77	20.76
triple socket	nr		25.09	

## PVC-U DRAIN PIPES AND FITTINGS

	Unit	£	£	£
<b>Bends, socket/spigot</b>				
short radius (87.5°)	nr	18.89	19.77	49.11
short radius (45°)	nr	18.89	21.38	44.41
adjustable (11 to 87.5°)	nr	31.88		
adjustable (21 to 90°)	nr		37.54	
adjustable (15 to 90°)	nr			71.73
<b>Bends, socket/socket</b>				
short radius (87.5°)	nr		19.88	56.51
short radius ( 15, 30, 45°)	nr		17.17	51.01
long radius (87.5°)	nr		34.45	
Diameter in mm		82	110	160
<b>Branches</b>				
socket/spigot 45° equal	nr	29.90	29.47	57.48
socket/spigot 87.5° equal	nr		29.47	57.41
socket/spigot 45°, 160 x 110 mm	nr			49.85
socket/socket 87.5° equal	nr		31.90	80.49
socket/socket 45° equal	nr		31.90	80.49
<b>Access components</b>				
socket/spigot pipe	nr		74.37	
socket/spigot bend 87.5° rear access	nr		39.94	
socket/spigot branches				
45° branch	nr		109.34	
45° double branch	nr		103.85	
rodding point 45° socketed	nr		64.56	167.76
cap and pressure plug	nr		20.36	51.93
cap	nr	16.97		
pressure plug	nr		15.58	26.93
socket plug, 1 boss upstand	nr		10.25	
<b>Open channels</b>				
straight double spigot (1500 mm long)	nr		61.87	
long radius channel bend 87.5°	nr		88.73	
slipper bend	nr		28.54	
<b>Bottle gully</b>				
bottle gully	nr		74.39	
sealed acces lid	nr		12.05	

## PVC-U DRAIN PIPES AND FITTINGS

	Unit	£	£	£
<b>Reducers</b>				
level invert				
110 mm spigot to 82 mm socket	nr		18.89	
160 mm spigot to 110 mm socket	nr			21.19
eccentric				
82 mm socket to boss upstand	nr	15.87		
82 mm socket to 68 mm socket	nr	6.80		
110 mm socket to boss upstand	nr		11.51	
110 mm socket to 68 mm socket	nr		9.51	
concentric				
110 mm socket to boss upstand	nr		10.25	
<b>Adapters</b>				
PVC-U spigot to salt glazed/pitch fibre socket	nr		13.39	
PVC-U spigot to salt glazed/cast iron to pvc-u socket	nr		26.02	
PVC-U spigot to thin wall clay spigot	nr		30.42	
PVC-U spigot to thick wall clay spigot	nr		30.42	
	Unit	£	£	£
Diameter in mm		82	110	160
<b>Access point covers</b>				
450 mm lid and frame (A15 loading)	nr		89.92	
<b>Inspection chambers</b>				
450 mm chamber base 230 mm high	nr		164.43	205.09
450 mm chamber riser 400 mm high	nr		62.21	
450 mm cast iron cover and frame	nr		105.23	
450 mm ductile iron lid and cast iron frame	nr		150.75	
250 mm equal double branch chamber base	nr		111.49	
250 mm double branch chamber base	nr		90.31	
250 mm bottom outlet chamber body 4 x 110 mm upstands	nr		113.56	
250 mm pressure plug	nr		55.48	
250 mm chamber riser 375 mm long	nr		34.23	
lifting handle	nr		18.35	
square lid and frame	nr		90.26	
PVC-U lid and frame	nr		44.42	

## PVC-U DRAIN PIPES AND FITTINGS

	Unit	£	£	£
<b>Gully components</b>				
compact gully, 45° outlet	nr		85.59	
gully trap base, 45° outlet	nr		22.03	
P' trap gully 81.5° outlet	nr		55.29	
hoppers (rectangular)	nr		22.03	
hoppers (square)	nr		16.94	
inlet raising pieces				
2 x 82 mm upstands	nr		10.93	
4 boss upstands	nr		18.87	
grating assembly	nr		11.82	
Diameter in mm		150	225	300
<b>Marley Quantum underground drainage system</b>				
<b>Straight pipes</b>				
plain pipe 6 m	m	7.11	20.29	29.83
pipe 6 m with coupling and seals	m	8.09	21.54	32.78
<b>Couplings</b>				
straight or slip	nr	11.24	27.46	53.33
<b>Bends</b>				
double socket 87.5°	nr	22.63	108.77	195.00
double socket, 15, 30 and 45°	nr	19.66	78.04	145.12
<b>Branches</b>				
all socket, equal	nr	39.32	183.28	423.89
all socket, 150 x 110 mm	nr	34.54		
all socket, 225 x 110 mm	nr		111.93	
all socket, 225 x 150 mm	nr		93.16	
all socket, 300 x 110 mm	nr			176.81
all socket, 300 x 150 mm	nr			151.51
all socket, 300 x 225 mm	nr			423.89
	Unit	£	£	£
Diameter in mm		150	225	300
<b>Reducers</b>				
level invert 225 mm to 150 mm	nr		56.90	
level invert 300 mm to 225 mm	nr			123.53

## PVC-U DRAIN PIPES AND FITTINGS

	Unit	£	£	£
<b>Plugs</b>				
socket plug	nr	15.26		
end cap	nr	7.42	43.69	104.25
<b>Adapters</b>				
pipe to clayware	nr	31.39		
pipe spigot to pvc socket	nr	19.51		
flexible adaptors	nr	63.61	78.29	194.78
<b>PVC-U RAINWATER GUTTERS AND PIPES</b>	Unit	£		
<b>Gutters, Marley Deep Flow</b>				
110 x 75 mm gutters (3 m length)	m	5.63		
110 x 75 mm gutters (4 m length)	m	9.80		
union bracket	nr	6.86		
fascia brackets	nr	2.62		
angles, 90°	nr	19.00		
angles, 45°	nr	19.84		
running outlets	nr	15.56		
stopend outlets	nr	15.56		
stopends	nr	15.56		
<b>Gutters, Marley Industrial</b>				
150 mm half round gutters (4 m length)	m	8.88		
union clips	nr	7.80		
fascia brackets	nr	2.91		
angles, 90°	nr	14.99		
running outlets	nr	16.42		
stopend, internal	nr	3.23		
stopend, external	nr	5.92		
	Unit	£	£	
Diameter in mm		68	110	
<b>Downpipes, Marley circular</b>				
ring seal socket 2.5 m	m	6.82		
ring seal socket 3 m	m	6.29	13.50	
ring seal socket 5.5 m	m	6.24		
sockets, loose pipe	nr	0.58	10.50	
sockets, solvent weld pipe socket with ring seal	nr	8.31		
bends	nr	9.18	23.64	
offset bends	nr	5.08	21.77	
branches	nr	18.27	31.83	
shoes	nr	7.94	18.65	
hopper heads	nr	29.39	105.03	
one piece pipe clip	nr	2.59		
socket/pipe clip	nr	2.10	8.95	
backplate	nr	1.32		



## PVC-U SUBSOIL DRAIN PIPES AND FITTINGS

		Unit	£	£	
Diameter in mm			80	100	
<b>WavinCoil subsoil drainage system</b>					
S/S coils, 25 m coils		m	1.62	2.65	
end caps		nr	2.34	2.67	
couplers		nr	2.01	2.23	
reducers 100 to 80 mm		nr		2.46	
equal junctions, 67.5°		nr	5.74	6.42	
unequal junctions, 67.5°		nr		6.11	
	Unit	£	£	£	
Diameter in mm		150	225	300	
<b>Ultra-Rib system</b>					
S/S pipe (3 m length)		m	10.46	25.93	38.90
S/S pipe (6 m length)		m	10.46	25.93	
D/S pipe coupler		nr	19.20	40.14	80.88
D/S short radius bend, 45°		nr	25.79	103.81	188.53
D/S equal junction, 45°		nr	62.38	207.02	478.35
<b>Ultra-Rib Inspection Chambers, 450 mm diameter</b>					
D/S base, 150 x 150 mm		nr	149.65		
shaft, 230mm effective length		nr	41.38		
DI cover and frame, single seal, Class BS EN 124-B125 medium duty		nr	130.35		
steel cover and polypropylene frame, to 25kN loading		nr	77.96		
<b>Ultra-Rib manhole basis, 750 mm diameter</b>					
P/E unequal, 150 x 110 mm		nr	264.82		
P/E unequal, 225 x 150 mm		nr		351.34	
P/E equal, 150 x 150 mm		nr	286.35		
P/E equal, 225 x 225 mm		nr		283.51	
P/E channel access pipe		nr	58.64	134.43	225.80
<b>Ultra-Rib sealed rodding eye</b>					
oval cover, upto 35 kN loading		nr	138.17		



## BASIS OF PLANT RATES

### INTRODUCTION

The information, rates and prices included in this section are calculated examples of actual owning and operating costs of a range of construction plant and equipment. To an extent they will serve as a guide to prevailing commercial plant hire rates, but be aware that many factors will influence actual hire rates. For example, rates could be lower because of long term hire, use of older or second hand machines, low market demands/loss leaders, easy tasks or sites near to the depot. Rates could be higher due to short term hire, high production demands, low utilisation factors, specialist operations, restricted working and restricted accessibility problems, high profit or overhead demands and finance fluctuations. The use factors will mean a hired machine may not be used productively for each hour on site, it is therefore up to the estimator to allow for reasonable outputs in his unit rate calculations.

These and other considerations must be borne in mind if using these costs as a comparison to hire rates, especially operated plant.

All rates quoted EXCLUDE the following:

- Cost of drivers / operators
- VAT

### CONTRACTOR OWNED PLANT

Plant owned by a Contractor generally falls under two headings:

- Small plant and tools which are the subject of a direct charge to contracts and for estimating purposes are normally allowed for as a percentage of the labour cost in site oncosts (see [Preliminaries and General Items](#)), although many items are shown in this section for information.
- Power driven plant and major non-mechanical plant such as steel trestling, scaffolding, gantries etc. Such plant is normally charged to the contract on a rental basis except in the case of purpose made or special plant bought specifically for a particular operation; this latter is normally charged in full to contracts and allowance made for disposal on completion (often at scrap value).

A very wide range of plant is readily available from plant hire companies; it is not usually economical for Contractors to own plant unless they can ensure at least 75 to 80% utilisation factor based on the Contractor's normal working hours. Where a Contractor does own plant, however, it is essential that he maintains reasonably accurate records of the working hours and detailed costs of maintenance and repairs in order that he may estimate the charges to be made for each item of plant. For this reason, where a Contractor owns a large quantity of plant, it is normal for a separate plant hire department or company to be formed.

This department or company should be financially self supporting and may hire plant to other Contractors when it is not needed. Maintenance of contractor owned plant can be carried out on site; it is not necessary to maintain a centrally based repair workshop. It is, however, desirable to have some storage facilities available for plant when not in use. The cost of owning plant and hence the rental charges to be made to contracts must take into account:

- Capital cost
- Depreciation charges
- Maintenance and repairs
- Cost of finance
- Insurances and licences
- Administration, head office, depot and other overhead charges

**CONTRACTOR OWNED PLANT - continued**

Calculated examples of hourly owning costs of a range of plant and equipment.

PLANT ITEMS	A UTILISATION FACTOR %	B P.A. HOURS	C PLANT Years	D LIFE Hours	E PURCHASE PRICE £	F RESALE %	G RESALE PRICE £	H LOSS IN VALUE £	I DEPREC. £	J MAINTEN. £	K FINANCE @ 5% £	L INSUR. ADMIN. £	M ADMIN. £	N TOTAL COST/HR £
ACCESS PLATFORMS														
JLG 450AJ, diesel	65	1,365	10	13,650	35,000	20.00	7,000	28,000	2.05	2.56	0.51	0.51	1.13	6.76
JLG 600AJ, diesel	65	1,365	10	13,650	55,000	20.00	11,000	44,000	3.22	4.03	0.81	0.81	1.77	10.64
ASPHALT PAVERS														
BK 151	65	1,365	7	9,555	75,000	27.50	20,625	54,375	5.69	5.49	1.00	1.10	2.66	15.94
BK 181	65	1,365	7	9,555	115,000	27.50	31,625	83,375	8.73	8.42	1.53	1.68	4.07	24.43
BK 191	65	1,365	7	9,555	120,000	27.50	33,000	87,000	9.11	8.79	1.59	1.76	4.25	25.50
COMPRESSORS (PORTABLE)														
17 m <sup>3</sup> /min, electric motor	85	1,785	9	16,065	50,000	20.00	10,000	40,000	2.49	2.80	0.56	0.56	1.28	7.69
7.3 m <sup>3</sup> /min, electric motor	85	1,785	9	16,065	25,000	20.00	5,000	20,000	1.24	1.40	0.28	0.28	0.64	3.84
CRANES														
Kato 16 t mobile	60	1,260	12	15,120	180,000	25.00	45,000	135,000	8.93	14.29	2.68	2.86	5.75	34.51
Grove 35 t mobile	60	1,260	15	18,900	200,000	27.50	55,000	145,000	7.67	15.87	2.88	3.17	5.92	35.51
GENERATORS														
10 kVA, water cooled	85	1,785	5	8,925	6,000	15.00	900	5,100	0.57	0.34	0.07	0.07	0.21	1.26
10 kVA, air cooled	85	1,785	5	8,925	5,000	15.00	750	4,250	0.48	0.28	0.06	0.06	0.18	1.06
EXCAVATORS														
Hitachi ZX130 B/A track	80	1,680	9	15,120	80,000	27.50	22,000	58,000	3.84	4.76	0.86	0.95	2.08	12.49
Hitachi ZX800 B/A track	75	1,575	9	14,175	375,000	27.50	103,125	271,875	19.18	23.81	4.32	4.76	10.41	62.48
JCB 3CX	85	1,785	6	10,710	48,000	27.50	13,200	34,800	3.25	2.69	0.49	0.54	1.39	8.36
ROLLERS														
Bomag BW65H	85	1,785	6	10,710	15,000	27.50	4,125	10,875	1.02	0.84	0.15	0.17	0.44	2.62
Bomag BW80ADH (narrow, heavy duty)	85	1,785	6	10,710	28,000	27.50	7,700	20,300	1.90	1.57	0.28	0.31	0.81	4.87
Bomag BW75H	85	1,785	6	10,710	28,000	27.50	7,700	20,300	1.90	1.57	0.28	0.31	0.81	4.87
CRAWLER LOADERS														
CAT 963 C	80	1,680	9	15,120	140,000	27.50	38,500	101,500	6.71	8.33	1.51	1.67	3.64	21.86
TIPPERS														
Scania P94 CB 4	90	1,890	6	11,340	45,000	22.00	9,900	35,100	3.10	2.38	0.46	0.48	1.28	7.70
Scania P114 CB 8	90	1,890	6	11,340	70,000	22.00	15,400	54,600	4.81	3.70	0.72	0.74	1.99	11.96
DUMP TRUCKS														
Volvo A35 D	75	1,575	10	15,750	290,000	30.00	87,000	203,000	12.89	18.41	3.22	3.68	7.64	45.84

NOTES: The price of foreign manufactured plant will vary according to the strength of the £ Sterling internationally.  
No allowance is included for Road Fund Licence on road-going vehicles.

**Notes – example plant ownership hourly costs**

- The above costs would be updated annually or bi-annually, the rental rate being revised to ensure complete recovery of the costs associated with the item of plant and return of capital to enable the machine to be replaced at the end of its life with the Contractor. The purchase price must also be adjusted to ensure recovery of the replacement cost and not the original cost of purchase.
- Driver's wages and costs should be charged direct to site wages.
- Column A: The utilisation factors used in conjunction with the period of ownership is the percentage of time (per annum) that an item of plant can be expected to be used productively on a site or job and therefore is a very important influence of hourly costs

(Note: Utilisation factors are not the same as site utilisation rates - see note overleaf regarding Fuel Consumption)

Economical owning periods/use factors:	Life (years)	Usage (%)
Hydraulic Excavators, large	9	75
Hydraulic Excavators, medium	7	76
Hydraulic Excavators, mini	6	77
Dozers/Scrapers	10	78
Loaders/Shovels	9	79
Mobile Cranes	12	80
Crawler Cranes	15	81
Dump Trucks	8	82
Dumpers	6	83
Rollers/Compaction	6	84
Compressors/Generators	7 - 9	85
Diesel engine road vehicles	6 - 7	86
Petrol engine road vehicles	5 - 6	87

- Column B: The result of applying the utilisation factor to 2,100 hours per annum.
- Columns C and D: The period over which the Contractor owns the plant and during which time the items of plant can be maintained at reasonable efficiency will vary according to the Contractor's experience, the type of plant under consideration and the work on which is it employed. The owning period of an item of plant can vary considerably on this basis. The data we have used in our calculations varies considerably (see the tables shown above and on the next page).
- Column E: The list price being quoted by dealers, against which should be allowed a level of discount suited to the availability of the plant and the bargaining power between the purchaser and the agent.
- Column J: Maintenance costs cover major overhauls and replacement costs for wear items only, excluding insurable damage and will vary with each type of plant. This does not include day to day general servicing on site.
- Column K: Finance interest charges are taken on the average base rate over the previous 12 months plus 3%.
- Column L: Insurance premiums have been taken as 2% on the replacement value of the plant (purchase price)
- Column M: Administration, head office, depot and other overhead charges have been taken at +20%.
- Consumables should be charged direct to site costs. The costs included with this section are based upon manufacturers' data and are used in good faith. (For outline estimates fuel consumption can be taken as approximately 0.15 - 0.20 litres per kW per working hour; lube oils, filters, grease etc., can be taken as 2% to 10% of the fuel cost, depending upon the working conditions of the machine and its attachments). See below for details.
- Please note that the costs in this section have been reviewed for recent editions, based on the latest available advice and data from manufacturers and Plant Hire firms, the basis of calculation, including retention

period of the plant, has been changed in a number of cases, providing a realistic overall owning and operating cost of the machine.

- These examples are for machine costs only and do not include for operator costs or profit element or for transport costs to and from site.
- Fuel consumption is based on the following site utilisation rates. (Site utilisation being the percentage of time that the machine is operating at its average fuel consumption during a working day).

Typical utilisation factors:	Utilisation factor	Typical utilisation factors:	Utilisation factor
Excavators	0.75	Compressors, mixers, generators	
Dozers/Scrapers	0.80	Tractors	0.75
Loaders/Shovels/Graders	0.75	Hoists, etc.	0.65
Mobile Cranes	0.50	Drills and Saws	0.90
Crawler Cranes	0.25	Rollers/Compaction Plant	0.75
Dump Trucks (not Tippers)	0.75	Piling/Asphalt Equipment	0.65
Dumpers	0.80	All other items	1.00

- Approximate fuel consumption in litres per hour and percentage addition for consumables (examples only) based on the above site utilisation rates. assuming that reasonably new and well maintained plant would be used

		Fuel consumables				Fuel consumables	
		l/hr	% of fuel			l/hr	% of fuel
Tractor	116 hp	9.0	2.0%	Rollers	BW 90AD	2.0	7.5%
Paver	Bitelli BB650	16.0	5.0%		BW 120AD	4.4	7.5%
Compactor plate	188kg	0.9	3.0%		BW6 (towed)	7.6	7.5%
Compressors	3.5 m <sup>3</sup> /min	5.9	3.0%	Dozers	CAT D6N	21.0	6.0%
	10 m <sup>3</sup> /min	18.0	3.0%		CAT D8T	38.0	3.0%
	Tractor mounted	9.0	5.0%	Loaders	CAT 953C	18.0	4.0%
Mixer	5/3.5	1.2	2.0%	Scrapers	CAT 621G	41.5	3.0%
Mobile cranes	15t	5.1	10.0%		CAT 657E	125.0	6.0%
	40t	6.3	10.0%	Skidsteer	Bobcat 553	3.4	5.0%
Generators	4 kVA	1.6	3.0%	Graders	CAT 140H	19.0	5.0%
	25 kVA	4.9	5.0%	Dumpers	2 tonne	3.0	3.0%
Backacters	11.5 t	9.5	7.5%		Volvo A25D	17.0	3.0%
	19 t	14.0	7.5%		36 tonne	25.0	5.0%
	30 t	24.0	7.5%	Pumps	75 mm 65 m <sup>3</sup> /hr	1.1	2.0%
Backhoes	JCB 3CX	7.5	6.0%		150 mm 360 m <sup>3</sup> /hr	4.2	3.0%

Note that the above consumption figures represent "medium" plant operation, i.e. the plant would not be operating at full throttle and working conditions such as the soil and grades are average. A study of manufacturers' figures has indicated that "high" or "low" usage can affect consumption on average by  $\pm 25\%$ ; "high" usage would involve full loads, continuous working at full throttle with difficult ground and adverse grades, whereas "low" usage would involve more intermittent working with perhaps considerable idling periods, more easily worked ground and easier grades

## PLANT COSTS

The costs included in this section are based upon the methodology of the worked examples, these have then been compared to average costs, allowances and hire rates in force at the time of writing (May 2009). These costs then form the basis for plant costs included in parts 4 and 5 (except for specialist advice). Weekly costs are based upon a 40 hour week, daily costs are based on an 8 hour day, all costs are exclusive of labour for operation. Also given here is a reference (DSR) to the July 2008 CECA Daywork Schedule (Plant Section).

Rates given for consumables are in line with the notes on the preceding page without loss or wastage and are based on the following (All plant except those noted are priced on Gas Oil usage):

Petrol ULS	100.90	pence/litre
Petrol Unleaded	97.30	pence/litre
Fuel Oil (taxed for use in licensed vehicles) DERV	100.90	pence/litre
Fuel Oil (lower tax, for use on site) Gas Oil	47.50	pence/litre
Lubrication Oil (15/40)	55.67	pence/litre
Mains electric power	10.80	pence/kWh
Oxygen	21.40	/10 m <sup>3</sup>
	0.21	pence/litre
Acetylene	60.97	/8.4 m <sup>3</sup>
	0.72	pence/litre
Propane	293.33	pence/kg

Also included here are allowances for Transmission Oils, Hydraulic Oil, Filters, Grease, etc.  
N/A indicates that information not available.

Imperial units of measurements are used frequently in this section reflecting their continuing usage in this sector of the industry.

	Hire Rate £	Hire Period	Cost per working hour					DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel	Total £	
<b>ACCESS PLATFORMS</b>								
Access platform, scissor type, towed; height of platform 7 m	4.54	hour	4.54	-	-	-	4.54	1(8)
Access platform, scissor type, electric; height of platform 5 m	4.63	hour	4.63	-	-	-	4.63	1(1)
Access platform, scissor type, rough terrain, petrol driven; height of platform 9 m	9.62	hour	9.62	50.00	1.50	2.00	10.36	1(6)
Access platform, telescopic, towed; height of platform 10 m	4.63	hour	4.63	-	-	-	4.63	1(13)
Access platform telescopic, petrol; height of platform 15 m	18.08	hour	18.08	50.00	2.00	3.00	19.08	1(11)
Access platform, telescopic, vehicle mounted (DERV) height of platform 10 m	18.83	hour	18.83	50.00	2.00	3.00	19.87	1(16)
height of platform 20 m	28.93	hour	28.93	50.00	3.00	3.00	30.49	1(*)
Access platform underbridge type (Simon UB40)	35.08	hour	35.08	-	-	-	35.08	1(13)





	Hire Rate £	Hire Period	Cost per working hour					DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel	Total £	
unit weight 600 mm wide Vibrating compaction trench plate 300 mm wide	142.33	week	3.56	85.00	1.20	3.00	4.06	22(12)
Tamper 60 kg (petrol)	80.67	week	2.02	85.00	0.80	3.00	2.35	22(*)
	75.33	week	1.88	85.00	0.80	3.00	2.56	22(1)
<b>CLEANERS/SWEEPERS</b>								
Front Tractor or Truck mounted 2 m wide (excluding vehicle)	117.67	week	2.94	-	-	-	2.94	14(36)
Towed sweeper diesel engined	110.13	week	2.75	75.00	4.00	4.00	5.90	-
Glutton type mobile gully sucker	24.48	hour	24.48	75.00	12.00	3.00	33.83	-
<b>MOBILE COMPRESSORS (SILENCED OR SUPER SILENCED)</b>								
Compressors, single tool								
2.5 m <sup>3</sup> /min	274.33	week	6.86	85.00	3.20	4.00	8.20	4(1)
Compressors, two tool								
3.0 m <sup>3</sup> /min, two tool	312.00	week	7.80	85.00	4.50	3.00	9.67	4(2)
4.0 m <sup>3</sup> /min, two tool	331.67	week	8.29	85.00	5.90	3.00	10.74	4(3)
5.0 m <sup>3</sup> /min, two tool	376.00	week	9.40	85.00	6.80	3.00	12.23	4(4)
8.0 m <sup>3</sup> /min, two tool	480.00	week	12.00	85.00	10.20	3.00	16.24	4(6)
Compressors, four tool								
11.00 m <sup>3</sup> /min, four tool	644.67	week	16.12	85.00	19.00	3.00	24.02	4(7)
14.00 m <sup>3</sup> /min, four tool	875.33	week	21.88	85.00	32.00	3.00	35.19	4(8)
17.00 m <sup>3</sup> /min, four tool	1140.67	week	28.52	85.00	32.00	3.00	41.83	4(9)
20.00 m <sup>3</sup> /min, four tool	1502.33	week	37.56	85.00	47.00	3.00	57.11	4(10)
26.00 m <sup>3</sup> /min, four tool	2076.67	week	51.92	85.00	43.00	3.00	69.80	4(11)
Petrol driven hydraulic power unit c/w breaker (63 kg)								
	75.36	week	1.88	85.00	3.00	3.00	3.13	-
Tractair, wheeled loader mounted compressor, c/w hoses, 4 steels and 2 tarmac cutters	34.56	hour	34.56	85.00	12.00	3.00	39.55	4(12)
<b>COMPRESSOR TOOLS</b>								
(cw 50 ft/15 m HOSE)								
chipping hammer, 0.7 m <sup>3</sup> /min	55.33	week	1.38	-	-	-	1.38	30(4)
brick hammer/demolition pick, 1.4 m <sup>3</sup> /min	13.45	week	0.34	-	-	-	0.34	-
clay spade, 1.6 m <sup>3</sup> /min	65.00	week	1.63	-	-	-	1.63	30(3)
road breaker, 2.4 m <sup>3</sup> /min	69.00	week	1.73	-	-	-	1.73	30(1)
hand hammer drill, 0.9 m <sup>3</sup> /min	140.81	week	3.52	-	-	-	3.52	30(*)
light rock drill 16-20 kg	58.67	week	1.47	-	-	-	1.47	30(5)
medium rock drill up to 24 kg	73.00	week	1.83	-	-	-	1.83	30(6)
heavy rock drill up to 32 kg	51.33	week	1.28	-	-	-	1.28	30(7)
scabblor 1 head hand, 0.3 m <sup>3</sup> /min	45.00	week	1.13	-	-	-	1.13	-
scabblor 3 head hand, 0.7 m <sup>3</sup> /min	81.00	week	2.03	-	-	-	2.03	-
scabblor 5 head trolley, 3.1 m <sup>3</sup> /min	202.50	week	5.06	-	-	-	5.06	-
scabblor 7 head trolley, 4.5 m <sup>3</sup> /min	252.00	week	6.30	-	-	-	6.30	-
needle gun/descaler, 0.3 m <sup>3</sup> /min	45.00	week	1.13	-	-	-	1.13	30(15)
concrete crack cutter, 0.7 m <sup>3</sup> /min	108.72	week	2.72	-	-	-	2.72	-
rammer, 1.5 m <sup>3</sup> /min	75.33	week	1.88	-	-	-	1.88	22(1)

	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
air lance, variable valve, 0.3 m <sup>3</sup> /min	17.26	week	0.43	-	-	-	0.43	-	
impact wrench 12 mm drive, 0.4m <sup>3</sup> /min	40.36	week	1.01	-	-	-	1.01	-	
impact wrench 25 mm drive, 0.4m <sup>3</sup> /min	68.29	week	1.71	-	-	-	1.71	-	
trench sheet driver, 2.4 m <sup>3</sup> /min	88.02	week	2.20	-	-	-	2.20	-	
steel post driver (crash barrier), 2.4 m <sup>3</sup> /min	88.18	week	2.20	-	-	-	2.20	-	
angle grinder 9", 0.8 m <sup>3</sup> /min	24.00	week	0.60	-	-	-	0.60	-	
disc cutter 12", 1.4 m <sup>3</sup> /min	57.71	week	1.44	-	-	-	1.44	-	
poker vibrator P35 (35 mm), 2.4 m <sup>3</sup> /min	41.33	week	1.03	-	-	-	1.03	6(24)	
poker vibrator P54 (54 mm), 2.4 m <sup>3</sup> /min	49.60	week	1.24	-	-	-	1.24	6(24)	
poker vibrator P70 (70 mm), 2.4 m <sup>3</sup> /min	57.87	week	1.45	-	-	-	1.45	6(24)	
rotary drill, 0.3 m <sup>3</sup> /min	20.67	week	0.52	-	-	-	0.52	-	
extra air hose, 25mm x 15 m hose	2.00	week	0.05	-	-	-	0.05	-	
extra air hose, 38mm x 15 m hose	3.00	week	0.08	-	-	-	0.08	-	
<b>CONCRETE EQUIPMENT</b>									
Poker vibrators									
air pokers (see compressor tables)									
50 mm, petrol	106.00	week	2.65	75.00	2.00	2.00	4.19	6(21)	
50 mm, electric	60.33	week	1.51	-	-	-	1.51	6(23)	
75 mm, diesel	104.67	week	2.62	75.00	1.50	2.00	3.17	6(22)	
75 mm, electric	66.37	week	1.66	-	-	-	1.66	6(23)	
Tampers and screeders									
vibrating tamper and handles									
(petrol)	70.67	week	1.77	75.00	2.00	2.00	3.31	6(32)	
razor-back screeder (per metre)	44.24	week	1.11	75.00	1.50	2.00	1.66	-	
double beam screeder (7.6 m wide)	85.33	week	2.13	75.00	1.50	2.00	2.68	6(34)	
Rotary power float (petrol),									
687 mm diameter	89.67	week	2.24	75.00	2.00	2.00	3.78	6(36)	
865 mm diameter	98.63	week	2.47	75.00	2.00	2.00	4.01	6(36)	
Reinforcement									
power bar cropper (electric)	213.33	week	5.33	-	-	-	5.33	3(6)	
Reinforcement									
power bar bender (electric)	220.00	week	5.50	-	-	-	5.50	3(3)	
Compaction									
stud roller	158.67	week	3.97	75.00	1.50	2.00	4.52	-	
<b>MIXERS</b>									
Concrete mixer									
tilting drum mixer 90 litres	70.00	week	1.75	-	-	-	1.75	5(1)	
tilting drum mixer 150 litres	2.46	week	0.06	75.00	1.50	2.00	1.22	5(3)	
tilting drum mixer 200 litres	107.67	week	2.69	75.00	1.20	2.00	3.13	5(5)	
non tilting drum mixer 400 litres	151.00	week	3.78	75.00	1.30	2.00	4.25	5(7)	
non tilting drum mixer 500 litres	170.33	week	4.26	75.00	1.20	2.00	4.70	5(8)	
Truck mixer 6 m <sup>3</sup>	34.16	hour	34.16	75.00	14.00	3.00	39.30	5(35)	

	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
<b>CONCRETE PUMPS</b>									
Concrete pump skid/trailer mounted									
40m <sup>3</sup> /hr, excl. piping	18.85	hour	18.85	74.00	4.00	2.00	20.28	6(2)	
Truck mounted 80 m <sup>3</sup> /hr	144.88	hour	144.88	75.00	8.00	3.00	147.82	6(7)	
Schwing slurry pump	12.37	hour	12.37	75.00	1.50	3.00	12.92	6(1)	
<b>CONCRETE SKIPS</b>									
Rollover type									
0.5 m <sup>3</sup>	46.67	week	1.17	-	-	-	1.17	8(29)	
Dual flow type									
0.5 m <sup>3</sup>	45.67	week	1.14	-	-	-	1.14	8(34)	
0.75 m <sup>3</sup>	58.33	week	1.46	-	-	-	1.46	8(35)	
1.5 m <sup>3</sup>	80.00	week	2.00	-	-	-	2.00	8(37)	
<b>CRANES</b>									
up to 18t mobile (site use)	39.55	hour	39.55	60.00	3.40	10.00	40.62	7(2)	
Truck mounted mobile (wheeled) cranes									
12 t SWL	65.48	hour	65.48	60.00	5.10	10.00	67.08	7(14)	
20 t SWL	76.27	hour	76.27	60.00	5.50	10.00	77.99	7(15)	
26 t SWL	85.93	hour	85.93	60.00	5.80	10.00	87.75	7(16)	
45 t SWL	114.92	hour	114.92	60.00	6.30	10.00	116.90	7(18)	
60 t SWL	136.28	hour	136.28	60.00	8.50	10.00	138.94	7(19)	
90 t SWL	174.78	hour	174.78	60.00	10.00	10.00	177.92	7(20)	
135 t SWL	236.81	hour	236.81	60.00	12.00	10.00	240.57	7(22)	
Crawler cranes									
28 t SWL	42.82	hour	42.82	60.00	5.00	10.00	44.39	7(7)	
56 t SWL	72.27	hour	72.27	60.00	8.00	10.00	74.78	7(9)	
85 t SWL	101.51	hour	101.51	60.00	10.00	10.00	104.65	7(11)	
150 t SWL	155.11	hour	155.11	61.00	12.00	10.00	158.93	7(13)	
<b>DIESEL GENERATORS</b>									
500 w Petrol 110 or 240 V	61.33	week	1.53	85.00	0.80	3.00	2.24	11(1)	
2.0 kVA Petrol 110 or 240 V	122.67	week	3.07	85.00	1.60	3.00	4.48	11(1)	
4 kVA diesel dual voltage	152.00	week	3.80	85.00	1.70	3.00	4.51	11(2)	
10 kVA diesel dual voltage	147.67	week	3.69	85.00	1.80	3.00	4.44	11(3)	
16 kVA diesel 3 phase 440 V	174.00	week	4.35	85.00	1.90	3.00	5.14	11(4)	
30 kVA diesel 3 phase 440 V	230.33	week	5.76	85.00	2.00	3.00	6.59	11(5)	
50 kVA diesel 3 phase 440 V	303.00	week	7.58	85.00	2.50	4.00	8.63	11(6)	
100 kVA diesel 3 phase 440 V	508.67	week	12.72	85.00	3.00	4.00	13.98	11(9)	
125 kVA diesel 3 phase 440 V	691.00	week	17.28	85.00	4.90	5.00	19.36	11(11)	
150 kVA diesel 3 phase 440 V	691.00	week	17.28	85.00	10.90	5.00	21.90	11(12)	
175 kVA diesel 3 phase 440 V	768.00	week	19.20	85.00	17.00	5.00	26.41	11(12)	
200 kVA diesel 3 phase 440 V	845.00	week	21.13	85.00	21.80	5.00	30.37	11(12)	
250 kVA diesel 3 phase 440 V	1019.00	week	25.48	85.00	40.00	5.00	42.44	11(13)	
330 kVA diesel 3 phase 440 V	1195.00	week	29.88	85.00	48.00	5.00	50.23	11(14)	

	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
<b>EXCAVATORS</b>									
(Bucket capacity refers to SAE heaped)									
Mini Excavators (tracked)									
Up to 2000 kg (0.04 m <sup>3</sup> )	418.67	week	10.47	85.00	4.00	5.00	12.17	10(15)	
Up to 2000 kg (0.045 m <sup>3</sup> )	418.67	week	10.47	85.00	4.00	5.00	12.17	10(15)	
Up to 3000 kg (0.075 m <sup>3</sup> )	519.33	week	12.98	85.00	5.00	5.00	15.10	10(16)	
Up to 4000 kg (0.12m <sup>3</sup> )	591.67	week	14.79	85.00	5.00	5.00	16.91	10(17)	
Mini Excavators (wheeled)									
Up to 3000 kg (0.075 m <sup>3</sup> )	519.33	week	12.98	85.00	5.00	5.00	15.10	10(15)	
Hydraulic crawler mounted backacter approximate data:									
weight up to SAE bucket kW									
4.0 tonne 0.10 m <sup>3</sup> 25	14.79	hour	14.79	80.00	4.00	7.50	16.42	10(17)	
6.0 tonne 0.25 m <sup>3</sup> 40	17.45	hour	17.45	80.00	5.00	7.50	19.49	10(18)	
11.0 tonne 0.30 m <sup>3</sup> 50	21.99	hour	21.99	80.00	8.00	7.50	25.26	10(19)	
14.0 tonne 0.40 m <sup>3</sup> 63	26.21	hour	26.21	80.00	9.50	7.50	30.09	10(20)	
17.0 tonne 0.45 m <sup>3</sup> 70	29.33	hour	29.33	80.00	12.00	7.50	34.23	10(21)	
21.0 tonne 1.00 m <sup>3</sup> 100	33.25	hour	33.25	80.00	16.00	7.50	39.79	10(22)	
25.0 tonne 1.00 m <sup>3</sup> 115	37.25	hour	37.25	80.00	19.00	7.50	45.01	10(23)	
30.0 tonne 1.20 m <sup>3</sup> 130	47.03	hour	47.03	75.00	24.00	7.50	56.22	10(24)	
38.0 tonne 1.20 m <sup>3</sup> 160	60.99	hour	60.99	75.00	31.00	7.50	72.86	10(25)	
55.0 tonne 2.00 m <sup>3</sup> 205	81.32	hour	81.32	75.00	45.00	7.50	98.55	10(26)	
75.0 tonne 2.50 m <sup>3</sup> 235	108.20	hour	108.20	75.00	52.00	7.50	128.11	10(27)	
Hydraulic crawler mounted backacter; approximate data:									
20 tonne (0.6 m <sup>3</sup> ), 15 m reach cable operated boom	33.25	hour	33.25	80.00	16.00	7.50	39.79	10(22)	
30 tonne (0.8 m <sup>3</sup> ), 20 m reach cable operated boom	47.03	hour	47.03	75.00	24.00	7.50	56.22	10(24)	
Hydraulic wheeled backacter weight up to SAE bucket									
4.0 tonne 0.10 m <sup>3</sup>	14.79	hour	14.79	80.00	4.00	7.50	16.42	10(17)	
6.0 tonne 0.27 m <sup>3</sup>	17.45	hour	17.45	80.00	5.00	7.50	19.49	10(18)	
11tonne 0.34 m <sup>3</sup>	21.99	hour	21.99	80.00	8.00	7.50	25.26	10(19)	
14tonne 0.43 m <sup>3</sup>	26.21	hour	26.21	80.00	9.50	7.50	30.09	10(20)	
17tonne 0.47 m <sup>3</sup>	29.33	hour	29.33	80.00	10.50	7.50	33.62	10(21)	
21tonne 1.00 m <sup>3</sup>	33.25	hour	33.25	80.00	14.00	7.50	38.97	10(22)	
Backhoe loader, wheeled									
JCB 3CX, 1.1 m <sup>3</sup>	20.98	hour	20.98	75.00	7.50	6.00	23.81	10(36)	
Volvo BL61, 1.0 m <sup>3</sup>	20.98	hour	20.98	75.00	7.50	6.00	23.81	10(36)	
JCB 2CX, 0.6 m <sup>3</sup>	14.89	hour	14.89	75.00	7.50	6.00	17.72	10(34)	
Hymac 180C, 0.95 m <sup>3</sup>	15.16	hour	15.16	75.00	7.50	6.00	17.99	10(36)	
Percussion breaker attachments									
Montabert 140 (380 kg) with steels	322.33	week	8.06	-	-	-	8.06	10(30)	
Montabert 300 (606 kg) with steels	322.33	week	8.06	-	-	-	8.06	10(30)	
Montabert 900 (1133 kg) with steels	470.00	week	11.75	-	-	-	11.75	10(31)	
Montabert V 1200 (1570 kg) with steels	617.67	week	15.44	-	-	-	15.44	10(32)	
Other hydraulic attachments									
Rock backacter bucket (ripper teeth)	123.66	week	3.09	-	-	-	3.09	-	

	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
Ditch bucket (c/w side cutters)	83.03	week	2.08	-	-	-	2.08	-	
Trapezoidal bucket	91.85	week	2.30	-	-	-	2.30	-	
Clamshell Grab (1.0 m³)	166.04	week	4.15	-	-	-	4.15	-	
Rock handling Grab (up to 3 t)	155.45	week	3.89	-	-	-	3.89	-	
Scrap handling Grab (up to 1 t)	155.45	week	3.89	-	-	-	3.89	-	
Scrap shears	206.68	week	5.17	-	-	-	5.17	-	
Grab bucket	91.85	week	2.30	-	-	-	2.30	-	
Demolition ball	30.04	week	0.75	-	-	-	0.75	-	
Large scoop bucket 1.40 m³	74.19	week	1.85	-	-	-	1.85	-	
Single shank ripper	38.87	week	0.97	-	-	-	0.97	-	
Flat track shoes (highway use)	21.20	week	0.53	-	-	-	0.53	-	
<b>HOISTS, LIFTING AND HANDLING</b>									
Telescopic handler 4WD lifting up to 2.50 tonnes	14.55	hour	14.55	25.00	75.00	4.00	23.81	15(12)	
Electric forklift 2.5 tonnes	8.74	hour	8.74	-	-	-	8.74	-	
Rough terrain forklift (Manitou M50) 5.0 tonnes	16.98	hour	16.98	75.00	7.50	4.00	19.76	15(20)	
Lorry (8T) with 1T Hiab	15.73	hour	15.73	75.00	7.50	4.00	18.51	14(10)	
Mast section per 1.5 m (max x 91m)	10.06	week	0.25	-	-	-	0.25	-	
Tirfor winch TU 32 (3T SWL)	59.00	week	1.48	-	-	-	1.48	36(14)	
Tirfor winch TU 16	50.00	week	1.25	-	-	-	1.25	36(12)	
Chain hoist up to 2000 kg capacity	47.00	week	1.18	-	-	-	1.18	-	
Chain hoist up to 3000 kg capacity	561.00	week	14.03	-	-	-	14.03	-	
Electric cable hoist 200 kg SWL with gantry	146.00	week	3.65	-	-	-	3.65	36(6)	
Engine crane up to 10 CWT (500 kg SWL)	58.00	week	1.45	75.00	2.00	3.00	2.18	36(1)	
<b>PILING PLANT</b>									
(weight = piston weight)									
Piling hammer, double acting (air) weight up to 3,000 kg	364.33	week	9.11	-	-	-	9.11	17(5)	
weight up to 4,000 kg	401.33	week	10.03	-	-	-	10.03	17(6)	
weight up to 6,000 kg	440.67	week	11.02	-	-	-	11.02	17(7)	
Piling hammer, double acting (hydraulic) weight up to 5,000 kg	2059.33	week	51.48	-	-	-	51.48	-	
weight up to 10,000 kg	2265.27	week	56.63	-	-	-	56.63	-	
weight up to 50,000 kg	2491.79	week	62.29	-	-	-	62.29	-	
weight up to 100,000 kg	2740.97	week	68.52	-	-	-	68.52	-	
Piling hammer, single acting (diesel) weight up to 1,500 kg	667.00	week	16.68	75.00	6.00	5.00	18.92	17(30)	
weight up to 2,500 kg	977.00	week	24.43	75.00	11.00	5.00	28.54	17(32)	
weight up to 3,500 kg	1267.00	week	31.68	75.00	14.00	5.00	36.92	17(34)	
weight up to 5,000 kg	2482.33	week	62.06	75.00	16.00	5.00	68.05	-	
weight up to 5,700 kg	2482.33	week	62.06	75.00	18.00	5.00	68.79	17(35)	
weight up to 6,200 kg	2482.33	week	62.06	75.00	26.00	5.00	71.79	17(36)	
weight up to 8,000 kg	2856.67	week	71.42	75.00	30.00	5.00	82.64	17(37)	
weight up to 10,000 kg	3177.33	week	79.43	75.00	35.00	5.00	92.52	17(38)	

	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
Hanging leaders for use with diesel hammers									
length 8.5 m	183.33	week	4.58	-	-	-	4.58	17(*)	
length 15.5 m	183.33	week	4.58	-	-	-	4.58	17(53)	
length 22.5 m	204.33	week	5.11	-	-	-	5.11	17(54)	
Flexible hose for compressed air (per 30 ft length)									
38 mm diameter	62.41	week	1.56	-	-	-	1.56	17(24)	
50 mm diameter	63.48	week	1.59	-	-	-	1.59	17(25)	
Piling extractors (including compressor)									
BSP HD10 unit weight 3,000 kg	1195.00	week	29.88	75.00	20.00	4.00	37.29	17(20)	
BSP HD15 unit weight 4,580 kg	1638.00	week	40.95	75.00	30.00	4.00	52.07	17(21)	
Vibratory hammer/extractor, hydraulic cent. force - 16 tonne, pulling force -12.5 tonne	1102.00	week	27.55	75.00	30.00	7.50	39.04	17(39)	
cent. force - 59 tonne, pulling force -36 tonne	1657.67	week	41.44	75.00	30.00	7.50	52.93	17(41)	
cent. force - 200 tonne, pulling force -80 tonne	4281.00	week	107.03	75.00	30.00	7.50	118.52	17(43)	
<b>ROLLERS</b>									
Pedestrian rollers									
475 kg trench compactor	2.47	hour	2.47	80.00	0.89	7.50	2.83	23(11)	
600 kg double drum vibratory	5.13	hour	5.13	80.00	0.99	7.50	5.53	23(11)	
928 kg double drum vibratory	6.61	hour	6.61	80.00	1.59	7.50	7.26	23(12)	
1300 kg double drum vibratory	6.61	hour	6.61	80.00	2.30	7.50	7.55	23(13)	
159 kg single drum vibratory	3.97	hour	3.97	80.00	0.80	7.50	4.30	23(9)	
466 kg single drum vibratory	4.40	hour	4.40	80.00	0.91	7.50	4.77	23(9)	
Self propelled rollers									
2½ tonne double vibratory	9.03	hour	9.03	80.00	3.63	7.50	10.51	23(21)	
5 tonne double vibratory	13.73	hour	13.73	80.00	3.84	7.50	15.30	23(22)	
9 tonne single drum vibratory	22.20	hour	22.20	80.00	10.00	7.50	26.29	23(23)	
Bomag BW55E single drum vibratory	1.22	hour	1.22	80.00	11.00	7.50	5.71	23(25)	
Bomag BW71E single drum vibratory	2.47	hour	2.47	80.00	16.29	7.50	9.12	23(26)	
Bomag BW217D single drum vibratory	15.03	hour	15.03	80.00	23.77	7.50	24.74	23(*)	
Bomag BC672 RB Refuse compactor 3 wheel dead weight	12.70	hour	12.70	80.00	42.00	7.50	29.86	23(*)	
10 tonne	19.61	hour	19.61	80.00	16.00	7.50	26.15	23(3)	
10 tonne	19.61	hour	19.61	80.00	15.00	7.50	25.74	23(3)	
12 tonne	21.77	hour	21.77	80.00	17.00	7.50	28.71	23(4)	
Rubber tyred rollers									
10 tonne	26.96	hour	26.96	80.00	17.00	7.50	33.90	23(7)	
6 tonne	21.36	hour	21.36	80.00	12.00	7.50	26.26	23(6)	
Towed vibratory rollers									
6 tonne	13.69	hour	13.69	80.00	7.50	7.50	16.75	23(17)	
Sheepsfoot	16.02	hour	16.02	80.00	4.00	7.50	17.65	23(30)	
Dual Purpose Rollers with breaker	2.39	hour	2.39	80.00	4.00	7.50	4.02	-	
Bomag BW138 with breaker	13.73	hour	13.73	80.00	4.00	7.50	15.36	-	

	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
<b>SCAFFOLDING AND ACCESSORIES</b>									
Tube alloy per metre	0.20	4 week	0.05	-	-	-	0.05	25(2)	
Tube galvanised per metre	0.10	4 week	0.03	-	-	-	0.03	25(1)	
Boards – per 4 metre length	0.27	4 week	0.07	-	-	-	0.07	25(19)	
Base plates adjustable each	0.23	4 week	0.06	-	-	-	0.06	25(8)	
Base plates fixed each	0.07	4 week	0.02	-	-	-	0.02	25(7)	
Clips each (all types)	0.07	4 week	0.02	-	-	-	0.02	25(7)	
Couplers each (all types)	0.07	4 week	0.02	-	-	-	0.02	25(7)	
Spigots each ledgers and braces/m	0.20	4 week	0.05	-	-	-	0.05	25(7)	
Putlog 1.5 m blade end each steel	0.23	4 week	0.06	-	-	-	0.06	25(3)	
Putlog 1.8 m blade end each steel	0.30	4 week	0.08	-	-	-	0.08	25(5)	
Reveal screws each	0.15	4 week	0.04	-	-	-	0.04	25(7)	
Castor wheel rubber tyred w/brake	5.47	4 week	1.37	-	-	-	1.37	25(16)	
<b>ACCESS STAGING AND TOWERS</b>									
Alloy towers base size 1.8 x 0.80 height to platform 2.6 m	191.10	weekhour	4.78	-	-	-	4.78	-	
Extra sections per 2 m rise (max 3)	49.73	week	49.73	-	-	-	49.73	-	
Alloy towers base size 1.8 x 1.80 height to platform 2.6 m	191.10	week	191.10	-	-	-	191.10	-	
Extra sections per 2 m rise (max 7)	49.73	week	49.73	-	-	-	49.73	-	
Alloy stairwell tower per 2 m rise	91.65	week	91.65	-	-	-	91.65	-	
Steel towers base size 1.80 x 1.80 height to platform 1.80 m	95.55	week	95.55	-	-	-	95.55	-	
Extra sections per 0.60 m rise	20.48	week	20.48	-	-	-	20.48	-	
Steel towers base size 3.80 x 3.80 height to platform 1.80 m	425.85	week	425.85	-	-	-	425.85	-	
Extra sections per 1.20 m rise	182.51	week	182.51	-	-	-	182.51	-	
Castor wheels	21.87	4 week	5.47	-	-	-	5.47	25(14)	
Toe boards per 4 metre length	0.27	4 week	0.07	-	-	-	0.07	25(19)	
Toe boards hinged per 4 metre length	0.27	4 week	0.07	-	-	-	0.07	-	
Handrail (included with towers)	0.25	4 week	0.06	-	-	-	0.06	-	
Stair tread complete	0.41	4 week	0.10	-	-	-	0.10	-	
Brick guard	3.56	4 week	0.89	-	-	-	0.89	-	
Bridging Unit per 1.00 m	4.63	week	4.63	-	-	-	4.63	-	
<b>TRACTORS</b>									
Tractor dozers with single equipment									
50 kW	24.98	hour	24.98	80.00	11.00	7.50	29.47	32(1)	
74 kW	32.85	hour	32.85	80.00	14.50	7.50	38.77	32(2)	
104 kW	47.53	hour	47.53	80.00	21.00	6.00	55.99	32(4)	
212 kW	82.00	hour	82.00	80.00	38.00	6.00	97.31	32(7)	
276 kW	136.08	hour	136.08	80.00	53.00	7.50	157.73	32(9)	
67 kW	24.98	hour	24.98	80.00	14.50	7.50	30.90	32(1)	
123 kW	51.38	hour	51.38	80.00	25.00	7.50	61.59	32(5)	
Dozer attachments									
single shank ripper	3.75	hour	3.75	-	-	-	3.75	-	
triple shank ripper	6.83	hour	6.83	-	-	-	6.83	-	

	Hire Rate £	Hire Period	Cost per working hour					DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel	Total £	
'U' dozer blade	2.05	hour	2.05	-	-	-	2.05	-
angle dozer blade	2.13	hour	2.13	-	-	-	2.13	-
skeleton blade	2.13	hour	2.13	-	-	-	2.13	-
Tractor loaders								
0.8 m <sup>3</sup>	22.89	hour	22.89	75.00	11.00	7.50	27.10	32(11)
1.5 m <sup>3</sup>	44.41	hour	44.41	75.00	19.00	7.50	51.69	32(15)
2.0 m <sup>3</sup>	48.66	hour	48.66	75.00	25.00	7.50	58.23	32(16)
3.0 m <sup>3</sup>	74.20	hour	74.20	75.00	34.00	7.50	87.22	32(18)
3.0 m <sup>3</sup>	74.20	hour	74.20	75.00	34.00	7.50	82.01	32(18)
Wheeled loaders								
0.55 m <sup>3</sup> 33 kW	16.03	hour	16.03	75.00	8.00	7.50	19.09	32(28)
0.75 m <sup>3</sup> 41 kW	16.03	hour	16.03	75.00	9.50	7.50	19.67	32(28)
1.60 m <sup>3</sup> 83 kW	21.58	hour	21.58	75.00	11.00	7.50	25.79	32(32)
2.70 m <sup>3</sup> 115 kW	31.89	hour	31.89	75.00	19.00	7.50	39.17	32(36)
3.10 m <sup>3</sup> 135 kW	36.78	hour	36.78	75.00	23.00	7.50	45.59	32(37)
3.85 m <sup>3</sup> 194 kW	47.56	hour	47.56	80.00	30.00	7.50	59.82	32(39)
6.00 m <sup>3</sup> 310 kW	139.48	hour	139.48	80.00	53.00	7.50	161.13	32(41)
Wheeled loaders 10.50 m <sup>3</sup> , 588 kW	115.93	hour	115.93	80.00	90.00	7.50	152.70	32(*)
Long reach loader; 1.00 m <sup>3</sup> , 54 kW	31.62	hour	31.62	75.00	11.00	7.50	35.83	-
Wheel dozer, blade capacity 7.5 m <sup>3</sup> , 338 kW	64.12	hour	64.12	80.00	68.00	7.50	91.90	32(9)
Loader Attachments								
4 in 1 bucket	2.75	hour	2.75	-	-	-	2.75	-
side dumping bucket	2.69	hour	2.69	-	-	-	2.69	-
rock bucket	2.33	hour	2.33	-	-	-	2.33	-
skeleton bucket	2.41	hour	2.41	-	-	-	2.41	-
single shank ripper (D6)	3.93	hour	3.93	-	-	-	3.93	-
multi shank ripper (D8)	7.15	hour	7.15	-	-	-	7.15	-
rear mounted backacter	10.20	hour	10.20	-	-	-	10.20	-
Hydraulic face shovels								
32 tonne, 1.50 m <sup>3</sup>	60.99	hour	60.99	80.00	34.00	7.50	74.88	10(25)
42 tonne, 2.60 m <sup>3</sup>	81.32	hour	81.32	80.00	44.00	7.50	99.29	10(26)
62 tonne, 1.30 - 3.40 m <sup>3</sup>	108.20	hour	108.20	80.00	64.00	7.50	134.34	10(27)
Skid Steer Loaders								
Bobcat 463 or similar	4.63	hour	4.63	75.00	3.50	5.00	5.94	32(48)
Bobcat 553 or similar	4.88	hour	4.88	75.00	4.50	5.00	6.56	32(49)
Case 85 XT or similar	25.40	hour	25.40	75.00	8.30	5.00	28.50	32(49)
Motor Scraper - single engine								
15.30 m <sup>3</sup>	83.43	hour	83.43	80.00	44.00	3.00	100.65	32(69)
33.60 m <sup>3</sup>	181.46	hour	181.46	80.00	20.00	3.00	189.29	32(*)
Motor Scraper - twin engine								
16.00 m <sup>3</sup>	106.04	hour	106.04	80.00	70.00	3.00	133.44	32(71)
33.60 m <sup>3</sup>	238.93	hour	238.93	80.00	125.50	6.00	289.48	32(73)
Motor scraper - elevating								
8.40 m <sup>3</sup>	65.23	hour	65.23	80.00	25.00	3.00	75.02	32(74)
13.00 m <sup>3</sup>	99.75	hour	99.75	80.00	36.00	3.00	113.84	32(75)
16.80 m <sup>3</sup>	130.98	hour	130.98	80.00	46.00	3.00	148.98	32(76)



	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
Tractor (tracked) pipe layer complete with counterweight and boom up to 145 kW lifting max 28 t (Komatsu/CAT or similar)	45.75	hour	45.75	80.00	17.00	4.00	52.47	-	
Tractor (tracked) pipe layer complete with counterweight and boom up to 149 kW lifting max 41 t (CAT or similar)	53.77	hour	53.77	80.00	17.00	4.00	60.49	-	
up to 224 kW, lifting max 70 t (CAT or similar)	65.69	hour	65.69	80.00	26.00	4.00	75.97	-	
Tractor (tracked) no equipment, for Agro/towing use									
75 kW	14.32	hour	14.32	75.00	10.00	5.00	18.06	-	
90 kW	18.23	hour	18.23	75.00	12.00	5.00	22.72	-	
125 kW	24.16	hour	24.16	75.00	18.00	5.00	30.89	-	
Motor Grader (6 wheel) up to 93kW blade 3.66m (Cat or similar)	40.70	hour	40.70	80.00	17.00	7.50	47.64	32(55)	
up to 113kW blade 3.66m (Cat or similar)	45.99	hour	45.99	80.00	23.00	7.50	55.39	32(56)	
up to 158kW blade 3.96m	72.87	hour	72.87	80.00	27.00	7.50	83.90	32(57)	
up to 205kW blade 4.88m (Cat or similar)	119.16	hour	119.16	80.00	32.00	7.50	132.23	33(*)	
Trench excavator (Trencher) up to 100kW max width 0.60m max depth 2.40m (Vermeer or similar)	31.92	hour	31.92	75.00	22.00	3.00	39.99	33(5)	
up to 300kW max width 1.07m max depth 3.66m (Vermeer or similar)	85.81	hour	85.81	75.00	40.00	3.00	100.49	33(7)	
towed type from Agro Tractor max width 0.13m max depth 0.55m	9.74	hour	9.74	75.00	3.00	3.00	10.84	33(*)	
<b>TRANSPORT (TIPPERS AND DUMPERS)</b>									
Tipping lorries									
4 x 2 wheel tippers									
gross weight up to 11.0 tonnes	16.07	hour	16.07	80.00	30.00	4.00	27.93	14(15/	
payload up to 5.5 tonnes - side tipping									
gross weight up to 11 tonnes payload up to 8 tonnes	13.39	hour	13.39	80.00	25.00	4.00	23.27	14(15)	
gross weight up to 14 tonnes payload up to 10 tonnes	20.37	hour	20.37	80.00	30.00	4.00	32.23	14(16)	
gross weight up to 17 tonnes payload up to 12 tonnes	26.66	hour	26.66	80.00	33.00	4.00	39.70	14(16)	
6 x 4 wheel tippers									
gross weight up to 25 tonnes payload up to 18 tonnes	26.66	hour	26.66	80.00	35.00	4.00	40.49	14(17)	
gross weight up to 31 tonnes payload up to 20 tonnes	32.13	hour	32.13	80.00	40.00	4.00	47.94	14(18)	
8 x 4 wheel tippers									

	Hire Rate £	Hire Period	Cost per working hour					
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel	Total £	DSR
gross weight up to 31 tonnes payload up to 20 tonnes	32.13	hour	32.13	80.00	40.00	4.00	47.94	14(18)
gross weight up to 31 tonnes payload up to 22 tonnes	32.13	hour	32.13	80.00	42.00	4.00	48.73	14(18)
gross weight up to 33 tonnes payload up to 24 tonnes	32.13	hour	32.13	80.00	44.00	4.00	49.52	14(*)
Articulated tipper trailers (Highway type excluding tractor)								
twin axle (Bogie) payload up to 20 tonnes (40' length)	29.59	hour	29.59	80.00	40.00	4.00	45.40	-
triple axle (Bogie) payload up to 25 tonnes (50' length)	33.75	hour	33.75	80.00	44.00	4.00	51.14	-
Dump truck (on site use only)								
10.5 m <sup>3</sup> heaped capacity, 15.5 tonne payload	24.28	hour	24.28	80.00	15.00	5.00	30.27	9(12)
14 m <sup>3</sup> heaped capacity, 18 tonne payload	34.80	hour	34.80	80.00	31.00	5.00	47.17	9(14)
Dump truck (on site use only)								
19 m <sup>3</sup> heaped capacity, 31 tonne payload	60.08	hour	60.08	80.00	37.50	5.00	75.04	9(17)
24 m <sup>3</sup> heaped capacity, 36 tonne payload	74.57	hour	74.57	80.00	37.90	5.00	89.69	9(18)
57 m <sup>3</sup> heaped capacity, 88 tonne payload	82.77	hour	82.77	80.00	112.00	5.00	127.46	9(*)
78 m <sup>3</sup> heaped capacity, 136 tonne payload	97.20	hour	97.20	80.00	122.00	5.00	145.88	9(*)
Dump truck (articulated type ADT's)								
Volvo 6 x 6, 18.5 tonne or similar, payload 11 m <sup>3</sup> heaped capacity	40.24	hour	40.24	80.00	21.40	3.00	48.62	9(22)
Volvo 6 x 6, 22.5 tonne or similar, payload 12 m <sup>3</sup> heaped capacity	46.46	hour	46.46	80.00	29.20	3.00	57.89	9(23)
Dump truck (articulated type ADT's)								
23 tonne payload, 13 m <sup>3</sup> heaped capacity	46.46	hour	46.46	80.00	26.90	3.00	56.99	9(23)
25 tonne payload, 13.6 m <sup>3</sup> heaped capacity	54.00	hour	54.00	80.00	29.50	3.00	65.55	9(24)
25 tonne payload, 14.2 m <sup>3</sup> heaped capacity	54.00	hour	54.00	80.00	25.00	3.00	63.79	9(24)
32 tonne payload, 19 m <sup>3</sup> heaped capacity	62.09	hour	62.09	80.00	36.50	3.00	76.38	9(25)
Small dumpers								
750kg payload, heaped capacity 0.55 m <sup>3</sup>	5.28	hour	5.28	80.00	1.50	3.00	5.87	9(3)
1000kg payload, heaped capacity 0.75 m <sup>3</sup>	5.28	hour	5.28	80.00	2.00	3.00	6.06	9(3)
2000kg payload, heaped capacity 1.55 m <sup>3</sup> (Thwaites 4000 L, 4 x 4)	6.27	hour	6.27	80.00	3.00	3.00	7.44	9(5)
2500kg payload, heaped capacity 1.80 m <sup>3</sup> (Thwaites 3 Tonne, 4 x 4)	6.89	hour	6.89	80.00	4.00	3.00	8.46	9(6)

	Hire Rate £	Hire Period	Cost per working hour					DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel	Total £	
3000kg payload, heaped capacity 2.00 m <sup>3</sup> (Thwaites 3.5 Tonne, 4 x 4)	7.61	hour	7.61	80.00	5.00	3.00	9.57	9(7)
4000kg payload, heaped capacity 2.50 m <sup>3</sup> (Thwaites 4.5 Tonne, 4 x 4)	8.37	hour	8.37	80.00	7.00	3.00	11.11	9(8)
Power barrow	2.86	hour	2.86	80.00	0.80	2.00	3.17	6(49)
Transport (trucks and vans)								
Truck, 5t chassis	11.92	hour	11.92	80.00	7.00	3.00	14.66	
Truck, 8t chassis	16.35	hour	16.35	80.00	8.00	3.00	19.48	
Truck, 10t chassis	16.35	hour	16.35	80.00	10.00	3.00	20.26	
Truck, 16t chassis	19.48	hour	19.48	80.00	15.00	3.00	25.35	
Skip Loader, 17t chassis	19.48	hour	19.48	80.00	15.00	3.00	25.35	
Small van (petrol)	6.68	hour	6.68	80.00	8.00	3.00	9.81	14(20)
Pick up (DERV) (1.10 tonnes)	11.76	hour	11.76	80.00	8.00	3.00	14.89	14(21)
Personnel carrier (12 seat transit)	16.91	hour	16.91	80.00	10.00	3.00	20.82	14(30)
SWB utility Land Rover type (DERV)	15.08	hour	15.08	80.00	7.00	3.00	17.82	14(26)
LWB utility Land Rover type (DERV)	16.91	hour	16.91	80.00	7.00	3.00	19.65	14(27)
Trailers								
Flat trailer (2 axles) up to 2 tonne	11.58	day	1.45	-	-	-	1.45	15 (1)
Drop side trailer (2 axles)								
power tipping up to 4 tonne	15.40	day	1.93	-	-	-	1.93	15 (4)
Plant Trailer up to 10 tonne	19.62	day	2.45	-	-	-	2.45	15 (6)
Plant Trailer up to 20 tonne	23.35	day	2.92	-	-	-	2.92	15 (7)
<b>TRENCH SHEETS ETC. (MINIMUM 50)</b>								
Trench struts (each)								
Nr 0; range 0.30 m - 0.40 m	1.21	week	1.21	-	-	-	1.21	-
Nr 1; range 0.46 m - 0.71 m	1.21	week	1.21	-	-	-	1.21	26(3)
Nr 2; range 0.70 m - 1.10 m	1.24	week	1.24	-	-	-	1.24	26(4)
Nr 3; range 1.04 m - 1.70 m	1.31	week	1.31	-	-	-	1.31	26(5)
Standard props (each)								
Nr 0; 1.07 m - 1.83 m	1.47	week	1.47	-	-	-	1.47	-
Nr 1; 1.75 m - 3.13 m	1.54	week	1.54	-	-	-	1.54	-
Nr 2; 1.98 m - 3.36 m	1.58	week	1.58	-	-	-	1.58	-
Nr 3; 2.59 m - 3.97 m	1.63	week	1.63	-	-	-	1.63	-
Nr 4; 3.20 m - 4.88 m	1.80	week	1.80	-	-	-	1.80	-
Nr 5; 4.88 m - 6.41 m	1.99	week	1.99	-	-	-	1.99	-
Beam heads (each)								
Nr 1	2.60	week	2.60	-	-	-	2.60	-
Nr 2	2.64	week	2.64	-	-	-	2.64	-
Nr 3	2.68	week	2.68	-	-	-	2.68	-
Nr 4	2.72	week	2.72	-	-	-	2.72	-
Split heads (each)								
Nr 1 1ft 9in - 2ft 9in	1.08	week	1.08	-	-	-	1.08	-
Nr 2 3ft 9in - 4ft 6in	1.08	week	1.08	-	-	-	1.08	-
Nr 3 4ft 6in - 6ft 3in	1.09	week	1.09	-	-	-	1.09	-
Trench Sheets								
1.83 m	1.26	week	1.26	-	-	-	1.26	-
2.44 m	1.44	week	1.44	-	-	-	1.44	-
3.05 m	1.78	week	1.78	-	-	-	1.78	-

	Hire Rate £	Hire Period	Cost per working hour					DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel	Total £	
3.66 m	2.23	week	2.23	-	-	-	2.23	-
4.27 m	2.50	week	2.50	-	-	-	2.50	-
4.88 m	2.87	week	2.87	-	-	-	2.87	-
Trench boxes (approximate cost per m <sup>2</sup> ) - refer to Approximate Estimates								
<b>PUMPING AND DEWATERING</b>								
Self priming centrifugal diesel pumps (inc.8 m suction and delivery pipes)								
50 mm 550 l/min	91.23	week	2.28	80.00	0.80	2.00	2.59	20(10)
75 mm Flygt submersible 1050 l/min (4 kW)	60.13	week	1.50	80.00	-	-	1.50	20(24)
75 mm 750 l/min	130.61	week	3.27	80.00	1.00	2.00	3.66	20(11)
100 mm 1500 l/min	159.66	week	3.99	80.00	2.80	2.00	5.08	20(12)
150 mm Sykes UV0 head pump / high capacity	199.09	week	4.98	80.00	6.80	2.00	7.62	20(13)
76 mm Sykes VCD3 jetting pump	241.37	week	6.03	80.00	2.00	2.00	6.81	-
100 mm Sykes WP100/60 wellpointing pump	222.58	week	5.56	80.00	4.50	2.00	7.30	-
150 mm Sykes WP150/60 wellpointing pump	274.89	week	6.87	80.00	6.80	2.00	9.51	-
Extra hose (per metre)								
50 mm Suction	0.41	week	0.01	-	-	-	0.01	21(2)
50 mm Delivery	0.64	week	0.02	-	-	-	0.02	21(8)
75 mm Suction	0.64	week	0.02	-	-	-	0.02	21(3)
75 mm Delivery	0.99	week	0.02	-	-	-	0.02	21(9)
100 mm Suction	0.82	week	0.02	-	-	-	0.02	21(4)
100 mm Delivery	1.28	week	0.03	-	-	-	0.03	21(10)
150 mm Suction	1.23	week	0.03	-	-	-	0.03	21(5)
150 mm Delivery	1.93	week	0.05	-	-	-	0.05	21(11)
150 mm Duraline (lay flat fine hose)	-	week	(included with Jetting pump)			-	-	-
150 mm Jetting tube	-	week	-	-	-	-	-	-
150 mm PVC header pipe and attachments at 1.50m centres including jet wells for wellpointing to 6.5 m deep (per well-point)	4.39	week	0.11	-	-	-	0.11	-
<b>MISCELLANEOUS</b>								
Road form 10m long (each)								
102mm high	0.63	day	0.08	-	-	-	0.08	27(2)
152 mm high	0.69	day	0.09	-	-	-	0.09	27(3)
203 mm high	0.81	day	0.10	-	-	-	0.10	27(4)
203 mm high (heavy section)	0.81	day	0.10	-	-	-	0.10	27(5)
203 mm high (heavy section with rail)	1.11	day	0.14	-	-	-	0.14	27(6)
254 mm high (heavy section with rail)	1.36	day	0.17	-	-	-	0.17	27(7)
3.05 mm high (heavy section with rail)	1.49	day	0.19	-	-	-	0.19	27(8)
Flexible road form 3m long (each)								
150 mm high	2.04	day	0.26	-	-	-	0.26	-
200 mm high	2.13	day	0.27	-	-	-	0.27	-

	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
225 mm high	2.21	day	0.28	-	-	-	0.28	-	
Road signs on stands (each)									
600mm diameter	0.20	day	0.03	-	-	-	0.03	37(43)	
750mm diameter	0.31	day	0.04	-	-	-	0.04	37(44)	
900mm diameter	0.45	day	0.06	-	-	-	0.06	37(45)	
1200mm diameter	0.73	day	0.09	-	-	-	0.09	37(46)	
Road safety flashing hazard lamps (Batteries & tripod inc.)	3.32	day	0.42	-	-	-	0.42	37(22)	
traffic lamps static	4.56	day	0.57	-	-	-	0.57	37(10)	
standard cone	0.42	day	0.05	-	-	-	0.05	37(39)	
road pins	0.77	week	0.02	-	-	-	0.02	-	
PVC-U barrier	4.08	day	0.51	-	-	-	0.51	37(6)	
cone converter	1.92	week	0.05	-	-	-	0.05	-	
railway sleepers - baulks - each	2.90	week	0.07	-	-	-	0.07	-	
traffic light systems									
two way radar, 110V	101.34	week	2.53	-	-	-	2.53	-	
two way, mains, timer operated	88.13	week	2.20	-	-	-	2.20	37(9)	
Transformers/cables									
up to 2.5 kVA	0.73	hour	0.73	-	-	-	0.73	11(16)	
up to 5.0 kVA	0.81	hour	0.81	-	-	-	0.81	11(17)	
up to 7.5 kVA	0.89	hour	0.89	-	-	-	0.89	11(18)	
Extension cable 240V/110V									
15 m plug and socket	6.45	week	0.16	-	-	-	0.16	-	
30 m plug and socket	8.07	week	0.20	-	-	-	0.20	-	
15 m4 mm	11.13	week	0.28	-	-	-	0.28	-	
Transformers/cables									
240V junction box	11.63	week	0.29	-	-	-	0.29	-	
110V junction box	11.63	week	0.29	-	-	-	0.29	-	
Welding & cutting sets									
ARC Mains 150 amps portable	1.88	hour	1.88	-	-	-	1.88	35(5)	
ARC diesel 150 amps mobile	2.42	hour	2.42	80.00	1.80	-	3.87	35(2)	
ARC Diesel 300 amps trailer mounted	3.75	hour	3.75	80.00	2.30	-	4.62	35(3)	
Oxy acetylene set portable (cutting)	2.11	hour	2.11	75.00	650/325	-	4.89	35(1)	
Oxy acetylene set portable (welding)	2.11	hour	2.11	75.00	500/325	-	4.89	35(1)	
MIG welder 120 amp	2.64	hour	2.64	-	-	-	2.64	-	
Lighting							0.72		
mobile lighting 8m c/w 2 light tungsten incl 1.25 kVA generator	4.45	hour	4.45	-	-	-	4.45	11(29)	
mobile lighting 16m c/w 4 light mercury vapour vapour incl 6.25 kVA generator	6.33	hour	6.33	-	-	-	6.33	11(30)	
mobile lighting 20m c/w 4 light tungsten halogen incl 7.5 kVA generator	6.69	hour	6.69	-	-	-	6.69	11(31)	
Festoon lighting set (34m)	33.44	week	0.84	-	-	-	0.84	-	
Tripod floodlight 1.8m stand 500 watt	32.93	week	0.82	-	-	-	0.82	-	
Drain tools									
drain rods (10m set) including equipment	0.08	day	0.01	-	-	-	0.01	37(24)	
drain plug (rubber diaphragm) 100	0.05	day	0.01	-	-	-	0.01	37(26)	

	Hire Rate £	Hire Period	Cost per working hour					DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel	Total £	
drain plug (rubber diaphragm) 150	0.07	day	0.01	-	-	-	0.01	37(27)
drain plug (rubber diaphragm) 300	0.23	day	0.03	-	-	-	0.03	37(28)
mains powered drain cleaner	69.26	week	1.73	-	-	-	1.73	-
drain tester - smoke	9.24	week	0.23	-	-	-	0.23	-
drain tester - U gauge	10.39	week	0.26	-	-	-	0.26	-
drain tester - pressure pump	30.78	week	0.77	-	-	-	0.77	-
drain tester - mandrel	5.77	week	0.14	-	-	-	0.14	-
stilson wrench 0.600 m	8.00	week	0.20	-	-	-	0.20	-
stilson wrench 0.915 m	12.31	week	0.31	-	-	-	0.31	-
clay pipe cutter to 0.225 m	23.08	week	0.58	-	-	-	0.58	-
steel pipe cutter to 150 mm	17.50	week	0.44	-	-	-	0.44	-
drain bag 100 mm or 150 mm	7.70	week	0.19	-	-	-	0.19	-
Tar boilers								
hand operated 1000 litres	5.27	hour	5.27	-	-	-	5.27	29(1)
power operated 2000 litres	6.38	hour	6.38	-	-	-	6.38	29(2)
Shot blasting equipment								
67 kg	133.04	week	3.33	-	-	-	3.33	-
156 kg	183.90	week	4.60	-	-	-	4.60	-
Grit blaster ICE160, 72kg	148.34	week	3.71	-	-	-	3.71	-
Stone splitter 600 mmx 100 mm	58.29	week	1.46	-	-	-	1.46	-
Block splitter	30.78	week	0.77	-	-	-	0.77	-
Slab splitter	38.48	week	0.96	-	-	-	0.96	-
Slab lifter	8.09	week	0.20	-	-	-	0.20	-
Cartridge guns								
Hilti DX76	32.97	week	0.82	-	-	-	0.82	-
Hilti DX460	29.33	week	0.73	-	-	-	0.73	-
Heating/Drying					Propane			
up to 30.000 BTU/hhour	1.33	hour	1.33	80.00	0.25	-	1.92	37(11)
up to 63.000 BTU/hhour	1.58	hour	1.58	80.00	1.20	-	4.40	37(12)
up to 150.000 BTU/hhour	2.40	hour	2.40	80.00	3.00	-	9.44	37(14)
up to 325.000 BTU/hhour	6.45	hour	6.45	80.00	6.50	-	21.70	37(16)
dehumidifier (68 litres/day)	6.95	day	0.87	-	-	-	0.87	37(34)
fume extractor (150 mm diameter)	76.34	week	1.91	-	-	-	1.91	-
Drills/Saws/Tools								
diamond drill,150 mm max. diameter	96.00	week	2.40	-	-	-	2.40	-
masonry drill & core bits, 10mm	0.32	hour	0.32	-	-	-	0.32	31(1)
masonry drill & core bits, 19mm	0.42	hour	0.42	-	-	-	0.42	31(3)
masonry drill & core bits, 32mm	0.55	hour	0.55	-	-	-	0.55	31(4)
Roto broach, milling to 34mm	66.27	week	1.66	-	-	-	1.66	-
rotary hammer drill, light weight	0.72	hour	0.72	-	-	-	0.72	31(15)
rotary hammer drill, heavy weight	0.95	hour	0.95	-	-	-	0.95	31(16)
demolition hammer, heavy duty	0.95	hour	0.95	-	-	-	0.95	-
grinder, 225mm, electric	0.56	hour	0.56	-	-	-	0.56	-
grinder, 114mm, electric	0.45	hour	0.45	-	-	-	0.45	31(11)
saw bench, 410mm diameter, petrol	1.88	hour	1.88	75.00	1.00	2.00	2.65	24(10)
saw bench, 610mm diameter, diesel	2.48	hour	2.48	75.00	1.00	2.00	2.84	24(13)
chain saw, up to 410mm	1.94	hour	1.94	75.00	0.40	2.00	2.09	24(2)
225mm electric grinder (angle)	0.37	hour	0.37	-	-	-	0.37	31(10)
450mm conc saw 25hp diesel	3.38	hour	3.38	75.00	0.30	2.00	3.49	6(41)
600mm conc saw 40hp diesel	6.86	hour	6.86	75.00	0.30	2.00	6.97	6(42)



	Hire Rate £	Hire Period	Cost per working hour					Total £	DSR
			Plant	Usage %	Fuel l/hr	Oil etc. % fuel			
Adjustable props									
Nr 0 1.07 - 1.82	2.22	week	2.22	-	-	-	2.22	27(12)	
Nr 1 1.75 - 3.12	2.29	week	2.29	-	-	-	2.29	27(13)	
Nr 2 1.98 - 3.35	2.33	week	2.33	-	-	-	2.33	27(14)	
Nr 3 2.59 - 3.95	2.34	week	2.34	-	-	-	2.34	27(15)	
Nr 4 3.20 - 4.88	2.38	week	2.38	-	-	-	2.38	27(16)	
Formwork Miscellaneous									
Decking per SM (Kwikform) (excluding props)	9.47	week	9.47	-	-	-	9.47		
Column clamps (set)									
Nr 1; 254mm - 508mm	2.40	week	2.40	-	-	-	2.40	27(17)	
Nr 2 ; 406mm - 813mm	2.53	week	2.53	-	-	-	2.53	27(18)	
Nr 3; 610mm - 1220mm	2.77	week	2.77	-	-	-	2.77	27(19)	
Beam Clamps									
300mm arms	2.60	week	2.60	-	-	-	2.60	27(20)	
450mm arms	2.64	week	2.64	-	-	-	2.64	27(21)	
600mm arms	2.68	week	2.68	-	-	-	2.68	27(22)	
Manhole shutters - 1800mm high									
675 mm internal diameter	39.31	week	39.31	-	-	-	39.31		
900 mm internal diameter	47.18	week	47.18	-	-	-	47.18		
1050 mm internal diameter	50.84	week	50.84	-	-	-	50.84		
1200 mm internal diameter	55.03	week	55.03	-	-	-	55.03		
1500 mm internal diameter	62.90	week	62.90	-	-	-	62.90		
1800 mm internal diameter	66.57	week	66.57	-	-	-	66.57		
2100 mm internal diameter	78.62	week	78.62	-	-	-	78.62		
2400 mm internal diameter	86.48	week	86.48	-	-	-	86.48		
2700 mm internal diameter	90.16	week	90.16	-	-	-	90.16		
<b>Site Accommodation</b> (including electrical fittings but excluding additional security items, shutters, grilles etc. per unit delivered and set up on site) Offices, stores etc. on site									
Offices per 10m2 floor area	42.17	week	42.17	-	-	-	42.17	16(1)	
Mess room per 10m2 floor area	37.88	week	37.88	-	-	-	37.88	16(2)	
Stores per 10m2 floor area	34.89	week	34.89	-	-	-	34.89	16(3)	
Mobile office up to 5m long	79.58	week	79.58	-	-	-	79.58	16(8)	
Mobile office up to 7m long	103.39	week	103.39	-	-	-	103.39	16(9)	
Stores									
ISO containers used as tool stores, fitting shop, etc up to 13m long	25.92	week	25.92	-	-	-	25.92	16(10)	
Toilets									
Toilet unit, single chemical type	19.59	week	19.59	-	-	-	19.59	16(4)	
Toilet unit, single mains flushing type with wash basin	24.08	week	24.08	-	-	-	24.08	16(5)	
Ditto - double	36.49	week	36.49	-	-	-	36.49	16(6)	
Ditto - treble	58.30	week	58.30	-	-	-	58.30	16(7)	
Sundries									
Pollution Decontamination unit									
6.75m X 2.34m	256.25	week	256.25	-	-	-	256.25	-	



# Unit Costs (Civil Engineering Works)

## INTRODUCTORY NOTES

*The Unit Costs in this part represent the net cost to the Contractor of executing the work on site; they are not the prices which would be entered in a tender Bill of Quantities.*

It must be emphasised that the unit rates are averages calculated on unit outputs for typical site conditions. Costs can vary considerably from contract to contract depending on individual Contractors, site conditions, methods of working and various other factors. Reference should be made to Part 1 for a general discussion on Civil Engineering Estimating.

Guidance prices are included for work normally executed by specialists, with a brief description where necessary of the assumptions upon which the costs have been based. Should the actual circumstances differ, it would be prudent to obtain check prices from the specialists concerned, on the basis of actual / likely quantity of the work, nature of site conditions, geographical location, time constraints, etc.

*The method of measurement adopted in this section is the **CESMM3**, subject to variances where this has been felt to produce more helpful price guidance.*

*We have structured this Unit Costs section to cover as many aspects of Civil works as possible.*

The Gang hours column shows the output per measured unit in actual time, not the total labour hours; thus for an item involving a gang of 5 men each for 0.3 hours, the total labour hours would naturally be 1.5, whereas the Gang hours shown would be 0.3.

*This section is structured to provide the User with adequate background information on how the rates have been calculated, so as to allow them to be readily adjusted to suit other conditions to the example presented:*

- Alternative gang structures as well as the effect of varying bonus levels, travelling costs etc.*
- Other types of plant or else different running costs from the medium usage presumed*
- Other types of materials or else different discount / waste allowances from the levels presumed*

*Reference to Part 3 giving basic costs of labour, materials and plant together with Parts 13 and 14 will assist the reader in making adjustments to the unit costs.*

## GUIDANCE NOTES

### Generally

Adjustments should be made to the rates shown for time, location, local conditions, site constraints and any other factors likely to affect the costs of a specific scheme.

### Method of Measurement

Although this part of the book is primarily based on CESMM3, the specific rules have been varied from in cases where it has been felt that an alternative presentation would be of value to the book's main purpose of providing guidance on prices. This is especially so with a number of specialist contractors but also in the cases of work where a more detailed presentation will enable the user to allow for ancillary items.

### Materials cost

Materials costs within the rates have been calculated using the 'list prices' contained in Part 3: Resources (pages 59 to 135), with an index appearing on page 58), adjusted to allow for delivery charges (if any) and a 'reasonable' level of discount obtainable by the contractor. This will vary very much depending on the contractor's standing, the potential size of the order and the supplier's eagerness and will vary also between raw traded goods such as timber which will attract a low discount of perhaps 3%, if at all, and manufactured goods where the room for bargaining is much greater and can reach levels of 30% to 40%. High demand for a product at the time of pricing can dramatically reduce the potential discount, as can the world economy in the case of imported goods such as timber and copper. Allowance has also been made for wastage on site (generally 2½% to 5%), dependent upon the risk of damage, the actual level should take account of the nature of the material and its method of storage and distribution about the site.

### Labour cost

The composition of the labour and type of plant is generally stated at the beginning of each section, more detailed information on the calculation of the labour rates is given in Part 3: Resources, pages 51 to 54. In addition on pages 55 and 57 is a summary of labour grades and responsibilities extracted from the Working Rule Agreement. Within Parts 4 and 5, each section is prefaced by a detailed build-up of the labour gang assumed for each type of work. This should allow the user to see the cost impact of a different gang as well as different levels of bonus payments, allowances for skills and conditions, travelling allowances etc. The user should be aware that the output constants are based on the gangs shown and would also need to be changed.

### Plant cost

A rate buildup of suitable plant is generally stated at the beginning of each section, with more detailed information on alternative machines and their average fuel costs being given in Part 3: Resources, pages 141 to 158. Within Parts 4 and 5, each section is prefaced by a detailed build-up of plant assumed for each type of work. This should allow the user to see the cost impact of using alternative plant as well as different levels of usage (see notes on [pages 137 and 138](#)). The user should be aware that the output constants are based on the plant shown and would also need to be changed.

### Outputs

The user is directed to Part 13: Outputs (pages 582 to 589) which contains a selection of output constants, in particular a chart of haulage times for various capacities of Tippers on page 582.

## CLASS A: GENERAL ITEMS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
Refer also to the example calculation of Preliminaries in Part 2 and also to Part 8 Oncosts and Profit.						
<b>CONTRACTUAL REQUIREMENTS</b>						
<b>Performance bond</b>						
The cost of the bond will relate to the nature and degree of difficulty and risk inherent in the type of works intended, the perceived ability and determination of the Contractor to complete them, his financial status and whether he has a proven track record in this field with the provider. Refer to the discussion of the matter on page 41.						
<b>Insurance of the works</b>						
Refer to the discussion of the various insurances on pages 41 and 42 as well as the example on page 46.						
<b>Third party insurance</b>						
Refer to the discussion of the various insurances on pages 41 and 42 as well as the example on page 46.						
<b>SPECIFIED REQUIREMENTS</b>						
<b>General</b>						
This section entails the listing of services and facilities over and above the 'Permanent Works' which the Contractor would be instructed to provide in the Contract Documents.						
<b>Accommodation for the Engineer's staff</b>						
Refer to resources - Plant page 157 and 158 for a list of accommodation types.						
<b>Services for the Engineer's staff</b>						
Transport vehicles						
4 WD utility short wheelbase	-	-	992.66	-	week	<b>992.66</b>
4 WD long wheelbase	-	-	1080.26	-	week	<b>1080.26</b>
(for other vehicles, refer to Resources - Plant)						
Telephones						
(allow for connection charges and usage of telephones required for use by the Engineer's Staff)						
<b>Equipment for use by the Engineer's staff</b>						
Allow for equipment specifically required; entailing Office Equipment, Laboratory Equipment and Surveying Equipment.						
<b>Attendance upon the Engineer's staff</b>						
Driver	40.00	515.50	-	-	week	<b>515.50</b>
Chainmen	40.00	515.50	-	-	week	<b>515.50</b>
Laboratory assistants	40.00	348.00	-	-	week	<b>348.00</b>

## CLASS A: GENERAL ITEMS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SPECIFIED REQUIREMENTS - cont'd</b>						
<b>Testing of materials</b>						
<b>Testing of the Works</b>						
<b>Temporary Works</b>						
Temporary Works relate to other work which the contractor may need to carry out due to his construction method. These are highly specific to the particular project and envisaged construction method. Examples are:						
* access roads and hardstandings/ bases for plant and accommodation as well as to the assembly/ working area generally						
* constructing ramps for access to low excavations						
* steel sheet, diaphragm wall or secant pile cofferdam walling to large excavations subject to strong forces / water penetration						
* bridges						
* temporary support works and decking The need for these items should be carefully considered and reference made to the other sections of the book for guidance on what costs should be set against the design assumptions made. Extensive works could well call for the involvement of a contractor's temporary works engineer for realistic advice.						
<b>METHOD-RELATED CHARGES</b>						
<b>Accommodation and buildings</b>						
Offices; establishment and removal; Fixed Charge						
80 m <sup>2</sup> mobile unit (10 staff x 8 m <sup>2</sup> )	-	-	350.98	-	sum	<b>350.98</b>
10 m <sup>2</sup> section units; two	-	-	175.49	-	sum	<b>175.49</b>
Offices; maintaining; Time-Related Charge						
80 m <sup>2</sup> mobile unit (10 staff x 8 m <sup>2</sup> )	-	-	425.04	-	week	<b>425.04</b>
10 m <sup>2</sup> section units; two	-	-	106.26	-	week	<b>106.26</b>
Stores; establishment and removal; Fixed Charge						
22 m <sup>2</sup> section unit	-	-	147.41	-	sum	<b>147.41</b>
Stores; maintaining; Time-Related Charge						
22 m <sup>2</sup> section unit	-	-	96.72	-	sum	<b>96.72</b>
Canteens and messrooms; establishment and removal; Fixed Charge						
70 m <sup>2</sup> mobile unit (70 men)	-	-	350.98	-	sum	<b>350.98</b>
Canteens and messrooms; maintaining; Time-Related Charge						
70 m <sup>2</sup> mobile unit (70 men)	-	-	334.06	-	week	<b>334.06</b>
<b>Plant</b>						
General purpose plant not included in Unit Costs :-						
Transport						
wheeled tractor	40.00	497.60	804.80	-	week	<b>1302.40</b>
trailer	-	-	14.19	-	week	<b>14.19</b>
Tractair						
hire charge	-	-	941.60	-	week	<b>941.60</b>
driver (skill rate 4)	40.00	582.40	-	-	week	<b>582.40</b>
fuel and consumables	-	-	402.99	-	week	<b>402.99</b>
Cranes						
10t Crane	40.00	647.60	2103.08	-	week	<b>2750.68</b>

**CLASS A: GENERAL ITEMS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Miscellaneous						
sawbench	-	-	83.28	-	week	<b>83.28</b>
concrete vibrator	-	-	245.97	-	week	<b>245.97</b>
75 mm 750 l/min pump	-	-	172.69	-	week	<b>172.69</b>
compressor	-	-	3127.32	-	week	<b>3127.32</b>
plate compactor; 180 kg	-	-	115.16	-	week	<b>115.16</b>
towed roller; BW6	-	-	776.90	-	week	<b>776.90</b>
Excavators etc.						
hydraulic backacter; 14.5 tonne; driver + banksman	80.00	1180.40	1575.58	-	week	<b>2755.98</b>
bulldozer; D6; driver	40.00	722.00	2616.36	-	week	<b>3338.36</b>
loading shovel; CAT 939; driver	40.00	647.60	1274.36	-	week	<b>1921.96</b>
<b>Temporary Works</b>						
<b>Supervision and labour</b>						
Supervision for the duration of construction;						
Time-Related Charge						
Agent	40.00	1392.00	-	-	week	<b>1392.00</b>
Senior Engineer	40.00	1113.60	-	-	week	<b>1113.60</b>
Engineers	40.00	835.20	-	-	week	<b>835.20</b>
General Foreman	40.00	1020.80	-	-	week	<b>1020.80</b>
Administration for the duration of construction;						
Time-Related Charge						
Office manager / cost clerk	40.00	754.00	-	-	week	<b>754.00</b>
Timekeeper / Storeman / Checker	40.00	522.00	-	-	week	<b>522.00</b>
Typist / telephonist	40.00	348.00	-	-	week	<b>348.00</b>
Security guard	40.00	522.00	-	-	week	<b>522.00</b>
Quantity Surveyor	40.00	1044.00	-	-	week	<b>1044.00</b>
Labour teams for the duration of construction;						
Time-Related Charge						
General yard labour (part time); loading and offloading, clearing site rubbish etc.; ganger	40.00	614.34	-	-	week	<b>614.34</b>
General yard labour (part time); loading and offloading, clearing site rubbish etc.; four unskilled operatives	160.00	2062.02	-	-	week	<b>2062.02</b>
Maintenance of Contractor's own plant; Fitter	40.00	812.00	-	-	week	<b>812.00</b>
Maintenance of Contractor's own plant; Fitter's Mate	40.00	689.50	-	-	week	<b>689.50</b>

## CLASS B: GROUND INVESTIGATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
Trial hole gang						
1 ganger or chargehand (skill rate 4)		13.32				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		<b>£ 67.71</b>				
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Trial holes</b>						
8 tonne wheeled backacter			29.58			
3 tonne dumper			11.13			
3.7 m <sup>3</sup> /min compressor, 2 tool			13.12			
two 2.4m <sup>3</sup> /min road breakers			4.14			
extra 50 ft / 15m hose			0.06			
plate compactors; vibrating compaction; plate 180kg/600mm			2.88			
Total Rate / Hour		<b>£ 60.91</b>				
<b>TRIAL PITS AND TRENCHES</b>						
<b>The following costs assume the use of mechanical plant and excavating and backfilling on the same day</b>						
<b>Trial holes measured by number</b>						
Excavating trial hole; plan size 1.0 x 2.0 m; supports, backfilling						
ne 1.0 m deep	0.24	16.25	14.62	-	nr	<b>30.87</b>
1.0 - 2.0 m deep	0.47	31.82	28.66	-	nr	<b>60.48</b>
over 2.0 m deep	0.53	35.89	32.31	-	nr	<b>68.20</b>
Excavating trial hole in rock or similar; plan size 1.0 x 2.0 m; supports, backfilling						
ne 1.0 m deep	0.28	18.96	17.05	-	nr	<b>36.01</b>
1.0 - 2.0 m deep	0.51	34.53	31.10	-	nr	<b>65.63</b>
over 2.0 m deep	0.58	39.32	35.33	-	nr	<b>74.64</b>
<b>Trial holes measured by depth</b>						
Excavating trial hole; plan size 1.0 x 2.0 m; supports, backfilling						
ne 1.0 m deep	0.24	16.27	14.62	-	m	<b>30.89</b>
1.0 - 2.0 m deep	0.53	35.93	32.31	-	m	<b>68.24</b>
2.0 - 3.0 m deep	0.59	39.99	35.97	-	m	<b>75.96</b>
3.0 - 5.0 m deep	0.65	44.06	39.62	-	m	<b>83.69</b>
Excavating trial hole in rock or similar; plan size 1.0 x 2.0 m; supports, backfilling						
ne 1.0 m deep	2.95	199.97	179.71	-	m	<b>379.68</b>
1.0 - 2.0 m deep	3.65	247.42	222.34	-	m	<b>469.77</b>
2.0 - 3.0 m deep	3.95	267.76	240.62	-	m	<b>508.38</b>
3.0 - 5.0 m deep	4.50	305.04	274.08	-	m	<b>579.12</b>

## CLASS B: GROUND INVESTIGATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Sundries in trial holes</b>						
Removal of obstructions from trial holes irrespective of depth	1.00	67.79	60.91	-	hr	<b>128.69</b>
Pumping; maximum depth 4.0 m minimum 750 litres per hour	0.06	1.30	9.56	-	hr	<b>10.85</b>
<b>LIGHT CABLE PERCUSSION BOREHOLES</b>						
<b>The following costs are based on using Specialist Contractors and are for guidance only.</b>						
Establishment of standard plant and equipment and removal on completion	-	-	-	-	sum	<b>472.50</b>
Number; 150 mm nominal diameter at base	-	-	-	-	nr	<b>52.50</b>
Depth; 150 mm nominal diameter of base						
in holes of maximum depth not exceeding 5 m	-	-	-	-	m	<b>18.90</b>
in holes of maximum depth 5 - 10 m	-	-	-	-	m	<b>18.90</b>
in holes of maximum depth 10 - 20 m	-	-	-	-	m	<b>24.15</b>
in holes of maximum depth 20 - 30 m	-	-	-	-	m	<b>30.45</b>
Depth backfilled; imported pulverised fuel ash	-	-	-	-	m	<b>5.25</b>
Depth backfilled; imported gravel	-	-	-	-	m	<b>7.35</b>
Depth backfilled; bentonite grout	-	-	-	-	m	<b>10.50</b>
Chiselling to prove rock or to penetrate obstructions	-	-	-	-	h	<b>50.40</b>
Standing time of rig and crew	-	-	-	-	h	<b>50.40</b>
<b>ROTARY DRILLED BOREHOLES</b>						
<b>The following costs are based on using Specialist Contractors and are for guidance only.</b>						
Establishment of standard plant and equipment and removal on completion	-	-	-	-	sum	<b>1000.00</b>
Setting up at each borehole position	-	-	-	-	nr	<b>8.00</b>
Depth without core recovery; nominal minimum core diameter 100 mm						
ne 5.0 m deep	-	-	-	-	m	<b>35.20</b>
5 - 10 m deep	-	-	-	-	m	<b>35.20</b>
10 - 20 m deep	-	-	-	-	m	<b>36.30</b>
20 - 30 m deep	-	-	-	-	m	<b>36.30</b>
Depth with core recovery; nominal minimum core diameter 75 mm						
ne 5.0 m deep	-	-	-	-	m	<b>77.00</b>
5 - 10 m deep	-	-	-	-	m	<b>77.00</b>
10 - 20 m deep	-	-	-	-	m	<b>85.80</b>
20 - 30 m deep	-	-	-	-	m	<b>96.80</b>
Depth cased; semi-rigid plastic core barrel liner	-	-	-	-	m	<b>6.60</b>

**CLASS B: GROUND INVESTIGATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ROTARY DRILLED BOREHOLES - cont'd</b>						
<b>SAMPLES</b>						
From the surface or from trial pits and trenches undisturbed soft material; minimum 200 mm cube	-	-	-	-	nr	18.40
disturbed soft material; minimum 5 kg rock; minimum 5 kg groundwater; minimum 1 l	-	-	-	-	nr	2.88
From boreholes open tube; 100 mm diameter X 450 mm long	-	-	-	-	nr	11.50
disturbed; minimum 5 kg groundwater; minimum 1 l	-	-	-	-	nr	4.60
stationary piston	-	-	-	-	nr	4.60
Swedish foil	-	-	-	-	nr	28.75
Delft	-	-	-	-	nr	28.75
Bishop sand	-	-	-	-	nr	28.75
<b>SITE TESTS AND OBSERVATIONS</b>						
Groundwater level Standard penetration in light cable percussion boreholes	-	-	-	-	nr	-
Vane in borehole Plate bearing in pits and trenches; loading table	-	-	-	-	nr	-
in pits and trenches; hydraulic jack and kentledge	-	-	-	-	nr	-
California bearing ratio	-	-	-	-	nr	-
Mackintosh probe Hand auger borehole mm minimum diameter; 6 m maximum depth	-	-	-	-	nr	-
<b>INSTRUMENTAL OBSERVATIONS</b>						
<b>General</b>						
Pressure head standpipe; 75 mm diameter HDPE pipe	-	-	-	-	m	31.90
piezometer	-	-	-	-	m	45.95
install protective cover	-	-	-	-	nr	88.00
readings	-	-	-	-	nr	22.00
<b>LABORATORY TESTS</b>						
<b>General</b>						
Classification						
moisture content	-	-	-	-	nr	4.88
specific gravity	-	-	-	-	nr	8.13
particle size analysis by sieve	-	-	-	-	nr	32.53
particle size analysis by pipette or hydrometer	-	-	-	-	nr	45.56
Chemical content						
organic matter	-	-	-	-	nr	35.79
sulphate	-	-	-	-	nr	24.40
pH value	-	-	-	-	nr	7.87
contaminants; Comprehensive	-	-	-	-	nr	284.60
contaminants; Abbreviated	-	-	-	-	nr	203.39
contaminants; Mini, Screening	-	-	-	-	nr	162.70
contaminants; nitrogen herbicides	-	-	-	-	nr	146.44
contaminants; organophosphorus pesticides	-	-	-	-	nr	122.04
contaminants; organochlorine pesticides	-	-	-	-	nr	122.04



**CLASS B: GROUND INVESTIGATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Compaction						
standard	-	-	-	-	nr	<b>146.43</b>
heavy	-	-	-	-	nr	<b>146.43</b>
vibratory	-	-	-	-	nr	<b>162.70</b>
Permeability						
falling head	-	-	-	-	nr	<b>65.08</b>
Soil strength						
quick undrained triaxial; set of three 38 mm diameter specimens	-	-	-	-	nr	<b>32.53</b>
shear box; peak only; size of shearbox 100 x 100 mm	-	-	-	-	nr	<b>40.69</b>
California bearing ratio; typical	-	-	-	-	nr	<b>48.82</b>
Rock strength						
point load test; minimum 5 kg sample	-	-	-	-	nr	<b>81.35</b>
<b>PROFESSIONAL SERVICES</b>						
<b>General</b>						
Technician	-	-	-	-	hr	<b>39.10</b>
Technician engineer	-	-	-	-	hr	<b>52.90</b>
Engineer or geologist						
graduate	-	-	-	-	hr	<b>52.90</b>
Chartered	-	-	-	-	hr	<b>67.85</b>
principal or consultant	-	-	-	-	hr	<b>90.85</b>
Visits to the Site						
technician	-	-	-	-	nr	<b>39.10</b>
technician engineer / graduate engineer or geologist	-	-	-	-	nr	<b>52.90</b>
chartered engineer	-	-	-	-	nr	<b>67.85</b>
principal or consultant	-	-	-	-	nr	<b>90.85</b>
Overnight stays in connection with visits to the site						
technician	-	-	-	-	nr	<b>74.75</b>
technician engineer / graduate engineer or geologist	-	-	-	-	nr	<b>74.75</b>
Chartered engineer / senior geologist	-	-	-	-	nr	<b>97.75</b>
principal or consultant	-	-	-	-	nr	<b>97.75</b>

**CLASS C: GEOTECHNICAL AND OTHER SPECIALIST PROCESSES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTE</b>						
The processes referred to in this Section are generally carried out by Specialist Contractors and the costs are therefore an indication of the probable costs based on average site conditions.						
<b>DRILLING FOR GROUT HOLES</b>						
<b>The following unit costs are based on drilling 100 grout holes on a clear site with reasonable access</b>						
Establishment of standard drilling plant and equipment and removal on completion	-	-	-	-	sum	<b>8750.00</b>
Standing time	-	-	-	-	hr	<b>175.00</b>
<b>Drilling through material other than rock or artificial hard material</b>						
vertically downwards						
depth ne 5 m	-	-	-	-	m	<b>18.32</b>
depth 5 - 10 m	-	-	-	-	m	<b>21.25</b>
depth 10 - 20 m	-	-	-	-	m	<b>24.91</b>
depth 20 - 30 m	-	-	-	-	m	<b>30.77</b>
downwards at an angle 0-45° to the vertical						
depth ne 5 m	-	-	-	-	m	<b>18.32</b>
depth 5 - 10 m	-	-	-	-	m	<b>21.25</b>
depth 10 - 20 m	-	-	-	-	m	<b>24.91</b>
depth 20 - 30 m	-	-	-	-	m	<b>30.77</b>
horizontally or downwards at an angle less than 45° to the horizontal						
depth ne 5 m	-	-	-	-	m	<b>18.32</b>
depth 5 - 10 m	-	-	-	-	m	<b>21.25</b>
depth 10 - 20 m	-	-	-	-	m	<b>24.91</b>
depth 20 - 30 m	-	-	-	-	m	<b>30.77</b>
upwards at an angle 0-45° to the horizontal						
depth ne 5 m	-	-	-	-	m	<b>30.77</b>
depth 5 - 10 m	-	-	-	-	m	<b>35.18</b>
depth 10 - 20 m	-	-	-	-	m	<b>38.12</b>
depth 20 - 30 m	-	-	-	-	m	<b>41.78</b>
upwards at an angle less than 45° to the vertical						
depth ne 5 m	-	-	-	-	m	<b>30.77</b>
depth 5 - 10 m	-	-	-	-	m	<b>35.18</b>
depth 10 - 20 m	-	-	-	-	m	<b>38.12</b>
depth 20 - 30 m	-	-	-	-	m	<b>41.78</b>
<b>Drilling through rock or artificial hard material</b>						
Vertically downwards						
depth ne 5 m	-	-	-	-	m	<b>20.81</b>
depth 5 - 10 m	-	-	-	-	m	<b>25.54</b>
depth 10 - 20 m	-	-	-	-	m	<b>31.25</b>
depth 20 - 30 m	-	-	-	-	m	<b>38.78</b>
Downwards at an angle 0-45° to the vertical						
depth ne 5 m	-	-	-	-	m	<b>20.81</b>
depth 5 - 10 m	-	-	-	-	m	<b>25.54</b>
depth 10 - 20 m	-	-	-	-	m	<b>31.25</b>
depth 20 - 30 m	-	-	-	-	m	<b>38.78</b>

**CLASS C: GEOTECHNICAL AND OTHER SPECIALIST PROCESSES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Horizontally or downwards at an angle less than 45° to the horizontal						
depth ne 5 m	-	-	-	-	m	<b>20.81</b>
depth 5 - 10 m	-	-	-	-	m	<b>25.54</b>
depth 10 - 20 m	-	-	-	-	m	<b>31.25</b>
depth 20 - 30 m	-	-	-	-	m	<b>38.78</b>
Upwards at an angle 0-45° to the horizontal						
depth ne 5 m	-	-	-	-	m	<b>37.02</b>
depth 5 - 10 m	-	-	-	-	m	<b>41.62</b>
depth 10 - 20 m	-	-	-	-	m	<b>47.18</b>
depth 20 - 30 m	-	-	-	-	m	<b>52.72</b>
Upwards at an angle less than 45° to the horizontal						
depth ne 5 m	-	-	-	-	m	<b>37.02</b>
depth 5 - 10 m	-	-	-	-	m	<b>41.62</b>
depth 10 - 20 m	-	-	-	-	m	<b>47.18</b>
depth 20 - 30 m	-	-	-	-	m	<b>52.72</b>
<b>GROUT HOLES</b>						
<b>The following unit costs are based on drilling 100 grout holes on a clear site with reasonable access</b>						
Grout holes						
number of holes	-	-	-	-	nr	<b>101.24</b>
multiple water pressure tests	-	-	-	-	nr	<b>7.25</b>
<b>GROUT MATERIALS AND INJECTION</b>						
<b>The following unit costs are based on drilling 100 grout holes on a clear site with reasonable access</b>						
Materials						
ordinary portland cement	-	-	-	-	t	<b>123.75</b>
sulphate resistant cement	-	-	-	-	t	<b>126.00</b>
cement grout	-	-	-	-	t	<b>153.16</b>
pulverised fuel ash	-	-	-	-	t	<b>17.94</b>
sand	-	-	-	-	t	<b>17.30</b>
pea gravel	-	-	-	-	t	<b>17.30</b>
bentonite (2:1)	-	-	-	-	t	<b>159.64</b>
Injection						
Establishment of standard injection plant and removal on completion	-	-	-	-	sum	<b>8750.00</b>
Standing time	-	-	-	-	hr	<b>132.50</b>
number of injections	-	-	-	-	nr	<b>62.18</b>
neat cement grout	-	-	-	-	t	<b>108.08</b>
cement / P.F.A. grout	-	-	-	-	t	<b>62.79</b>

## CLASS C: GEOTECHNICAL AND OTHER SPECIALIST PROCESSES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DIAPHRAGM WALLS</b>						
<b>Notes</b>						
Diaphragm walls are the construction of vertical walls, cast in place in a trench excavation. They can be formed in reinforced concrete to provide structural elements for temporary or permanent retaining walls. Wall thicknesses of 500 mm to 1.50 m and up to 40 m deep may be constructed. Special equipment such as the Hydrofraise can construct walls up to 100 m deep. Restricted urban sites will significantly increase the costs.						
<b>The following costs are based on constructing a diaphragm wall with an excavated volume of 4000 m<sup>3</sup> using standard equipment Typical progress would be up to 500 m per week.</b>						
Establishment of standard plant and equipment including bentonite storage tanks and removal on completion						
	-	-	-	-	sum	<b>120000.00</b>
Standing time	-	-	-	-	hr	<b>925.00</b>
Excavation, disposal of soil and placing of concrete	-	-	-	-	m <sup>3</sup>	<b>440.00</b>
Provide and place reinforcement cages	-	-	-	-	t	<b>750.00</b>
Excavate/chisel in hard material/rock	-	-	-	-	hr	<b>975.00</b>
Waterproofed joints	-	-	-	-	m	<b>6.50</b>
Guide walls						
guide walls (twin)	-	-	-	-	m	<b>340.00</b>
<b>GROUND ANCHORAGES</b>						
<b>Notes</b>						
Ground anchorages consist of the installation of a cable or solid bar tendon fixed in the ground by grouting and tensioned to exceed the working load to be carried. Ground anchors may be of a permanent or temporary nature and can be used in conjunction with diaphragm walls or sheet piling to eliminate the use of strutting etc..						
<b>The following costs are based on the installation of 50 nr ground anchors.</b>						
Establishment of standard plant and equipment and removal on completion						
	-	-	-	-	sum	<b>10500.00</b>
Standing time	-	-	-	-	hr	<b>160.00</b>
Ground anchorages; temporary or permanent						
15.0 m maximum depth; in rock, alluvial or clay; 0 - 50 t load	-	-	-	-	nr	<b>82.15</b>
15.0 m maximum depth; in rock or alluvial; 50 - 90 t load	-	-	-	-	nr	<b>98.29</b>
15.0 m maximum depth; in rock only; 90 - 150 t load	-	-	-	-	nr	<b>131.97</b>
Temporary tendons						
in rock, alluvial or clay; 0 - 50 t load	-	-	-	-	nr	<b>62.89</b>
in rock or alluvial; 50 - 90 t load	-	-	-	-	nr	<b>95.95</b>
in rock only; 90 - 150 t load	-	-	-	-	nr	<b>128.83</b>
Permanent tendons						
in rock, alluvial or clay; 0 - 50 t load	-	-	-	-	nr	<b>96.59</b>
in rock or alluvial; 50 - 90 t load	-	-	-	-	nr	<b>132.19</b>
in rock only; 90 - 150 t load	-	-	-	-	nr	<b>165.10</b>

**CLASS C: GEOTECHNICAL AND OTHER SPECIALIST PROCESSES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SAND, BAND AND WICK DRAINS</b>						
<b>Notes</b>						
Vertical drains are a technique by which the rate of consolidation of fine grained soils can be considerably increased by the installation of vertical drainage paths commonly in the form of columns formed by a high-quality plastic material encased in a filter sleeve. Columns of sand are rarely used in this country these days. Band drains are generally 100 mm wide and 3 - 5 mm thick. water is extracted through the drain from the soft soils when the surface is surcharged. The rate of consolidation is dependent on the drain spacing and the height of surcharge. Drains are usually quickly installed up to depths of 25 m by special lances either pulled or vibrated into the ground. typical drain spacing would be one per 1 - 2 m with the rate of installation varying between 1,500 to 6,000 m per day depending on ground conditions and depths.						
<b>The following costs are based on the installation of 2,000 nr vertical band drains to a depth of 12 m</b>						
Establishment of standard plant and equipment and removal on completion	-	-	-	-	sum	<b>6750.00</b>
Standing time	-	-	-	-	hr	<b>170.00</b>
Set up installation equipment at each drain position	-	-	-	-	nr	<b>2.85</b>
Install drains maximum depth 10 - 15 m	-	-	-	-	m	<b>0.78</b>
Additional costs in pre-drilling through hard upper strata at each drain position :						
establishment of standard drilling plant and equipment and removal on completion	-	-	-	-	sum	<b>3750.00</b>
set up at each drain position	-	-	-	-	nr	<b>2.81</b>
drilling for vertical band drains up to a maximum depth of 3 m	-	-	-	-	m	<b>2.71</b>

**CLASS C: GEOTECHNICAL AND OTHER SPECIALIST PROCESSES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GROUND CONSOLIDATION – VIBRO REPLACEMENT</b>						
<b>Notes</b>						
Vibroreplacement is a method of considerably increasing the ground bearing pressure and consists of a specifically designed powerful poker vibrator penetrating vertically into the ground hydraulically. Air and water jets may be used to assist penetration. In cohesive soils a hole is formed into which granular backfill is placed and compacted by the poker, forming a dense stone column. In natural sands and gravels the existing loose deposits may be compacted without the addition of extra material other than making up levels after settlement resulting from compaction. There are many considerations regarding the soil types to be treated, whether cohesive or non-cohesive, made-up or natural ground, which influence the choice of wet or dry processes, pure densification or stone column techniques with added granular backfill. It is therefore possible only to give indicative costs; a Specialist Contractor should be consulted for more accurate costs for a particular site. Testing of conditions after consolidation can be static or dynamic penetration tests, plate bearing tests or zone bearing tests. A frequently adopted specification calls for plate bearing tests at 1 per 1000 stone columns. Allowable bearing pressures of up to 400 kN/m <sup>2</sup> by the installation of stone columns in made or natural ground.						
<b>The following costs are typical rates for this sort of work</b>						
Establishment of standard plant and equipment and removal on completion	-	-	-	-	sum	<b>5577.50</b>
Standing time	-	-	-	-	hr	<b>287.50</b>
Construct stone columns to a depth ne 4 m						
dry formed	-	-	-	-	m	<b>19.24</b>
water jet formed	-	-	-	-	m	<b>28.08</b>
Plate bearing test						
ne 11 t or 2 hour duration	-	-	-	-	nr	<b>468.70</b>
Zone loading test to specification	-	-	-	-	nr	<b>10175.00</b>

## CLASS C: GEOTECHNICAL AND OTHER SPECIALIST PROCESSES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GROUND CONSOLIDATION - DYNAMIC COMPACT</b>						
<b>Notes</b>						
Ground consolidation by dynamic compaction is a technique which involves the dropping of a steel or concrete pounder several times in each location on a grid pattern that covers the whole site. For ground compaction up to 10 m, a 15 t pounder from a free fall of 20 m would be typical. Several passes over the site are normally required to achieve full compaction. The process is recommended for naturally cohesive soils and is usually uneconomic for areas of less than 4,000 m <sup>2</sup> for sites with granular or mixed granular cohesive soils and 6,000 m for a site with weak cohesive soils. The main considerations to be taken into account when using this method of consolidation are:						
* sufficient area to be viable						
* proximity and condition of adjacent property and services						
* need for blanket layer of granular material for a working surface and as backfill to offset induced settlement						
* water table level The final bearing capacity and settlement criteria that can be achieved depends on the nature of the material being compacted. Allowable bearing capacity may be increased by up to twice the pre-treated value for the same settlement. Control testing can be by crater volume measurements, site levelling between passes, penetration tests or plate loading tests.						
<b>The following range of costs are average based on treating an area of about 10,000 m<sup>2</sup> for a 5 - 6 m compaction depth. Typical progress would be 1,500 - 2,000 m<sup>2</sup> per week</b>						
Establishment of standard plant and equipment and removal on completion.	-	-	-	-	sum	<b>40000.00</b>
Ground treatment	-	-	-	-	m <sup>2</sup>	<b>8.77</b>
Laying free-draining granular blanket layer as both working surface and backfill material (300 mm thickness required of filter material)	-	-	-	-	m <sup>2</sup>	<b>24.15</b>
Control testing including levelling, piezometers and penetrometer testing	-	-	-	-	m <sup>2</sup>	<b>3.49</b>
Kentledge load test	-	-	-	-	nr	<b>12000.00</b>
<b>CONSOLIDATION OF ABANDONED MINE WORKINGS</b>						
<b>The following costs are based on using Specialist Contractors and are for guidance only</b>						
Transport plant, labour and all equipment to and from site (max. 100 miles)	-	-	-	-	sum	<b>310.00</b>
Drilling bore holes						
move to each separate bore position; erect equipment; dismantle prior to next move	-	-	-	-	nr	<b>36.29</b>
drill 50 mm diameter bore holes	-	-	-	-	m	<b>10.76</b>
drill 100 mm diameter bore holes for pea gravel injection	-	-	-	-	m	<b>17.84</b>
extra for casing, when required	-	-	-	-	m	<b>14.69</b>
standing time for drilling rig and crew	-	-	-	-	hr	<b>94.49</b>

**CLASS C: GEOTECHNICAL AND OTHER SPECIALIST PROCESSES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CONSOLIDATION OF ABANDONED MINE WORKINGS - cont'd</b>						
<b>The following costs are based on using Specialist Contractors and are for guidance only - cont'd</b>						
Grouting drilled bore holes						
connecting grout lines	-	-	-	-	m	18.77
injection of grout	-	-	-	-	t	73.48
add for pea gravel injection	-	-	-	-	t	88.19
standing time for grouting rig and crew	-	-	-	-	hr	90.54
Provide materials for grouting						
ordinary portland cement	-	-	-	-	t	123.75
sulphate resistant cement	-	-	-	-	t	126.00
pulverised fuel ash (PFA)	-	-	-	-	t	17.94
sand	-	-	-	-	t	17.30
pea gravel	-	-	-	-	t	17.31
bentonite (2:1)	-	-	-	-	t	159.64
cement grout	-	-	-	-	t	153.16
Capping to old shafts or similar; reinforced concrete grade C20P, 20 mm aggregate; thickness						
ne 150 mm	-	-	-	-	m <sup>3</sup>	176.00
150-300 mm	-	-	-	-	m <sup>3</sup>	170.50
300-500 mm	-	-	-	-	m <sup>3</sup>	165.00
over 500 mm	-	-	-	-	m <sup>3</sup>	132.00
Mild steel bars BS4449; supplied in bent and cut lengths						
6 mm nominal size	-	-	-	-	t	820.00
8 mm nominal size	-	-	-	-	t	697.00
10 mm nominal size	-	-	-	-	t	668.00
12 mm nominal size	-	-	-	-	t	654.00
16 mm nominal size	-	-	-	-	t	625.00
20 mm nominal size	-	-	-	-	t	564.00
High yield steel bars BS4449 or 4461; supplied in bent and cut lengths						
6 mm nominal size	-	-	-	-	t	807.00
8 mm nominal size	-	-	-	-	t	685.00
10 mm nominal size	-	-	-	-	t	657.00
12 mm nominal size	-	-	-	-	t	644.00
16 mm nominal size	-	-	-	-	t	615.00
20 mm nominal size	-	-	-	-	t	615.00



## CLASS D: DEMOLITION AND SITE CLEARANCE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL CLEARANCE</b>						
<b>The rates for site clearance include for all sundry items, small trees (i.e. under 500 mm diameter), hedges etc., but exclude items that are measured separately; examples of which are given in this section</b>						
Clear site vegetation						
generally	-	-	-	-	ha	<b>1027.40</b>
wooded areas	-	-	-	-	ha	<b>3162.48</b>
areas below tidal level	-	-	-	-	ha	<b>3850.00</b>
<b>TREES</b>						
<b>The following rates are based on removing a minimum of 100 trees, generally in a group. Cutting down a single tree on a site would be many times these costs</b>						
Remove trees						
girth 500 mm - 1 m	-	-	-	-	nr	<b>41.54</b>
girth 1 - 2 m	-	-	-	-	nr	<b>67.78</b>
girth 2 - 3 m	-	-	-	-	nr	<b>245.96</b>
girth 3 - 5 m	-	-	-	-	nr	<b>1010.50</b>
girth 7 m	-	-	-	-	nr	<b>1295.78</b>
<b>STUMPS</b>						
Clearance of stumps						
diameter 150 - 500 mm	-	-	-	-	nr	<b>29.91</b>
diameter 500 mm - 1 m	-	-	-	-	nr	<b>54.94</b>
diameter 2 m	-	-	-	-	nr	<b>120.91</b>
Clearance of stumps; backfilling holes with topsoil from site						
diameter 150 - 500 mm	-	-	-	-	nr	<b>34.83</b>
diameter 500 mm - 1 m	-	-	-	-	nr	<b>88.01</b>
diameter 2 m	-	-	-	-	nr	<b>278.04</b>
Clearance of stumps; backfilling holes with imported hardcore						
diameter 150 - 500 mm	-	-	-	-	nr	<b>56.66</b>
diameter 500 mm - 1 m	-	-	-	-	nr	<b>211.86</b>
diameter 2 m	-	-	-	-	nr	<b>749.00</b>
<b>BUILDINGS</b>						
<b>The following rates are based on assuming a non urban location where structure does not take up a significant area of the site</b>						
Demolish building to ground level and dispose off site						
brickwork with timber floor and roof	-	-	-	-	m <sup>3</sup>	<b>6.56</b>
brickwork with concrete floor and roof	-	-	-	-	m <sup>3</sup>	<b>10.93</b>
masonry with timber floor and roof	-	-	-	-	m <sup>3</sup>	<b>8.57</b>
reinforced concrete frame with brick infill	-	-	-	-	m <sup>3</sup>	<b>11.39</b>
steel frame with brick cladding	-	-	-	-	m <sup>3</sup>	<b>6.20</b>
steel frame with sheet cladding	-	-	-	-	m <sup>3</sup>	<b>5.90</b>
timber	-	-	-	-	m <sup>3</sup>	<b>5.31</b>
Demolish buildings with asbestos linings to ground level and dispose off site						

## CLASS D: DEMOLITION AND SITE CLEARANCE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL CLEARANCE - cont'd</b>						
<b>The following rates are based on assuming a non urban location where structure does not take up a significant area of the site - cont'd</b>						
brick with concrete floor and roof	-	-	-	-	m <sup>3</sup>	26.57
reinforced concrete frame with brick infill	-	-	-	-	m <sup>3</sup>	27.69
steel frame with brick cladding	-	-	-	-	m <sup>3</sup>	15.14
steel frame with sheet cladding	-	-	-	-	m <sup>3</sup>	14.62
<b>OTHER STRUCTURES</b>						
<b>The following rates are based on assuming a non urban location where structure does not take up a significant area of the site</b>						
Demolish walls to ground level and dispose off site						
reinforced concrete wall	-	-	-	-	m <sup>3</sup>	150.76
brick or masonry wall	-	-	-	-	m <sup>3</sup>	67.85
brick or masonry retaining wall	-	-	-	-	m <sup>3</sup>	82.91
<b>PIPELINES</b>						
Removal of redundant services						
electric cable; LV	-	-	-	-	m	2.81
75 mm diameter water main; low pressure	-	-	-	-	m	5.63
150 mm diameter gas main; low pressure	-	-	-	-	m	6.75
earthenware ducts; one way	-	-	-	-	m	2.81
earthenware ducts; two way	-	-	-	-	m	5.63
100 or 150 mm diameter sewer or drain	-	-	-	-	m	11.25
225 mm diameter sewer or drain	-	-	-	-	m	16.88
300 mm diameter sewer or drain	-	-	-	-	m	19.69
450 mm diameter sewer or drain	-	-	-	-	m	22.50
750 mm diameter sewer or drain	-	-	-	-	m	28.13
Extra for breaking up concrete surround	-	-	-	-	m	28.13
Grouting redundant drains or sewers						
100 mm diameter	-	-	-	-	m	7.05
150 mm diameter	-	-	-	-	m	15.86
225 mm diameter	-	-	-	-	m	35.25
manhole chambers	-	-	-	-	m <sup>3</sup>	881.25

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>Ground conditions</b>						
The following unit costs for 'excavation in material other than topsoil, rock or artificial hard material' are based on excavation in firm sand and gravel soils. For alternative types of soil, multiply the following rates by:						
Scrapers						
Stiff clay	1.5					
Chalk	2.5					
Soft rock	3.5					
Broken rock	3.7					
Tractor dozers and loaders						
Stiff clay	2.0					
Chalk	3.0					
Soft rock	2.5					
Broken rock	2.5					
Backacter (minimum bucket size 0.5 m <sup>3</sup> )						
Stiff clay	1.7					
Chalk	2.0					
Soft rock	2.0					
Broken rock	1.7					
<b>Basis of disposal rates</b>						
All pricing and estimating for disposal is based on the volume of solid material excavated and rates for disposal should be adjusted by the following factors for bulkage. Multiply the rates by :						
Sand bulkage	1.10					
Gravel bulkage	1.20					
Compacted soil bulkage	1.30					
Compacted sub-base, suitable fill etc. bulkage	1.30					
Stiff clay bulkage	1.20					
See also <a href="#">Part 14</a> : Tables and Memoranda						
<b>Basis of rates generally</b>						
To provide an overall cost comparison, rates, prices and outputs have been based on a medium sized Civil Engineering project of £ 10 - 12 million, location neither in city centre nor excessively remote, with no abnormal ground conditions that would affect the stated output and consistency of work produced. The rates are optimum rates and assume continuous output with no delays caused by other operations or works.						
<b>RESOURCES - LABOUR</b>						
<b>Excavation for cuttings gang</b>						
1 plant operator (skill rate 1) - 33% of time		19.54				
1 plant operator (skill rate 2) - 66% of time		11.91				
1 banksman (skill rate 4)		13.32				
Total Gang Rate / Hour		£ 44.77				

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR - cont'd</b>						
<b>Misc</b>						
<b>Excavation for foundations gang</b>						
1 plant operator (skill rate 3) - 33% of time		5.34				
1 plant operator (skill rate 2) - 66% of time		11.91				
1 banksman (skill rate 4)		13.32				
Total Gang Rate / Hour		<b>30.58</b>				
<b>General excavation gang</b>						
1 plant operator (skill rate 3)		16.19				
1 plant operator (skill rate 3) - 25% of time		4.05				
1 banksman (skill rate 4)		13.32				
Total Gang Rate / Hour		<b>33.56</b>				
<b>Filling gang</b>						
1 plant operator (skill rate 4)		14.56				
2 unskilled operatives (general)		24.88				
Total Gang Rate / Hour		<b>39.44</b>				
<b>Treatment of filled surfaces gang</b>						
1 plant operator (skill rate 2)		18.05				
Total Gang Rate / Hour		<b>18.05</b>				
<b>Geotextiles (light sheets) gang</b>						
1 ganger/chargehand (skill rate 4) - 20% of time		2.86				
2 unskilled operatives (general)		24.88				
Total Gang Rate / Hour		<b>27.74</b>			s	
<b>Geotextiles (medium sheets) gang</b>						
1 ganger/chargehand (skill rate 4) - 20% of time		2.86				
3 unskilled operatives (general)		37.32				
Total Gang Rate / Hour		<b>40.18</b>			s	
<b>Geotextiles (heavy sheets) gang</b>						
1 ganger/chargehand (skill rate 4) - 20% of time		2.86				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)			25.57			
Total Gang Rate / Hour		<b>43.93</b>				
<b>Horticultural works gang</b>						
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		<b>25.76</b>				
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Excavation for foundations</b>						
Hydraulic Backacter - 21 tonne (33% of time)			15.43			
Hydraulic Backacter - 14.5 tonne (33% of time)			13.13			
1000 kg hydraulic breaker (33% of time)			6.15			
Tractor loader - 0.80 m <sup>3</sup> (33% of time)			10.62			
Total Rate / Hour			<b>45.33</b>			

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Filling</b>						
1.5 m <sup>3</sup> tractor loader			60.87			
6t vibratory roller			19.42			
Pedestrian Roller, Bomag BW35			2.88			
Total Rate / Hour			<b>83.17</b>			
<b>Treatment of filled surfaces</b>						
1.5 m <sup>3</sup> tractor loader			60.87			
Pedestrian Roller, Bomag BW35			2.88			
Total Rate / Hour			<b>63.75</b>			
<b>Geotextiles (heavy sheets)</b>						
1.5 m <sup>3</sup> tractor loader			60.87			
Total Rate / Hour			<b>60.87</b>			
<b>EXCAVATION BY DREDGING</b>						
<b>Notes</b>						
Dredging can be carried out by land based machines or by floating plant. The cost of the former can be assessed by reference to the excavation costs of the various types of plant given below, suitably adjusted to take account of the type of material to be excavated, depth of water and method of disposal. The cost of the latter is governed by many factors which affect the rates and leads to wide variations. For reliable estimates it is advisable to seek the advice of a Specialist Contractor. The prices included here are for some typical dredging situations and are shown for a cost comparison and EXCLUDE initial mobilisation charges which can range widely between £3,000 and £10,000 depending on plant, travelling distance etc.. Some clients schedule operations for when the plant is passing so as to avoid the large travelling cost. Of the factors affecting the cost of floating plant, the matter of working hours is by far one of the most important. The customary practice in the dredging industry is to work 24 hours per day, 7 days per week. Local constraints, particularly noise restrictions, will have a significant impact. Other major factors affecting the cost of floating plant are:						
* type of material to be dredged						
* depth of water						
* depth of cut						
* tidal range						
* disposal location						
* size and type of plant required						
* current location of plant						
* method of disposal of dredged material						
<b>In tidal locations, creating new channels on approaches to quays and similar locations or within dock systems</b>						
Backhoe dredger loading material onto two hopper barges with bottom dumping facility maximum water depth 15 m, distance to disposal site less than 20 miles approximate daily cost of backhoe dredger and two hopper barges £10,500; average production 100 m <sup>3</sup> /hr, 1,500 m <sup>3</sup> /day; locate, load, deposit and relocate						
	-	-	-	-	m <sup>3</sup>	<b>8.39</b>

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>EXCAVATION BY DREDGING - cont'd</b>						
<b>For general bed lowering or in maintaining shipping channels in rivers, estuaries or deltas</b>						
Trailer suction hopper dredger excavating non-cohesive sands, grits or silts; hopper capacity 2000m <sup>3</sup> , capable of dredging to depths of 25 m with ability either to dump at disposal site or pump ashore for reclamation. Costs totally dependent on nature of material excavated and method of disposal. Approximate cost per tonne £2.50, which should be adjusted by the relative density of the material for conversion to m <sup>3</sup>						
Locate, load, deposit and relocate	-	-	-	-	t	2.52
<b>Harbour bed control</b>						
Maintenance dredging of this nature would in most cases be carried out by trailing suction hopper dredger as detailed above, at similar rates. The majority of the present generation of trailers have the ability to dump at sea or discharge ashore. Floating craft using diesel driven suction method with a 750 mm diameter flexible pipe for a maximum distance of up to 5000 m from point of suction to point of discharge using a booster (standing alone, the cutter suction craft should be able to pump up to 2000 m). Maximum height of lift 10 m.						
Average pumping capacity of silt/sand type materials containing maximum 30% volume of solids would be about 8,000 m <sup>3</sup> /day based on 24 hour working, Daily cost (hire basis) in the region of £20,000 including						
all floating equipment and discharge pipes, maintenance and all labour and plant to service but excluding mobilisation/initial set-up and demobilisation costs (minimum £10,000).						
-	-	-	-	-	m <sup>3</sup>	3.25
<b>For use in lakes, canals, rivers, industrial lagoons and from silted locations in dock systems</b>						
Floating craft using diesel driven suction method with a 200 mm diameter flexible pipe maximum distance from point of suction to point of discharge 1500 m. Maximum dredge depth 5 m.						
Average pumping output 30 m <sup>3</sup> per hour and approximate average costs (excluding mobilisation and demobilisation costs ranging between £3,000 and £6,000 apiece)						
-	-	-	-	-	m <sup>3</sup>	6.04

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>EXCAVATION FOR CUTTINGS</b>						
<b>The following unit costs are based on backacter and tractor loader machines</b>						
Excavate topsoil maximum depth ne 0.25 m	0.03	0.95	1.40	-	m <sup>3</sup>	<b>2.34</b>
Excavate material other than topsoil, rock or artificial hard material						
ne 0.25 m maximum depth	0.03	0.95	1.40	-	m <sup>3</sup>	<b>2.34</b>
0.25 - 0.5 m maximum depth	0.03	0.95	1.40	-	m <sup>3</sup>	<b>2.34</b>
0.5 - 1.0 m maximum depth	0.04	1.26	1.79	-	m <sup>3</sup>	<b>3.05</b>
1.0 - 2.0 m maximum depth	0.06	1.89	2.72	-	m <sup>3</sup>	<b>4.61</b>
2.0 - 5.0 m maximum depth	0.10	3.16	4.51	-	m <sup>3</sup>	<b>7.66</b>
5.0 - 10.0 m maximum depth	0.20	6.31	9.10	-	m <sup>3</sup>	<b>15.41</b>
10.0 - 15.0 m maximum depth	0.29	9.15	13.14	-	m <sup>3</sup>	<b>22.30</b>
<b>The following unit costs are based on backacter machines fitted with hydraulic breakers and tractor loader machines</b>						
Excavate rock (medium hard)						
ne 0.25 m maximum depth	0.31	9.78	14.07	-	m <sup>3</sup>	<b>23.85</b>
0.25 - 0.5 m maximum depth	0.43	13.57	19.51	-	m <sup>3</sup>	<b>33.08</b>
0.5 - 1.0 m maximum depth	0.58	18.30	26.28	-	m <sup>3</sup>	<b>44.58</b>
1.0 - 2.0 m maximum depth	0.80	25.25	36.35	-	m <sup>3</sup>	<b>61.59</b>
Excavate unreinforced concrete exposed at the commencing surface						
ne 0.25 m maximum depth	0.57	17.99	25.89	-	m <sup>3</sup>	<b>43.88</b>
0.25 - 0.5 m maximum depth	0.60	18.94	27.21	-	m <sup>3</sup>	<b>46.15</b>
0.5 - 1.0 m maximum depth	0.67	21.14	30.40	-	m <sup>3</sup>	<b>51.54</b>
1.0 - 2.0 m maximum depth	0.70	22.09	31.72	-	m <sup>3</sup>	<b>53.81</b>
Excavate reinforced concrete exposed at the commencing surface						
ne 0.25 m maximum depth	0.90	28.40	40.82	-	m <sup>3</sup>	<b>69.22</b>
0.25 - 0.5 m maximum depth	0.90	28.40	40.82	-	m <sup>3</sup>	<b>69.22</b>
0.5 - 1.0 m maximum depth	0.95	29.98	43.08	-	m <sup>3</sup>	<b>73.06</b>
1.0 - 2.0 m maximum depth	1.08	34.08	48.98	-	m <sup>3</sup>	<b>83.07</b>
Excavate unreinforced concrete not exposed at the commencing surface						
ne 0.25 m maximum depth	0.65	20.51	29.47	-	m <sup>3</sup>	<b>49.98</b>
0.25 - 0.5 m maximum depth	0.67	21.14	30.40	-	m <sup>3</sup>	<b>51.54</b>
0.5 - 1.0 m maximum depth	0.69	21.78	31.33	-	m <sup>3</sup>	<b>53.11</b>
1.0 - 2.0 m maximum depth	0.72	22.72	32.66	-	m <sup>3</sup>	<b>55.38</b>
<b>EXCAVATION FOR FOUNDATIONS</b>						
<b>The following unit costs are based on the use of backacter machines</b>						
Excavate topsoil maximum depth ne 0.25 m	0.03	0.92	1.40	-	m <sup>3</sup>	<b>2.31</b>
Excavate material other than topsoil, rock or artificial hard material						
0.25 - 0.5 m deep	0.05	1.53	2.29	-	m <sup>3</sup>	<b>3.82</b>
0.5 - 1.0 m deep	0.06	1.84	2.72	-	m <sup>3</sup>	<b>4.56</b>
1.0 - 2.0 m deep	0.07	2.14	3.15	-	m <sup>3</sup>	<b>5.29</b>
2.0 - 5.0 m deep	0.12	3.67	5.44	-	m <sup>3</sup>	<b>9.11</b>
5.0 - 10.0 m deep	0.23	7.03	10.46	-	m <sup>3</sup>	<b>17.49</b>

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>EXCAVATION FOR FOUNDATIONS - cont'd</b>						
<b>The following unit costs are based on backacter machines fitted with hydraulic breakers</b>						
Excavate unreinforced concrete exposed at the commencing surface						
ne 0.25 m maximum depth	0.60	18.35	27.21	-	m <sup>3</sup>	<b>45.56</b>
0.25 - 0.5 m maximum depth	0.66	20.18	29.93	-	m <sup>3</sup>	<b>50.11</b>
0.5 - 1.0 m maximum depth	0.72	22.01	32.66	-	m <sup>3</sup>	<b>54.67</b>
1.0 - 2.0 m maximum depth	0.80	24.46	36.35	-	m <sup>3</sup>	<b>60.81</b>
Excavate reinforced concrete exposed at the commencing surface						
ne 0.25 m maximum depth	0.94	28.74	42.57	-	m <sup>3</sup>	<b>71.31</b>
0.25 - 0.5 m maximum depth	0.98	29.96	44.51	-	m <sup>3</sup>	<b>74.48</b>
0.5 - 1.0 m maximum depth	1.00	30.58	45.33	-	m <sup>3</sup>	<b>75.90</b>
1.0 - 2.0 m maximum depth	1.04	31.80	47.23	-	m <sup>3</sup>	<b>79.03</b>
Excavate tarmacadam exposed at the commencing surface						
ne 0.25 m maximum depth	0.30	9.17	13.61	-	m <sup>3</sup>	<b>22.78</b>
0.25 - 0.5 m maximum depth	0.34	10.40	15.36	-	m <sup>3</sup>	<b>25.75</b>
0.5 - 1.0 m maximum depth	0.37	11.31	16.75	-	m <sup>3</sup>	<b>28.07</b>
1.0 - 2.0 m maximum depth	0.40	12.23	18.08	-	m <sup>3</sup>	<b>30.31</b>
Excavate unreinforced concrete not exposed at the commencing surface						
ne 0.25 m maximum depth	0.70	21.40	31.68	-	m <sup>3</sup>	<b>53.09</b>
0.25 - 0.5 m maximum depth	0.85	25.99	38.52	-	m <sup>3</sup>	<b>64.51</b>
0.5 - 1.0 m maximum depth	0.96	29.35	43.54	-	m <sup>3</sup>	<b>72.89</b>
1.0 - 2.0 m maximum depth	1.02	31.19	46.26	-	m <sup>3</sup>	<b>77.45</b>
<b>GENERAL EXCAVATION</b>						
<b>The following unit costs are based on backacter and tractor loader machines</b>						
Excavate topsoil						
maximum depth ne 0.25 m	0.03	1.01	1.40	-	m <sup>3</sup>	<b>2.40</b>
Excavate material other than topsoil, rock or artificial hard material						
ne 0.25 m maximum depth	0.03	1.01	1.38	-	m <sup>3</sup>	<b>2.38</b>
0.25 - 0.5 m maximum depth	0.03	1.01	1.40	-	m <sup>3</sup>	<b>2.40</b>
0.5 - 1.0 m maximum depth	0.04	1.34	1.79	-	m <sup>3</sup>	<b>3.13</b>
1.0 - 2.0 m maximum depth	0.06	2.01	2.72	-	m <sup>3</sup>	<b>4.73</b>
2.0 - 5.0 m maximum depth	0.10	3.36	4.51	-	m <sup>3</sup>	<b>7.86</b>
5.0 - 10.0 m maximum depth	0.20	6.71	9.10	-	m <sup>3</sup>	<b>15.81</b>
10.0 - 15.0 m maximum depth	0.29	9.73	13.14	-	m <sup>3</sup>	<b>22.88</b>
<b>The following unit costs are based on backacter machines fitted with hydraulic breakers and tractor loader machines</b>						
Excavate rock (medium hard)						
ne 0.25 m maximum depth	0.31	10.40	14.07	-	m <sup>3</sup>	<b>24.47</b>
0.25 - 0.5 m maximum depth	0.43	14.43	19.51	-	m <sup>3</sup>	<b>33.94</b>
0.5 - 1.0 m maximum depth	0.58	19.46	26.28	-	m <sup>3</sup>	<b>45.74</b>
1.0 - 2.0 m maximum depth	0.80	26.85	36.35	-	m <sup>3</sup>	<b>63.19</b>
Excavate unreinforced concrete exposed at the commencing surface						
ne 0.25 m maximum depth	0.57	19.13	25.89	-	m <sup>3</sup>	<b>45.02</b>
0.25 - 0.5 m maximum depth	0.60	20.13	27.21	-	m <sup>3</sup>	<b>47.35</b>
0.5 - 1.0 m maximum depth	0.67	22.48	30.40	-	m <sup>3</sup>	<b>52.88</b>
1.0 - 2.0 m maximum depth	0.70	23.49	31.72	-	m <sup>3</sup>	<b>55.21</b>



**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Excavate reinforced concrete exposed at the commencing surface						
ne 0.25 m maximum depth	0.90	30.20	40.82	-	m <sup>3</sup>	<b>71.02</b>
0.25 - 0.5 m maximum depth	0.90	30.20	40.82	-	m <sup>3</sup>	<b>71.02</b>
0.5 - 1.0 m maximum depth	0.95	31.88	43.08	-	m <sup>3</sup>	<b>74.96</b>
1.0 - 2.0 m maximum depth	1.08	36.24	48.98	-	m <sup>3</sup>	<b>85.22</b>
Excavate unreinforced concrete not exposed at the commencing surface						
ne 0.25 m maximum depth	0.65	21.81	29.47	-	m <sup>3</sup>	<b>51.28</b>
0.25 - 0.5 m maximum depth	0.67	22.48	30.40	-	m <sup>3</sup>	<b>52.88</b>
0.5 - 1.0 m maximum depth	0.69	23.15	31.33	-	m <sup>3</sup>	<b>54.49</b>
1.0 - 2.0 m maximum depth	0.72	24.16	32.66	-	m <sup>3</sup>	<b>56.82</b>
<b>EXCAVATION ANCILLARIES</b>						
<b>The following unit costs are for various machines appropriate to the work</b>						
Trimming topsoil; using D4H dozer						
horizontal	0.04	0.59	0.90	-	m <sup>2</sup>	<b>1.49</b>
10 - 45° to horizontal	0.05	0.74	1.13	-	m <sup>2</sup>	<b>1.87</b>
Trimming material other than topsoil, rock or artificial hard material; using D4H dozer, tractor loader or motor grader average rate						
horizontal	0.04	0.59	1.14	-	m <sup>2</sup>	<b>1.73</b>
10 - 45° to horizontal	0.04	0.59	1.14	-	m <sup>2</sup>	<b>1.73</b>
45 - 90° to horizontal	0.06	0.89	1.70	-	m <sup>2</sup>	<b>2.59</b>
Trimming rock; using D6E dozer						
horizontal	0.08	1.18	26.16	-	m <sup>2</sup>	<b>27.34</b>
10 - 45° to horizontal	0.80	11.80	26.16	-	m <sup>2</sup>	<b>37.97</b>
45 - 90° to horizontal	1.06	15.64	34.67	-	m <sup>2</sup>	<b>50.31</b>
vertical	1.06	15.64	34.67	-	m <sup>2</sup>	<b>50.31</b>
Preparation of topsoil; using D4H dozer, tractor loader or motor grader average rate						
horizontal	0.06	0.89	1.59	-	m <sup>2</sup>	<b>2.48</b>
10 - 45° to horizontal	0.06	0.89	1.59	-	m <sup>2</sup>	<b>2.48</b>
Preparation of material other than rock or artificial hard material; using D6E dozer, tractor loader or motor grader average rate						
horizontal	0.06	0.89	1.91	-	m <sup>2</sup>	<b>2.79</b>
10 - 45° to horizontal	0.06	0.89	1.91	-	m <sup>2</sup>	<b>2.79</b>
45 - 90° to horizontal	0.06	0.89	1.91	-	m <sup>2</sup>	<b>2.79</b>
Preparation of rock; using D6E dozer						
horizontal	0.80	11.80	26.16	-	m <sup>2</sup>	<b>37.97</b>
10 - 45° to horizontal	0.60	8.85	19.62	-	m <sup>2</sup>	<b>28.48</b>
45 - 90° to horizontal	0.60	8.85	19.62	-	m <sup>2</sup>	<b>28.48</b>
<b>The following unit costs for disposal are based on using a 22.5 t ADT for site work and 20 t tipper for off-site work. The distances used in the calculation are quoted to assist estimating, although this goes beyond the specific requirements of CESMM3</b>						
Disposal of excavated topsoil						
storage on site; 100 m maximum distance	0.05	0.90	3.37	-	m <sup>3</sup>	<b>4.27</b>
removal; 5 km distance	0.11	1.99	6.00	-	m <sup>3</sup>	<b>7.98</b>
removal; 15 km distance	0.21	3.79	11.45	-	m <sup>3</sup>	<b>15.24</b>
Disposal of excavated earth other than rock or artificial hard material						

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>EXCAVATION ANCILLARIES - cont'd</b>						
<b>The following unit costs for disposal are based on using a 22.5 t ADT for site work and 20 t tipper for off-site work. The distances used in the calculation are quoted to assist estimating, although this goes beyond the specific requirements of CESMM3 - cont'd</b>						
storage on site; 100 m maximum distance; using 22.5 t ADT	0.05	0.90	3.37	-	m <sup>3</sup>	<b>4.27</b>
removal; 5 km distance; using 20 t tipper	0.12	2.17	6.54	-	m <sup>3</sup>	<b>8.71</b>
removal; 15 km distance; using 20 t tipper	0.22	3.97	11.99	-	m <sup>3</sup>	<b>15.97</b>
Disposal of excavated rock or artificial hard material						
storage on site; 100 m maximum distance; using 22.5 t ADT	0.06	1.08	4.04	-	m <sup>3</sup>	<b>5.13</b>
removal; 5 km distance; using 20 t tipper	0.13	2.35	7.09	-	m <sup>3</sup>	<b>9.43</b>
removal; 15 km distance; using 20 t tipper	0.23	4.15	12.54	-	m <sup>3</sup>	<b>16.69</b>
Add to the above rates where tipping charges apply:						
non-hazardous waste	-	-	-	-	m <sup>3</sup>	<b>29.62</b>
hazardous waste	-	-	-	-	m <sup>3</sup>	<b>74.25</b>
special waste	-	-	-	-	m <sup>3</sup>	<b>90.75</b>
contaminated liquid	-	-	-	-	m <sup>3</sup>	<b>94.88</b>
contaminated sludge	-	-	-	-	m <sup>3</sup>	<b>123.75</b>
Add to the above rates where Landfill Tax applies:						
exempted material	-	-	-	-	m <sup>3</sup>	<b>-</b>
inactive or inert material	-	-	-	-	m <sup>3</sup>	<b>3.75</b>
other material	-	-	-	-	m <sup>3</sup>	<b>48.00</b>
<b>The following unit costs for double handling are based on using a 1.5 m<sup>3</sup> tractor loader and 22.5 t ADT. A range of distances is listed to assist in estimating, although this goes beyond the specific requirements of CESMM3.</b>						
Double handling of excavated topsoil; using 1.5 m <sup>3</sup> tractor loader and 22.5 t ADT						
300 m average distance moved	0.08	1.44	5.13	-	m <sup>3</sup>	<b>6.57</b>
600 m average distance moved	0.10	1.80	6.41	-	m <sup>3</sup>	<b>8.22</b>
1000 m average distance moved	0.12	2.17	7.70	-	m <sup>3</sup>	<b>9.86</b>
Double handling of excavated earth other than rock or artificial hard material; using 1.5 m <sup>3</sup> tractor loader and 22.5 t ADT						
300 m average distance moved	0.08	1.44	5.13	-	m <sup>3</sup>	<b>6.57</b>
600 m average distance moved	0.10	1.80	6.41	-	m <sup>3</sup>	<b>8.22</b>
1000 m average distance moved	0.12	2.17	7.70	-	m <sup>3</sup>	<b>9.86</b>
Double handling of rock or artificial hard material; using 1.5 m <sup>3</sup> tractor loader and 22.5 t ADT						
300 m average distance moved	0.16	2.89	10.26	-	m <sup>3</sup>	<b>13.15</b>
600 m average distance moved	0.18	3.25	11.54	-	m <sup>3</sup>	<b>14.79</b>
1000 m average distance moved	0.20	3.61	12.83	-	m <sup>3</sup>	<b>16.44</b>
<b>The following unit rates for excavation below Final Surface are based on using a 16 t backacter machine</b>						
Excavation of material below the Final Surface and replacement of with:						
granular fill	1.20	17.18	23.99	25.76	m <sup>3</sup>	<b>66.93</b>
concrete Grade C7.5P	0.60	8.59	12.00	95.60	m <sup>3</sup>	<b>116.19</b>

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Misc</b>						
Timber supports left in	0.32	6.03	-	7.59	m <sup>2</sup>	<b>13.62</b>
Metal supports left in	0.89	16.40	-	36.76	m <sup>2</sup>	<b>53.17</b>
<b>FILLING</b>						
<b>Excavated topsoil; DfT specified type 5A</b>						
Filling						
to structures	0.07	2.82	5.95	-	m <sup>3</sup>	<b>8.77</b>
embankments	0.03	0.99	2.08	-	m <sup>3</sup>	<b>3.07</b>
general	0.02	0.83	1.75	-	m <sup>3</sup>	<b>2.58</b>
150 mm thick	0.01	0.28	0.58	-	m <sup>2</sup>	<b>0.86</b>
250 mm thick	0.01	0.47	1.00	-	m <sup>2</sup>	<b>1.47</b>
400 mm thick	0.02	0.67	1.41	-	m <sup>2</sup>	<b>2.08</b>
600 mm thick	0.02	0.95	2.00	-	m <sup>2</sup>	<b>2.94</b>
<b>Imported topsoil DfT specified type 5B;</b>						
Filling						
embankments	0.03	0.99	2.08	24.59	m <sup>3</sup>	<b>27.66</b>
general	0.02	0.83	1.75	24.59	m <sup>3</sup>	<b>27.17</b>
150 mm thick	0.01	0.28	0.58	3.69	m <sup>2</sup>	<b>4.55</b>
250 mm thick	0.01	0.47	1.00	6.15	m <sup>2</sup>	<b>7.62</b>
400 mm thick	0.02	0.67	1.41	9.84	m <sup>2</sup>	<b>11.92</b>
600 mm thick	0.02	0.95	2.00	14.76	m <sup>2</sup>	<b>17.70</b>
<b>Non-selected excavated material other than topsoil or rock</b>						
Filling						
to structures	0.04	1.42	2.99	-	m <sup>3</sup>	<b>4.42</b>
embankments	0.02	0.59	1.25	-	m <sup>3</sup>	<b>1.84</b>
general	0.01	0.43	0.91	-	m <sup>3</sup>	<b>1.35</b>
150 mm thick	-	0.16	0.33	-	m <sup>2</sup>	<b>0.49</b>
250 mm thick	0.01	0.24	0.50	-	m <sup>2</sup>	<b>0.74</b>
400 mm thick	0.01	0.36	0.75	-	m <sup>2</sup>	<b>1.10</b>
600 mm thick	0.01	0.47	1.00	-	m <sup>2</sup>	<b>1.47</b>
<b>Selected excavated material other than topsoil or rock</b>						
Filling						
to structures	0.04	1.62	3.41	-	m <sup>3</sup>	<b>5.03</b>
embankments	0.01	0.55	1.16	-	m <sup>3</sup>	<b>1.72</b>
general	0.01	0.47	1.00	-	m <sup>3</sup>	<b>1.47</b>
150 mm thick	-	0.16	0.33	-	m <sup>2</sup>	<b>0.49</b>
250 mm thick	0.01	0.28	0.58	-	m <sup>2</sup>	<b>0.86</b>
400 mm thick	0.01	0.39	0.83	-	m <sup>2</sup>	<b>1.23</b>
600 mm thick	0.01	0.51	1.08	-	m <sup>2</sup>	<b>1.59</b>
<b>Imported natural material other than topsoil or rock; subsoil</b>						
Filling						
to structures	0.04	1.42	2.99	24.56	m <sup>3</sup>	<b>28.97</b>
embankments	0.02	0.59	1.25	24.56	m <sup>3</sup>	<b>26.40</b>
general	0.02	0.59	1.25	24.56	m <sup>3</sup>	<b>26.40</b>
150 mm thick	0.01	0.36	0.75	3.68	m <sup>2</sup>	<b>4.79</b>
250 mm thick	0.01	0.51	1.08	6.14	m <sup>2</sup>	<b>7.73</b>
400 mm thick	0.02	0.59	1.25	9.82	m <sup>2</sup>	<b>11.66</b>
600 mm thick	0.02	0.67	1.41	14.73	m <sup>2</sup>	<b>16.82</b>

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FILLING - cont'd</b>						
<b>Imported natural material other than topsoil or rock; granular graded material</b>						
Filling						
to structures	0.04	1.42	2.99	28.14	m <sup>3</sup>	<b>32.56</b>
embankments	0.02	0.67	1.41	28.14	m <sup>3</sup>	<b>30.23</b>
general	0.02	0.67	1.41	28.14	m <sup>3</sup>	<b>30.23</b>
150 mm thick	0.01	0.47	1.00	4.22	m <sup>2</sup>	<b>5.69</b>
250 mm thick	0.02	0.67	1.41	7.04	m <sup>2</sup>	<b>9.12</b>
400 mm thick	0.02	0.79	1.66	11.26	m <sup>2</sup>	<b>13.71</b>
600 mm thick	0.02	0.87	1.83	16.89	m <sup>2</sup>	<b>19.58</b>
<b>Imported natural material other than topsoil or rock; granular selected material</b>						
Filling						
to structures	0.04	1.42	2.99	23.88	m <sup>3</sup>	<b>28.29</b>
embankments	0.02	0.67	1.41	23.88	m <sup>3</sup>	<b>25.96</b>
general	0.02	0.67	1.41	23.88	m <sup>3</sup>	<b>25.96</b>
150 mm thick	0.01	0.47	1.00	3.58	m <sup>2</sup>	<b>5.05</b>
250 mm thick	0.02	0.67	1.41	5.97	m <sup>2</sup>	<b>8.05</b>
400 mm thick	0.02	0.79	1.66	9.55	m <sup>2</sup>	<b>12.00</b>
600 mm thick	0.02	0.87	1.83	14.33	m <sup>2</sup>	<b>17.02</b>
<b>Excavated rock</b>						
Filling						
to structures	0.04	1.58	3.33	-	m <sup>3</sup>	<b>4.91</b>
embankments	0.05	1.97	4.16	-	m <sup>3</sup>	<b>6.13</b>
general	0.05	1.97	4.16	-	m <sup>3</sup>	<b>6.13</b>
150 mm thick	0.02	0.67	1.41	-	m <sup>2</sup>	<b>2.08</b>
250 mm thick	0.03	1.03	2.16	-	m <sup>2</sup>	<b>3.19</b>
400 mm thick	0.04	1.58	3.33	-	m <sup>2</sup>	<b>4.91</b>
600 mm thick	0.06	2.17	4.57	-	m <sup>2</sup>	<b>6.75</b>
<b>Imported rock</b>						
Filling						
to structures	0.04	1.58	3.33	49.84	m <sup>3</sup>	<b>54.74</b>
embankments	0.02	0.95	2.00	49.84	m <sup>3</sup>	<b>52.78</b>
general	0.02	0.79	1.66	49.84	m <sup>3</sup>	<b>52.29</b>
150 mm thick	0.01	0.47	1.00	7.47	m <sup>2</sup>	<b>8.95</b>
250 mm thick	0.02	0.79	1.66	12.46	m <sup>2</sup>	<b>14.91</b>
400 mm thick	0.03	1.18	2.50	19.93	m <sup>2</sup>	<b>23.61</b>
600 mm thick	0.03	1.18	2.50	29.90	m <sup>2</sup>	<b>33.58</b>

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FILLING ANCILLARIES</b>						
<b>Trimming of filled surfaces</b>						
Topsoil						
horizontal	0.02	0.38	1.34	-	m <sup>2</sup>	<b>1.72</b>
inclined at an angle of 10 - 45° to horizontal	0.02	0.38	1.34	-	m <sup>2</sup>	<b>1.72</b>
inclined at an angle of 45 - 90° to horizontal	0.03	0.49	1.72	-	m <sup>2</sup>	<b>2.21</b>
Material other than topsoil, rock or artificial hard material						
horizontal	0.02	0.38	1.34	-	m <sup>2</sup>	<b>1.72</b>
inclined at an angle of 10 - 45° to horizontal	0.02	0.38	1.34	-	m <sup>2</sup>	<b>1.72</b>
inclined at an angle of 45 - 90° to horizontal	0.03	0.49	1.72	-	m <sup>2</sup>	<b>2.21</b>
Rock						
horizontal	0.51	9.22	32.51	-	m <sup>2</sup>	<b>41.73</b>
inclined at an angle of 10 - 45° to horizontal	0.52	9.40	33.15	-	m <sup>2</sup>	<b>42.55</b>
inclined at an angle of 45 - 90° to horizontal	0.70	12.66	44.62	-	m <sup>2</sup>	<b>57.28</b>
<b>Preparation of filled surfaces</b>						
Topsoil						
horizontal	0.03	0.54	1.91	-	m <sup>2</sup>	<b>2.45</b>
inclined at an angle of 10 - 45° to horizontal	0.03	0.54	1.91	-	m <sup>2</sup>	<b>2.45</b>
inclined at an angle of 45 - 90° to horizontal	0.04	0.67	2.36	-	m <sup>2</sup>	<b>3.03</b>
Material other than topsoil, rock or artificial hard material						
horizontal	0.03	0.54	1.91	-	m <sup>2</sup>	<b>2.45</b>
inclined at an angle of 10 - 45° to horizontal	0.03	0.54	1.91	-	m <sup>2</sup>	<b>2.45</b>
inclined at an angle of 45 - 90° to horizontal	0.04	0.67	2.36	-	m <sup>2</sup>	<b>3.03</b>
Rock						
horizontal	0.33	5.96	21.04	-	m <sup>2</sup>	<b>26.99</b>
inclined at an angle of 10 - 45° to horizontal	0.33	5.96	21.04	-	m <sup>2</sup>	<b>26.99</b>
inclined at an angle of 45 - 90° to horizontal	0.52	9.39	33.15	-	m <sup>2</sup>	<b>42.53</b>
<b>GEOTEXTILES</b>						
<b>Notes</b>						
The geotextile products mentioned below are not specifically confined to the individual uses stated but are examples of one of many scenarios to which they may be applied. Conversely, the scenarios are not limited to the geotextile used as an example.						
<b>Geotextiles; stabilisation applications for reinforcement of granular sub-bases, capping layers and railway ballast placed over weak and variable soils</b>						
For use over weak soils with moderate traffic intensities e.g. car parks, light access roads; Tensar SS20 Polypropylene Geogrid						
horizontal	0.04	1.17	-	2.25	m <sup>2</sup>	<b>3.41</b>
inclined at an angle of 10 to 45° to the horizontal	0.05	1.47	-	2.25	m <sup>2</sup>	<b>3.72</b>
For use over weak soils with high traffic intensities and/or high axle loadings; Tensar SS30 Polypropylene Geogrid						
horizontal	0.05	1.81	-	2.59	m <sup>2</sup>	<b>4.40</b>
inclined at an angle of 10 to 45° to the horizontal	0.06	2.25	-	2.59	m <sup>2</sup>	<b>4.84</b>

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GEOTEXTILES - cont'd</b>						
<b>Geotextiles; stabilisation applications for reinforcement of granular sub-bases, capping layers and railway ballast placed over weak and variable soils - cont'd</b>						
For use over very weak soils e.g. alluvium, marsh or peat or firmer soil subject to exceptionally high axle loadings; Tensar SS40 Polypropylene Geogrid						
horizontal	0.05	1.98	2.74	4.00	m <sup>2</sup>	<b>8.72</b>
inclined at an angle of 10 to 45° to the horizontal	0.06	2.46	3.41	4.00	m <sup>2</sup>	<b>9.87</b>
For trafficked areas where fill comprises aggregate exceeding 100mm; Tensar SSLA20 Polypropylene Geogrid						
horizontal	0.04	1.17	-	2.20	m <sup>2</sup>	<b>3.37</b>
inclined at an angle 10 - 45° to the horizontal	0.05	1.47	-	2.20	m <sup>2</sup>	<b>3.67</b>
Stabilisation and separation of granular fill from soft sub grade to prevent intermixing: Terram 1000						
horizontal	0.05	2.05	-	0.43	m <sup>2</sup>	<b>2.48</b>
inclined at an angle of 10 to 45° to the horizontal	0.06	2.57	-	0.43	m <sup>2</sup>	<b>3.01</b>
Stabilisation and separation of granular fill from soft sub grade to prevent intermixing: Terram 2000						
horizontal	0.04	1.85	2.56	1.12	m <sup>2</sup>	<b>5.52</b>
inclined at an angle of 10 to 45° to the horizontal	0.05	2.33	3.23	1.12	m <sup>2</sup>	<b>6.67</b>
<b>Geotextiles; reinforcement applications for asphalt pavements</b>						
For roads, hardstandings and airfield pavements; Tensar AR-G composite comprising Tensar AR-1 grid bonded to a geotextile, laid within asphalt						
horizontal	0.05	1.81	-	3.25	m <sup>2</sup>	<b>5.06</b>
inclined at an angle of 10 to 45° to the horizontal	0.06	2.25	-	3.25	m <sup>2</sup>	<b>5.50</b>
<b>Geotextiles; slope reinforcement and embankment support; for use where soils can only withstand limited shear stresses, therefore steep slopes require external support</b>						
<b>Paragrid 30/155; 330g/m<sup>2</sup></b>						
horizontal	0.04	1.17	-	2.46	m <sup>2</sup>	<b>3.63</b>
inclined at an angle of 10-45° to the horizontal	0.05	1.47	-	2.46	m <sup>2</sup>	<b>3.93</b>
<b>Paragrid 100/255; 330g/m<sup>2</sup></b>						
horizontal	0.04	1.17	-	3.20	m <sup>2</sup>	<b>4.37</b>
inclined at an angle of 10-45° to the horizontal	0.05	1.47	-	3.20	m <sup>2</sup>	<b>4.67</b>
<b>Paralink 200s; 1120g/m<sup>2</sup></b>						
horizontal	0.05	2.38	3.29	4.87	m <sup>2</sup>	<b>10.53</b>
inclined at an angle of 10-45° to the horizontal	0.07	2.99	4.14	4.87	m <sup>2</sup>	<b>12.00</b>
<b>Paralink 600s; 2040g/m<sup>2</sup></b>						
horizontal	0.06	2.77	3.83	11.13	m <sup>2</sup>	<b>17.73</b>
inclined at an angle of 10-45° to the horizontal	0.08	3.48	4.81	11.13	m <sup>2</sup>	<b>19.41</b>
<b>Terram grid 30/30</b>						
horizontal	0.06	2.51	3.47	0.01	m <sup>2</sup>	<b>5.99</b>
inclined at an angle of 10-45° to the horizontal	0.07	3.12	4.32	0.01	m <sup>2</sup>	<b>7.45</b>

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Geotextiles; scour and erosion protection</b>						
For use where erosion protection is required to the surface of a slope once its geotechnical stability has been achieved, and to allow grass establishment; Tensar 'Mat' Polyethylene mesh; fixed with Tensar pegs						
horizontal	0.04	1.65	-	3.76	m <sup>2</sup>	5.41
inclined at an angle of 10-45° to the horizontal	0.05	2.05	-	3.76	m <sup>2</sup>	5.82
For use where hydraulic action exists, such as coastline protection from pressures exerted by waves, currents and tides; Typar SF56						
horizontal	0.05	2.24	3.10	0.67	m <sup>2</sup>	6.02
inclined at an angle of 10-45° to the horizontal	0.06	2.82	3.90	0.67	m <sup>2</sup>	7.38
For protection against puncturing to reservoir liner; Typar SF563						
horizontal	0.05	2.24	3.10	0.67	m <sup>2</sup>	6.02
inclined at an angle of 10-45° to the horizontal	0.06	2.82	3.90	0.67	m <sup>2</sup>	7.38
<b>Geotextiles; temporary parking areas</b>						
For reinforcement of grassed areas subject to wear from excessive pedestrian and light motor vehicle traffic; Netlon CE131 high density polyethylene geogrid						
horizontal	0.04	1.22	-	4.03	m <sup>2</sup>	5.25
<b>Geotextiles; landscaping applications</b>						
For prevention of weed growth in planted areas by incorporating a geotextile over top soil and below mulch or gravel; Typar SF20						
horizontal	0.08	3.02	-	0.40	m <sup>2</sup>	3.42
inclined at an angle of 10-45° to the horizontal	0.09	3.78	-	0.40	m <sup>2</sup>	4.18
For root growth control-Prevention of lateral spread of roots and mixing of road base and humus; Typar SF20						
horizontal	0.08	3.02	-	0.40	m <sup>2</sup>	3.42
inclined at an angle of 10-45° to the horizontal	0.09	3.78	-	0.40	m <sup>2</sup>	4.18
<b>Geotextiles; drainage applications</b>						
For clean installation of pipe support material and to prevent silting of the drainage pipe and minimising differential settlement; Typar SF10						
horizontal	0.04	1.65	-	0.44	m <sup>2</sup>	2.09
inclined at an angle of 10-45° to the horizontal	0.05	2.05	-	0.44	m <sup>2</sup>	2.49
For wrapping to prevent clogging of drainage pipes surrounded by fine soil; Typar SF10						
sheeting	0.08	3.22	-	0.87	m <sup>2</sup>	4.09
For wrapping to prevent clogging of drainage pipes surrounded by fine soil; Terram 1000						
sheeting	0.08	3.22	-	0.47	m <sup>2</sup>	3.69
For vertical structure drainage to sub-surface walls, roofs and foundations; Filtram 1B1						
sheeting	0.08	3.22	-	7.54	m <sup>2</sup>	10.76
For waterproofing to tunnels, buried structures, etc. where the membrane is buried, forming part of the drainage system; Filtram 1BZ						
sheeting	0.08	3.22	-	7.43	m <sup>2</sup>	10.65

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GEOTEXTILES - cont'd</b>						
<b>Geotextiles; roofing insulation and protection</b>						
Protection of waterproofing membrane from physical damage and puncturing; Typar SF56 sheeting	0.05	2.24	3.10	0.67	m <sup>2</sup>	<b>6.02</b>
Internal reinforcement of in situ spread waterproof bitumen emulsion; Typar SF10 sheeting	0.07	2.65	-	0.44	m <sup>2</sup>	<b>3.09</b>
<b>LANDSCAPING</b>						
<b>Preparatory operations prior to landscaping</b>						
Supply and apply granular cultivation treatments by hand						
35 grammes/m <sup>2</sup>	0.50	12.89	-	15.72	100 m <sup>2</sup>	<b>28.61</b>
50 grammes/m <sup>2</sup>	0.65	16.76	-	22.45	100 m <sup>2</sup>	<b>39.21</b>
75 grammes/m <sup>2</sup>	0.85	21.91	-	33.68	100 m <sup>2</sup>	<b>55.59</b>
100 grammes/m <sup>2</sup>	1.00	25.78	-	44.90	100 m <sup>2</sup>	<b>70.68</b>
Supply and apply granular cultivation treatments by machine in suitable economically large areas						
100 grammes/m <sup>2</sup>	0.25	3.64	1.38	44.90	100m <sup>2</sup>	<b>49.92</b>
Supply and incorporate cultivation additives into top 150 mm of topsoil by hand						
1 m <sup>3</sup> / 10 m <sup>2</sup>	20.00	515.58	-	12.00	100m <sup>2</sup>	<b>527.58</b>
1 m <sup>3</sup> / 13 m <sup>2</sup>	20.00	515.58	-	9.23	100m <sup>2</sup>	<b>524.81</b>
1 m <sup>3</sup> / 20 m <sup>2</sup>	19.00	489.80	-	6.00	100m <sup>2</sup>	<b>495.80</b>
1 m <sup>3</sup> / 40 m <sup>2</sup>	17.00	438.25	-	3.00	100m <sup>2</sup>	<b>441.25</b>
Supply and incorporate cultivation additives into top 150 mm of topsoil by machine in suitable economically large areas						
1 m <sup>3</sup> / 10 m <sup>2</sup>	-	-	204.80	12.00	100m <sup>2</sup>	<b>216.80</b>
1 m <sup>3</sup> / 13 m <sup>2</sup>	-	-	189.04	9.23	100m <sup>2</sup>	<b>198.27</b>
1 m <sup>3</sup> / 20 m <sup>2</sup>	-	-	168.05	6.00	100m <sup>2</sup>	<b>174.05</b>
1 m <sup>3</sup> / 40 m <sup>2</sup>	-	-	154.92	3.00	100m <sup>2</sup>	<b>157.92</b>
<b>Turfing</b>						
Turfing						
horizontal	0.12	3.09	-	3.59	m <sup>2</sup>	<b>6.69</b>
10 - 45 degrees to horizontal	0.17	4.38	-	3.59	m <sup>2</sup>	<b>7.97</b>
45 - 90° to horizontal; pegging down	0.19	4.90	-	3.59	m <sup>2</sup>	<b>8.49</b>
<b>Hydraulic mulch grass seeding</b>						
Grass seeding						
horizontal	0.01	0.13	-	0.28	m <sup>2</sup>	<b>0.40</b>
10 - 45° to horizontal	0.01	0.18	-	0.28	m <sup>2</sup>	<b>0.46</b>
45 - 90° to horizontal	0.01	0.23	-	0.28	m <sup>2</sup>	<b>0.51</b>



**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Selected grass seeding</b>						
Grass seeding; sowing at the rate of 0.050 kg/m <sup>2</sup> in two operations						
horizontal	0.01	0.26	-	0.26	m <sup>2</sup>	<b>0.52</b>
10 - 45° to horizontal	0.02	0.39	-	0.26	m <sup>2</sup>	<b>0.65</b>
45 - 90° to horizontal	0.02	0.52	-	0.26	m <sup>2</sup>	<b>0.77</b>
<b>Plants</b>						
Form planting hole in previously cultivated area, supply and plant specified herbaceous plants and backfill with excavated material						
5 plants/m <sup>2</sup>	0.01	0.26	-	3.66	m <sup>2</sup>	<b>3.92</b>
10 plants/m <sup>2</sup>	0.02	0.57	-	13.41	m <sup>2</sup>	<b>13.98</b>
25 plants/m <sup>2</sup>	0.05	1.29	-	31.24	m <sup>2</sup>	<b>32.53</b>
35 plants/m <sup>2</sup>	0.07	1.80	-	43.73	m <sup>2</sup>	<b>45.53</b>
50 plants/m <sup>2</sup>	0.10	2.58	-	62.48	m <sup>2</sup>	<b>65.06</b>
Supply and fix plant support netting on 50 mm diameter stakes 750 mm long driven into the ground at 1.5 m centres						
1.15m high green extruded plastic mesh, 125mm square mesh	0.06	1.55	-	0.98	m <sup>2</sup>	<b>2.53</b>
Form planting hole in previously cultivated area; supply and plant bulbs and backfill with excavated material						
small	0.01	0.26	-	0.17	each	<b>0.43</b>
medium	0.01	0.26	-	0.26	each	<b>0.52</b>
large	0.01	0.26	-	0.32	each	<b>0.57</b>
Supply and plant bulbs in grassed area using bulb planter and backfill with screened topsoil or peat and cut turf plug						
small	0.01	0.26	-	0.17	each	<b>0.43</b>
medium	0.01	0.26	-	0.26	each	<b>0.52</b>
large	0.01	0.26	-	0.32	each	<b>0.57</b>
<b>Shrubs</b>						
Form planting hole in previously cultivated area, supply and plant specified shrub and backfill with excavated material						
shrub 300 mm high	0.01	0.26	-	2.60	each	<b>2.86</b>
shrub 600 mm high	0.01	0.26	-	3.74	each	<b>4.00</b>
shrub 900 mm high	0.01	0.26	-	4.47	each	<b>4.73</b>
shrub 1 m high and over	0.01	0.26	-	5.97	each	<b>6.23</b>
Supply and fix shrub stake including two ties one stake; 1.5 m long, 75 mm diameter	0.12	3.09	-	5.52	each	<b>8.62</b>

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>LANDSCAPING - cont'd</b>						
<b>Trees</b>						
The cost of planting semi-mature trees will depend on the size and species, and on the access to the site for tree handling machines. Prices should be obtained for individual trees and planting. Break up subsoil to a depth of 200 mm						
in tree pit	0.05	1.29	-	-	each	<b>1.29</b>
Supply and plant tree in prepared pit; backfill with excavated topsoil minimum 600 mm deep						
light standard tree	0.25	6.44	-	13.29	each	<b>19.74</b>
standard tree	0.45	11.60	-	19.93	each	<b>31.53</b>
selected standard tree	0.75	19.33	-	26.59	each	<b>45.92</b>
heavy standard tree	0.85	21.91	-	46.53	each	<b>68.45</b>
extra heavy standard tree	1.50	38.67	-	83.12	each	<b>121.79</b>
Extra for filling with topsoil from spoil heap ne 100 m distant						
	0.15	3.87	-	-	m <sup>3</sup>	<b>3.87</b>
Extra for filling with imported topsoil						
	0.08	2.06	-	23.96	m <sup>3</sup>	<b>26.03</b>
Supply tree stake and drive 500 mm into firm ground and trim to approved height, including two tree ties to approved pattern						
one stake; 2.4 m long, 100 mm diameter	0.16	4.12	-	8.57	each	<b>12.69</b>
one stake; 3.0 m long, 100 mm diameter	0.20	5.16	-	10.79	each	<b>15.95</b>
two stakes; 2.4 m long, 100 mm diameter	0.24	6.19	-	17.11	each	<b>23.30</b>
two stakes; 3.0 m long, 100 mm diameter	0.30	7.73	-	21.58	each	<b>29.31</b>
Supply and fit tree support comprising three collars and wire guys; including pickets						
galvanised steel 50 x 600 mm	1.50	38.67	-	35.88	each	<b>74.55</b>
hardwood 75 x 600 mm	1.50	38.67	-	36.69	each	<b>75.36</b>
Supply and fix standard steel tree guard	0.30	7.73	-	29.95	each	<b>37.68</b>
<b>Hedges</b>						
Excavate trench by hand for hedge and deposit soil alongside trench						
300 wide x 300 mm deep	0.10	2.58	-	-	m	<b>2.58</b>
450 wide x 300 mm deep	0.13	3.35	-	-	m	<b>3.35</b>
Excavate trench by machine for hedge and deposit soil alongside trench						
300 wide x 300 mm deep	0.02	0.52	-	-	m	<b>0.52</b>
450 wide x 300 mm deep	0.02	0.52	-	-	m	<b>0.52</b>
Set out, nick out and excavate trench and break up subsoil to minimum depth of 300 mm						
400 mm minimum deep	0.28	7.19	-	-	m	<b>7.19</b>
Supply and plant hedging plants, backfill with excavated topsoil						
single row; plants at 200 mm centres	0.25	6.44	-	0.03	m	<b>6.48</b>
single row; plants at 300 mm centres	0.17	4.38	-	0.02	m	<b>4.40</b>
single row; plants at 400 mm centres	0.13	3.22	-	0.02	m	<b>3.24</b>
single row; plants at 500 mm centres	0.10	2.58	-	0.01	m	<b>2.59</b>
single row; plants at 600 mm centres	0.08	2.06	-	0.01	m	<b>2.07</b>
double row; plants at 200 mm centres	0.50	12.89	-	0.07	m	<b>12.96</b>
double row; plants at 300 mm centres	0.34	8.76	-	0.04	m	<b>8.81</b>
double row; plants at 400 mm centres	0.25	6.44	-	0.03	m	<b>6.48</b>
double row; plants at 500 mm centres	0.20	5.16	-	0.03	m	<b>5.18</b>
Extra for incorporating manure at the rate of 1m <sup>3</sup> per 30 m of trench						
	0.12	3.09	-	0.14	m	<b>3.23</b>

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>COMPARATIVE COSTS - EARTH MOVING</b>						
<b>Notes</b>						
The cost of earth moving and other associated works is dependent on matching the overall quantities and production rate called for by the programme of works with the most appropriate plant and assessing the most suitable version of that plant which will:						
* deal with the site conditions (e.g. type of ground, type of excavation, length of haul, prevailing weather, etc.)						
* comply with the specification requirements (e.g. compaction, separation of materials, surface tolerances, etc.)						
* complete the work economically (e.g. provide surface tolerances which will avoid undue expense of imported materials) Labour costs are based on a plant operative skill rate 3 unless otherwise stated						
<b>Comparative costs of excavation equipment</b>						
The following are comparative costs using various types of excavation equipment and include loading into transport. All costs assume 50 minutes productive work in every hour and adequate disposal transport being available to obviate any delay. Dragline (for excavations requiring a long reach and long discharge, mainly in clearing streams and rivers)						
bucket capacity ne 1.15 m <sup>3</sup>	0.06	1.08	3.84	-	m <sup>3</sup>	<b>4.93</b>
bucket capacity ne 2.00 m <sup>3</sup>	0.03	0.54	3.09	-	m <sup>3</sup>	<b>3.63</b>
bucket capacity ne 3.00 m <sup>3</sup>	0.02	0.36	2.85	-	m <sup>3</sup>	<b>3.21</b>
Hydraulic backacter (for all types of excavation and loading, including trenches, breaking hard ground, etc.)						
bucket capacity ne 0.40 m <sup>3</sup>	0.05	0.81	1.76	-	m <sup>3</sup>	<b>2.57</b>
bucket capacity ne 1.00 m <sup>3</sup>	0.02	0.36	0.93	-	m <sup>3</sup>	<b>1.29</b>
bucket capacity ne 1.60 m <sup>3</sup>	0.01	0.18	1.12	-	m <sup>3</sup>	<b>1.30</b>
Hydraulic face shovel (predominantly for excavating cuttings and embankments over 2 m high requiring high output)						
bucket capacity ne 1.50 m <sup>3</sup>	0.04	0.72	3.47	-	m <sup>3</sup>	<b>4.19</b>
bucket capacity ne 2.60 m <sup>3</sup>	0.02	0.36	2.30	-	m <sup>3</sup>	<b>2.66</b>
bucket capacity ne 3.40 m <sup>3</sup>	0.01	0.18	1.55	-	m <sup>3</sup>	<b>1.73</b>
Tractor loader (for loading, carrying, placing materials, spreading and levelling, some site clearance operations and reducing levels)						
bucket capacity ne 0.80 m <sup>3</sup>	0.02	0.36	0.64	-	m <sup>3</sup>	<b>1.00</b>
bucket capacity ne 1.50 m <sup>3</sup>	0.01	0.18	0.61	-	m <sup>3</sup>	<b>0.79</b>
bucket capacity ne 3.00 m <sup>3</sup>	0.01	0.13	0.72	-	m <sup>3</sup>	<b>0.84</b>
Multipurpose wheeled loader / backhoe (versatile machine for small to medium excavations, trenches, loading, carrying and back filling)						
bucket capacity ne 0.76 m <sup>3</sup>	0.08	1.44	1.67	-	m <sup>3</sup>	<b>3.11</b>
bucket capacity ne 1.00 m <sup>3</sup>	0.06	1.08	1.69	-	m <sup>3</sup>	<b>2.77</b>

## CLASS E: EXCAVATION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>COMPARATIVE COSTS - EARTH MOVING - cont'd</b>						
<b>Comparative costs of transportation equipment</b>						
The following are comparative costs for using various types of transportation equipment to transport excavated loose material. The capacity of the transport must be suitable for the output of the loading machine. The cost will vary depending on the number of transport units required to meet the output of the loading unit and the distance to be travelled. Loading loose material into transport by wheeled loader						
ne 2.1 m <sup>3</sup> capacity	0.02	0.36	0.92	-	m <sup>3</sup>	<b>1.28</b>
ne 5.4 m <sup>3</sup> capacity	0.01	0.18	1.89	-	m <sup>3</sup>	<b>2.07</b>
ne 10.5 m <sup>3</sup> capacity	0.01	0.13	0.94	-	m <sup>3</sup>	<b>1.07</b>
Transport material within site by dump truck (rear dump)						
ne 24 m <sup>3</sup> heaped capacity, distance travelled ne 0.5 Km	0.03	0.54	3.14	-	m <sup>3</sup>	<b>3.68</b>
Add per 0.5 Km additional distance	0.01	0.18	1.05	-	m <sup>3</sup>	<b>1.23</b>
ne 57 m <sup>3</sup> heaped capacity, distance travelled ne 0.5 Km	0.03	0.59	2.59	-	m <sup>3</sup>	<b>3.18</b>
Add per 0.5 Km additional distance	0.03	0.59	1.29	-	m <sup>3</sup>	<b>1.88</b>
Transport material within site by dump truck (articulated)						
ne 32 t payload, distance travelled ne 0.5 Km	0.04	0.78	3.56	-	m <sup>3</sup>	<b>4.34</b>
Add per 0.5 Km additional distance	0.02	0.39	1.78	-	m <sup>3</sup>	<b>2.17</b>
Transport material within or off site by tipping lorry						
ne 10 t payload, distance travelled ne 1 Km	0.05	0.81	1.82	-	m <sup>3</sup>	<b>2.63</b>
Add per 1 Km additional distance	0.03	0.40	0.91	-	m <sup>3</sup>	<b>1.32</b>
10 - 15 t payload, distance travelled ne 1 Km	0.04	0.65	1.81	-	m <sup>3</sup>	<b>2.45</b>
Add per 1 Km additional distance	0.02	0.32	0.90	-	m <sup>3</sup>	<b>1.23</b>
15 - 25 t payload, distance travelled ne 1 Km	0.03	0.54	1.38	-	m <sup>3</sup>	<b>1.92</b>
Add per 1 Km additional distance	0.02	0.27	0.69	-	m <sup>3</sup>	<b>0.96</b>
<b>Comparative costs of earth moving equipment</b>						
The following are comparative costs using various types of earth moving equipment to include excavation, transport, spreading and levelling.						
Bulldozer up to 74 KW (CAT D4H sized machine used for site strip, reducing levels or grading and spreading materials over smaller sites)						
average push one way 10 m	0.03	0.49	1.36	-	m <sup>3</sup>	<b>1.84</b>
average push one way 30 m	0.08	1.30	3.62	-	m <sup>3</sup>	<b>4.91</b>
average push one way 50 m	0.14	2.27	6.33	-	m <sup>3</sup>	<b>8.60</b>
average push one way 100 m	0.29	4.70	13.11	-	m <sup>3</sup>	<b>17.80</b>
Bulldozer up to 104 KW (CAT D6E sized machine for reducing levels, excavating to greater depths at steeper inclines, grading surfaces, small cut and fill operations; maximum push 100 m)						
average push one way 10 m	0.03	0.54	1.96	-	m <sup>3</sup>	<b>2.50</b>
average push one way 30 m	0.07	1.26	4.58	-	m <sup>3</sup>	<b>5.84</b>
average push one way 50 m	0.09	1.62	5.89	-	m <sup>3</sup>	<b>7.51</b>
average push one way 100 m	0.19	3.43	12.43	-	m <sup>3</sup>	<b>15.86</b>

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Bull or Angle Dozer up to 212 KW (CAT D8N sized machine for high output, ripping and excavating by reducing levels at steeper inclines or in harder material than with D6E, larger cut and fill operations used in conjunction with towed or S.P. scrapers. Spreading and grading over large areas; maximum push 100 m)						
average push one way 10 m	0.03	0.54	3.41	-	m <sup>3</sup>	<b>3.95</b>
average push one way 30 m	0.06	1.08	6.81	-	m <sup>3</sup>	<b>7.90</b>
average push one way 50 m	0.07	1.26	7.95	-	m <sup>3</sup>	<b>9.21</b>
average push one way 100 m	0.11	1.99	12.49	-	m <sup>3</sup>	<b>14.48</b>
Motorised scraper, 15 m <sup>3</sup> capacity (for excavating larger volumes over large haul lengths, excavating to reduce levels and also levelling ground, grading large sites, moving and tipping material including hard material - used in open cast sites)						
average haul one way 500 m	-	0.07	0.47	-	m <sup>3</sup>	<b>0.54</b>
average haul one way 1,000 m	0.01	0.11	0.71	-	m <sup>3</sup>	<b>0.81</b>
average haul one way 2,000 m	0.01	0.14	0.94	-	m <sup>3</sup>	<b>1.09</b>
average haul one way 3,000 m	0.01	0.18	1.18	-	m <sup>3</sup>	<b>1.36</b>
Twin engined motorised scraper, 16 m <sup>3</sup> capacity						
average haul one way 500 m	-	0.05	0.47	-	m <sup>3</sup>	<b>0.52</b>
average haul one way 1,000 m	-	0.07	0.62	-	m <sup>3</sup>	<b>0.69</b>
average haul one way 2,000 m	0.01	0.09	0.78	-	m <sup>3</sup>	<b>0.87</b>
average haul one way 3,000 m	0.01	0.13	1.09	-	m <sup>3</sup>	<b>1.21</b>
Twin engined motorised scraper, 34 m <sup>3</sup> capacity						
average haul one way 500 m	-	0.04	0.67	-	m <sup>3</sup>	<b>0.71</b>
average haul one way 1,000 m	-	0.05	1.01	-	m <sup>3</sup>	<b>1.06</b>
average haul one way 2,000 m	-	0.05	1.01	-	m <sup>3</sup>	<b>1.06</b>
average haul one way 3,000 m	-	0.07	1.35	-	m <sup>3</sup>	<b>1.42</b>
<b>Excavation by hand</b>						
Desirable for work around live services or in areas of highly restricted access. Excavate and load into skip or dumper bucket						
loose material	2.02	25.13	-	-	m <sup>3</sup>	<b>25.13</b>
compacted soil or clay	3.15	39.19	-	-	m <sup>3</sup>	<b>39.19</b>
mass concrete or sandstone	3.00	37.32	-	-	m <sup>3</sup>	<b>37.32</b>
broken rock	2.95	36.70	-	-	m <sup>3</sup>	<b>36.70</b>
existing sub-base or pipe surrounds	3.12	38.81	-	-	m <sup>3</sup>	<b>38.81</b>
<b>Excavate by hand using pneumatic equipment</b>						
Excavate below ground using 1.80 m <sup>3</sup> /min single tool compressor and pneumatic breaker and load material into skip or dumper bucket						
rock (medium drill)	2.12	26.37	27.18	-	m <sup>3</sup>	<b>53.55</b>
brickwork or mass concrete	2.76	34.33	35.61	-	m <sup>3</sup>	<b>69.94</b>
reinforced concrete	3.87	48.14	48.79	-	m <sup>3</sup>	<b>96.93</b>
asphalt in carriageways	1.15	14.31	15.12	-	m <sup>3</sup>	<b>29.43</b>
<b>Comparative prices for ancillary equipment</b>						
Excavate using 6 tonne to break out (JCB 3CX and Montalbert 125 breaker)						
medium hard rock	0.43	6.96	18.21	-	m <sup>3</sup>	<b>25.17</b>
brickwork or mass concrete	0.54	8.74	22.83	-	m <sup>3</sup>	<b>31.57</b>
reinforced concrete	0.64	10.36	27.05	-	m <sup>3</sup>	<b>37.42</b>

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>COMPARATIVE COSTS - EARTH MOVING - cont'd</b>						
<b>Load material into skip or dumper</b>						
Load material into skip or dumper bucket using a 11.5 tonne crawler backacter with 0.80 m <sup>3</sup> rock bucket						
medium hard rock	0.07	1.13	2.69	-	m <sup>3</sup>	<b>3.83</b>
brickwork or mass concrete	0.08	1.30	3.07	-	m <sup>3</sup>	<b>4.37</b>
reinforced concrete	0.09	1.46	3.46	-	m <sup>3</sup>	<b>4.92</b>
<b>DRILLING AND BLASTING IN ROCK</b>						
The cost of blasting is controlled by the number of holes and the length of drilling required to achieve the tolerances and degree of shatter required, e.g. line drilling to trenches, depth of drilling to control horizontal overbreak.						
Drilling with rotary percussion drills						
105 - 110 mm diameter; hard rock	-	-	-	-	m	<b>13.90</b>
105 - 110 mm diameter; sandstone	-	-	-	-	m	<b>7.03</b>
125 mm diameter; hard rock	-	-	-	-	m	<b>11.04</b>
125 mm diameter; sandstone	-	-	-	-	m	<b>9.92</b>
165 mm diameter; hard rock	-	-	-	-	m	<b>12.65</b>
165 mm diameter; sandstone	-	-	-	-	m	<b>12.65</b>
Drilling and blasting in open cut for bulk excavation excluding cost of excavatio or trimming						
hard rock	-	-	-	-	m	<b>3.20</b>
sandstone	-	-	-	-	m	<b>4.32</b>
Drilling and blasting for quarry operations with face height exceeding 10 m						
hard rock	-	-	-	-	m	<b>3.06</b>
sandstone	-	-	-	-	m	<b>3.06</b>
Drilling and blasting in trenches excluding cost of excavation or trimming						
trench width ne 1.0 m	-	-	-	-	m	<b>24.01</b>
trench width 1.0 - 1.5 m	-	-	-	-	m	<b>20.82</b>
trench width over 1.5 m	-	-	-	-	m	<b>17.63</b>
Secondary blasting to boulders						
pop shooting	-	-	-	-	m	<b>7.52</b>
plaster shooting	-	-	-	-	m	<b>4.01</b>
<b>DEWATERING</b>						
The following unit costs are for dewatering pervious ground only and are for sets of equipment comprising:						
1 nr diesel driven pump (WP 150/60 or similar) complete with allowance of £50 for fuel	-	-	-	-	day	<b>91.44</b>
50 m of 150 mm diameter header pipe	-	-	-	-	day	<b>17.79</b>
35 nr of disposable well points	-	-	-	-	buy	<b>298.86</b>
18 m of delivery pipe	-	-	-	-	day	<b>7.85</b>
1 nr diesel driven standby pump	-	-	-	-	day	<b>61.83</b>
1 nr jetting pump with hoses (for installation of wellpoints only)	-	-	-	-	-	<b>102.87</b>
attendant labour and plant (2 hrs per day) inclusive of small dumper and bowser)	-	-	-	-	-	<b>29.43</b>
Costs are based on 10 hr shifts with attendant labour and plant (specialist advice)						

**CLASS E: EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Guide price for single set of equipment comprising pump, 150 mm diameter header pipe, 35 nr well points, delivery pipes and attendant labour and plant</b>						
Bring to site equipment and remove upon completion	-	-	-	-	sum	<b>2500.00</b>
Installation costs						
hire of jetting pump with hoses; 1 day	-	-	-	-	sum	<b>102.87</b>
purchase of well points; 35 Nr	-	-	-	-	sum	<b>298.86</b>
labour and plant; 10 hours	-	-	-	-	sum	<b>294.30</b>
Operating costs						
hire of pump, header pipe, delivery pipe and standby pump complete with fuel etc. and 2 hours attendant labour and plant	-	-	-	-	day	<b>237.77</b>

**CLASS F: IN SITU CONCRETE**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
The unit rates in this Section are based on nett measurements and appropriate adjustments should be made for unmeasured excess (e.g. additional blinding thickness as a result of ground conditions). The unit rates for the provision of concrete are based on ready mixed concrete in full loads delivered to site within 5 miles (8km) of the concrete mixing plant and include an allowance for wastage prior to placing. This section assumes optimum outputs of an efficiently controlled pour with no delays caused by out of sequence working and no abnormal conditions that would affect continuity of work.						
<b>RESOURCES - LABOUR</b>						
Concrete gang						
1 ganger or chargehand (skill rate 4)		14.28				
2 skilled operatives (skill rate 4)		26.64				
4 unskilled operatives (general)		49.76				
1 plant operator (skill rate 3) - 25% of time		4.05				
Total Gang Rate / Hour	£	<b>94.72</b>				
<b>RESOURCES - MATERIALS</b>						
<b>Misc</b>						
The following costs do not reflect in the rates and should be considered separately						
Delivery to site for each additional mile from the concrete plant further than 5 miles (8km)	-	-	-	1.38	m <sup>3</sup>	<b>1.38</b>
Mix design, per trial mix	-	-	-	229.13	mix	<b>229.13</b>
Part loads, per m <sup>3</sup> below full load	-	-	-	31.14	m <sup>3</sup>	<b>31.14</b>
Waiting time ( in excess of 6 mins/m <sup>3</sup> 'norm' discharge time)	-	-	-	67.56	hr	<b>67.56</b>
Making and testing concrete cube	0.69	8.56	-	-	nr	<b>8.56</b>
Pumping from ready mix truck to point of placing at the rate of 25 m <sup>3</sup> / hour	0.11	1.31	4.23	-	m <sup>3</sup>	<b>5.53</b>
Pumping from ready mix truck to point of placing at the rate of 45 m <sup>3</sup> / hour	0.05	0.63	4.45	-	m <sup>3</sup>	<b>5.07</b>
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Concrete</b>						
10t Crane (50% of time)			26.29			
1.00 m <sup>3</sup> concrete skip (50% of time)			0.97			
11.30 m <sup>3</sup> /min compressor, 2 tool			33.56			
four 54 mm poker vibrators			6.27			
Total Rate / Hour		£	<b>67.08</b>			



## CLASS F: IN SITU CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PROVISION OF CONCRETE</b>						
<b>Standard mix; cement to BS EN 197-1</b>						
Type ST1	-	-	-	91.53	m <sup>3</sup>	<b>91.53</b>
Type ST2	-	-	-	92.07	m <sup>3</sup>	<b>92.07</b>
Type ST3	-	-	-	92.52	m <sup>3</sup>	<b>92.52</b>
Type ST4	-	-	-	96.14	m <sup>3</sup>	<b>96.14</b>
Type ST5	-	-	-	97.75	m <sup>3</sup>	<b>97.75</b>
<b>Standard mix; sulphate resisting cement to BS 4027</b>						
Type ST1	-	-	-	101.35	m <sup>3</sup>	<b>101.35</b>
Type ST2	-	-	-	101.89	m <sup>3</sup>	<b>101.89</b>
Type ST3	-	-	-	102.34	m <sup>3</sup>	<b>102.34</b>
Type ST4	-	-	-	105.96	m <sup>3</sup>	<b>105.96</b>
Type ST5	-	-	-	107.57	m <sup>3</sup>	<b>107.57</b>
<b>Designed mix; cement to BS EN 197-1</b>						
<b>Grade C7.5</b>						
10 mm aggregate	-	-	-	96.06	m <sup>3</sup>	<b>96.06</b>
20 mm aggregate	-	-	-	94.19	m <sup>3</sup>	<b>94.19</b>
40 mm aggregate	-	-	-	93.59	m <sup>3</sup>	<b>93.59</b>
<b>Grade C10</b>						
10 mm aggregate	-	-	-	96.98	m <sup>3</sup>	<b>96.98</b>
20 mm aggregate	-	-	-	95.09	m <sup>3</sup>	<b>95.09</b>
40 mm aggregate	-	-	-	94.04	m <sup>3</sup>	<b>94.04</b>
<b>Grade C15</b>						
10 mm aggregate	-	-	-	97.46	m <sup>3</sup>	<b>97.46</b>
20 mm aggregate	-	-	-	95.56	m <sup>3</sup>	<b>95.56</b>
40 mm aggregate	-	-	-	94.48	m <sup>3</sup>	<b>94.48</b>
<b>Grade C20</b>						
10 mm aggregate	-	-	-	97.94	m <sup>3</sup>	<b>97.94</b>
20 mm aggregate	-	-	-	96.01	m <sup>3</sup>	<b>96.01</b>
40 mm aggregate	-	-	-	94.95	m <sup>3</sup>	<b>94.95</b>
<b>Grade C25</b>						
10 mm aggregate	-	-	-	100.61	m <sup>3</sup>	<b>100.61</b>
20 mm aggregate	-	-	-	98.68	m <sup>3</sup>	<b>98.68</b>
40 mm aggregate	-	-	-	97.59	m <sup>3</sup>	<b>97.59</b>
<b>Grade C30</b>						
10 mm aggregate	-	-	-	94.47	m <sup>3</sup>	<b>94.47</b>
20 mm aggregate	-	-	-	99.14	m <sup>3</sup>	<b>99.14</b>
40 mm aggregate	-	-	-	107.99	m <sup>3</sup>	<b>107.99</b>
<b>Grade C40</b>						
10 mm aggregate	-	-	-	108.40	m <sup>3</sup>	<b>108.40</b>
20 mm aggregate	-	-	-	98.07	m <sup>3</sup>	<b>98.07</b>
<b>Grade C50</b>						
10 mm aggregate	-	-	-	108.70	m <sup>3</sup>	<b>108.70</b>
20 mm aggregate	-	-	-	106.58	m <sup>3</sup>	<b>106.58</b>
<b>Grade C60</b>						
10 mm aggregate	-	-	-	108.93	m <sup>3</sup>	<b>108.93</b>
20 mm aggregate	-	-	-	108.60	m <sup>3</sup>	<b>108.60</b>

**CLASS F: IN SITU CONCRETE**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PROVISION OF CONCRETE - cont'd</b>						
<b>Designed mix; sulphate resisting cement to BS 4027</b>						
Grade C7.5						
10 mm aggregate	-	-	-	105.65	m <sup>3</sup>	<b>105.65</b>
20 mm aggregate	-	-	-	103.78	m <sup>3</sup>	<b>103.78</b>
40 mm aggregate	-	-	-	103.18	m <sup>3</sup>	<b>103.18</b>
Grade C10						
10 mm aggregate	-	-	-	106.72	m <sup>3</sup>	<b>106.72</b>
20 mm aggregate	-	-	-	104.84	m <sup>3</sup>	<b>104.84</b>
40 mm aggregate	-	-	-	103.79	m <sup>3</sup>	<b>103.79</b>
Grade C15						
10 mm aggregate	-	-	-	107.37	m <sup>3</sup>	<b>107.37</b>
20 mm aggregate	-	-	-	105.47	m <sup>3</sup>	<b>105.47</b>
40 mm aggregate	-	-	-	104.39	m <sup>3</sup>	<b>104.39</b>
Grade C20						
10 mm aggregate	-	-	-	107.94	m <sup>3</sup>	<b>107.94</b>
20 mm aggregate	-	-	-	106.01	m <sup>3</sup>	<b>106.01</b>
40 mm aggregate	-	-	-	104.95	m <sup>3</sup>	<b>104.95</b>
Grade C25						
10 mm aggregate	-	-	-	110.95	m <sup>3</sup>	<b>110.95</b>
20 mm aggregate	-	-	-	109.02	m <sup>3</sup>	<b>109.02</b>
40 mm aggregate	-	-	-	107.93	m <sup>3</sup>	<b>107.93</b>
Grade C30						
10 mm aggregate	-	-	-	104.97	m <sup>3</sup>	<b>104.97</b>
20 mm aggregate	-	-	-	109.63	m <sup>3</sup>	<b>109.63</b>
40 mm aggregate	-	-	-	118.48	m <sup>3</sup>	<b>118.48</b>
<b>Prescribed mix; cement to BS EN 197-1</b>						
Grade C7.5						
10 mm aggregate	-	-	-	107.55	m <sup>3</sup>	<b>107.55</b>
20 mm aggregate	-	-	-	102.18	m <sup>3</sup>	<b>102.18</b>
40 mm aggregate	-	-	-	106.92	m <sup>3</sup>	<b>106.92</b>
Grade C10						
10 mm aggregate	-	-	-	111.01	m <sup>3</sup>	<b>111.01</b>
20 mm aggregate	-	-	-	103.71	m <sup>3</sup>	<b>103.71</b>
40 mm aggregate	-	-	-	108.29	m <sup>3</sup>	<b>108.29</b>
Grade C15						
10 mm aggregate	-	-	-	113.36	m <sup>3</sup>	<b>113.36</b>
20 mm aggregate	-	-	-	106.24	m <sup>3</sup>	<b>106.24</b>
40 mm aggregate	-	-	-	110.94	m <sup>3</sup>	<b>110.94</b>
Grade C20						
10 mm aggregate	-	-	-	115.28	m <sup>3</sup>	<b>115.28</b>
20 mm aggregate	-	-	-	108.03	m <sup>3</sup>	<b>108.03</b>
40 mm aggregate	-	-	-	112.73	m <sup>3</sup>	<b>112.73</b>
Grade C25						
10 mm aggregate	-	-	-	114.99	m <sup>3</sup>	<b>114.99</b>
20 mm aggregate	-	-	-	109.85	m <sup>3</sup>	<b>109.85</b>
40 mm aggregate	-	-	-	113.85	m <sup>3</sup>	<b>113.85</b>
Grade C30						
10 mm aggregate	-	-	-	116.86	m <sup>3</sup>	<b>116.86</b>
20 mm aggregate	-	-	-	111.69	m <sup>3</sup>	<b>111.69</b>
40 mm aggregate	-	-	-	115.57	m <sup>3</sup>	<b>115.57</b>
Grade C40						
10 mm aggregate	-	-	-	122.38	m <sup>3</sup>	<b>122.38</b>
20 mm aggregate	-	-	-	117.00	m <sup>3</sup>	<b>117.00</b>

**CLASS F: IN SITU CONCRETE**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Grade C50						
10 mm aggregate	-	-	-	127.15	m <sup>3</sup>	<b>127.15</b>
20 mm aggregate	-	-	-	123.28	m <sup>3</sup>	<b>123.28</b>
Grade C60						
10 mm aggregate	-	-	-	128.66	m <sup>3</sup>	<b>128.66</b>
20 mm aggregate	-	-	-	130.21	m <sup>3</sup>	<b>130.21</b>
<b>Prescribed mix; sulphate resisting cement to BS 4027</b>						
Grade C7.5						
10 mm aggregate	-	-	-	117.14	m <sup>3</sup>	<b>117.14</b>
20 mm aggregate	-	-	-	111.77	m <sup>3</sup>	<b>111.77</b>
40 mm aggregate	-	-	-	116.51	m <sup>3</sup>	<b>116.51</b>
Grade C10						
10 mm aggregate	-	-	-	120.75	m <sup>3</sup>	<b>120.75</b>
20 mm aggregate	-	-	-	113.45	m <sup>3</sup>	<b>113.45</b>
40 mm aggregate	-	-	-	118.04	m <sup>3</sup>	<b>118.04</b>
Grade C15						
10 mm aggregate	-	-	-	123.27	m <sup>3</sup>	<b>123.27</b>
20 mm aggregate	-	-	-	116.14	m <sup>3</sup>	<b>116.14</b>
40 mm aggregate	-	-	-	120.84	m <sup>3</sup>	<b>120.84</b>
Grade C20						
10 mm aggregate	-	-	-	125.28	m <sup>3</sup>	<b>125.28</b>
20 mm aggregate	-	-	-	118.03	m <sup>3</sup>	<b>118.03</b>
40 mm aggregate	-	-	-	122.73	m <sup>3</sup>	<b>122.73</b>
Grade C25						
10 mm aggregate	-	-	-	125.32	m <sup>3</sup>	<b>125.32</b>
20 mm aggregate	-	-	-	120.18	m <sup>3</sup>	<b>120.18</b>
40 mm aggregate	-	-	-	124.18	m <sup>3</sup>	<b>124.18</b>
Grade C30						
10 mm aggregate	-	-	-	127.36	m <sup>3</sup>	<b>127.36</b>
20 mm aggregate	-	-	-	122.18	m <sup>3</sup>	<b>122.18</b>
40 mm aggregate	-	-	-	126.06	m <sup>3</sup>	<b>126.06</b>
<b>PLACING OF CONCRETE; MASS</b>						
Blinding; thickness						
ne 150 mm	0.18	17.05	0.72	-	m <sup>3</sup>	<b>17.77</b>
150 - 300 mm	0.16	15.16	2.07	-	m <sup>3</sup>	<b>17.23</b>
300 - 500 mm	0.14	13.26	3.41	-	m <sup>3</sup>	<b>16.67</b>
exceeding 500 mm	0.12	11.37	4.75	-	m <sup>3</sup>	<b>16.12</b>
Bases, footings, pile caps and ground slabs; thickness						
ne 150 mm	0.20	18.94	13.42	-	m <sup>3</sup>	<b>32.36</b>
150 - 300 mm	0.17	16.10	11.46	-	m <sup>3</sup>	<b>27.56</b>
300 - 500 mm	0.15	14.21	10.12	-	m <sup>3</sup>	<b>24.33</b>
exceeding 500 mm	0.14	13.26	9.40	-	m <sup>3</sup>	<b>22.66</b>
ADD to the above for placing against an excavated surface	0.03	2.37	1.65	-	m <sup>3</sup>	<b>4.02</b>
Walls; thickness						
ne 150 mm	0.21	19.89	14.14	-	m <sup>3</sup>	<b>34.03</b>
150 - 300 mm	0.15	14.21	10.12	-	m <sup>3</sup>	<b>24.33</b>
300 - 500 mm	0.13	12.31	8.77	-	m <sup>3</sup>	<b>21.09</b>
exceeding 500 mm	0.12	11.37	8.05	-	m <sup>3</sup>	<b>19.42</b>
ADD to the above for placing against an excavated surface	0.03	2.84	2.07	-	m <sup>3</sup>	<b>4.91</b>

**CLASS F: IN SITU CONCRETE**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PLACING OF CONCRETE; MASS - cont'd</b>						
Other concrete forms						
plinth 1000 x 1000 x 600 mm	0.33	31.26	22.19	-	m <sup>3</sup>	<b>53.45</b>
plinth 1500 x 1500 x 750 mm	0.25	23.68	16.83	-	m <sup>3</sup>	<b>40.51</b>
plinth 2000 x 2000 x 600 mm	0.20	18.94	13.42	-	m <sup>3</sup>	<b>32.36</b>
surround to precast concrete manhole chambers 200 mm thick	0.29	27.47	19.51	-	m <sup>3</sup>	<b>46.98</b>
<b>PLACING OF CONCRETE; REINFORCED</b>						
Bases, footings, pile caps and ground slabs; thickness						
ne 150 mm	0.21	19.89	14.14	-	m <sup>3</sup>	<b>34.03</b>
150 - 300 mm	0.18	17.05	12.08	-	m <sup>3</sup>	<b>29.13</b>
300 - 500 mm	0.16	15.16	10.73	-	m <sup>3</sup>	<b>25.89</b>
exceeding 500 mm	0.15	14.21	10.12	-	m <sup>3</sup>	<b>24.33</b>
Suspended slabs; thickness						
ne 150 mm	0.27	25.58	18.17	-	m <sup>3</sup>	<b>43.75</b>
150 - 300 mm	0.21	19.89	14.14	-	m <sup>3</sup>	<b>34.03</b>
300 - 500 mm	0.19	18.00	12.80	-	m <sup>3</sup>	<b>30.80</b>
exceeding 500 mm	0.19	18.00	12.80	-	m <sup>3</sup>	<b>30.80</b>
Walls; thickness						
ne 150 mm	0.29	27.47	19.51	-	m <sup>3</sup>	<b>46.98</b>
150 - 300 mm	0.22	20.84	14.76	-	m <sup>3</sup>	<b>35.60</b>
300 - 500 mm	0.20	18.94	13.42	-	m <sup>3</sup>	<b>32.36</b>
exceeding 500 mm	0.20	18.94	13.42	-	m <sup>3</sup>	<b>32.36</b>
Columns and piers; cross-sectional area						
ne 0.03 m <sup>2</sup>	0.50	47.36	33.55	-	m <sup>3</sup>	<b>80.91</b>
0.03 - 0.10 m <sup>2</sup>	0.40	37.89	26.84	-	m <sup>3</sup>	<b>64.73</b>
0.10 - 0.25 m <sup>2</sup>	0.35	33.15	23.54	-	m <sup>3</sup>	<b>56.69</b>
0.25 - 1.00 m <sup>2</sup>	0.35	33.15	23.54	-	m <sup>3</sup>	<b>56.69</b>
exceeding 1 m <sup>2</sup>	0.28	26.52	18.78	-	m <sup>3</sup>	<b>45.31</b>
Beams; cross-sectional area						
ne 0.03 m <sup>2</sup>	0.50	47.36	33.55	-	m <sup>3</sup>	<b>80.91</b>
0.03 - 0.10 m <sup>2</sup>	0.40	37.89	26.84	-	m <sup>3</sup>	<b>64.73</b>
0.10 - 0.25 m <sup>2</sup>	0.35	33.15	23.54	-	m <sup>3</sup>	<b>56.69</b>
0.25 - 1.00 m <sup>2</sup>	0.35	33.15	23.54	-	m <sup>3</sup>	<b>56.69</b>
exceeding 1 m <sup>2</sup>	0.28	26.52	18.78	-	m <sup>3</sup>	<b>45.31</b>
Casings to metal sections; cross-sectional area						
ne 0.03 m <sup>2</sup>	0.47	44.52	31.59	-	m <sup>3</sup>	<b>76.11</b>
0.03 - 0.10 m <sup>2</sup>	0.47	44.52	31.59	-	m <sup>3</sup>	<b>76.11</b>
0.10 - 0.25 m <sup>2</sup>	0.40	37.89	26.83	-	m <sup>3</sup>	<b>64.72</b>
0.25 - 1.00 m <sup>2</sup>	0.40	37.89	26.83	-	m <sup>3</sup>	<b>64.72</b>
exceeding 1 m <sup>2</sup>	0.35	33.15	23.54	-	m <sup>3</sup>	<b>56.69</b>
<b>PLACING OF CONCRETE; PRESTRESSED</b>						
Suspended slabs; thickness						
ne 150 mm	0.28	26.52	18.78	-	m <sup>3</sup>	<b>45.31</b>
150 - 300 mm	0.22	20.84	14.76	-	m <sup>3</sup>	<b>35.60</b>
300 - 500 mm	0.20	18.94	13.42	-	m <sup>3</sup>	<b>32.36</b>
exceeding 500 mm	0.19	18.00	12.80	-	m <sup>3</sup>	<b>30.80</b>
Beams; cross-sectional area						
ne 0.03 m <sup>2</sup>	0.50	47.36	33.55	-	m <sup>3</sup>	<b>80.91</b>
0.03 - 0.10 m <sup>2</sup>	0.40	37.89	26.84	-	m <sup>3</sup>	<b>64.73</b>
0.10 - 0.25 m <sup>2</sup>	0.35	33.15	23.54	-	m <sup>3</sup>	<b>56.69</b>
0.25 - 1.00 m <sup>2</sup>	0.35	33.15	23.54	-	m <sup>3</sup>	<b>56.69</b>
exceeding 1 m <sup>2</sup>	0.28	26.52	18.78	-	m <sup>3</sup>	<b>45.31</b>

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FORMWORK; ROUGH FINISH</b>						
Plane horizontal, width						
ne 0.1 m	0.10	6.32	2.96	2.28	m	<b>11.55</b>
0.1- 0.20 m	0.18	11.37	5.32	2.47	m	<b>19.16</b>
0.2 - 0.40 m	0.40	30.87	6.55	5.67	m <sup>2</sup>	<b>43.09</b>
0.4 - 1.22 m	0.40	30.87	6.55	5.67	m <sup>2</sup>	<b>43.09</b>
exceeding 1.22 m	0.38	29.33	6.22	5.67	m <sup>2</sup>	<b>41.22</b>
Plane sloping, width						
ne 0.1 m	0.11	6.95	3.25	2.28	m	<b>12.48</b>
0.1- 0.20 m	0.20	12.63	5.91	2.47	m	<b>21.02</b>
0.2 - 0.40 m	0.43	33.19	7.07	7.95	m <sup>2</sup>	<b>48.21</b>
0.4 - 1.22 m	0.43	33.19	7.07	7.95	m <sup>2</sup>	<b>48.21</b>
exceeding 1.22 m	0.38	29.33	6.22	7.95	m <sup>2</sup>	<b>43.50</b>
Plane battered, width						
ne 0.1 m	0.12	7.58	3.55	4.34	m	<b>15.46</b>
0.1- 0.20 m	0.20	12.63	5.91	4.53	m	<b>23.07</b>
0.2 - 0.40 m	0.43	33.19	7.17	10.58	m <sup>2</sup>	<b>50.94</b>
0.4 - 1.22 m	0.43	33.19	7.17	10.58	m <sup>2</sup>	<b>50.94</b>
exceeding 1.22 m	0.40	30.87	6.55	10.58	m <sup>2</sup>	<b>47.99</b>
Plane vertical, width						
ne 0.1 m	0.12	7.58	3.55	3.64	m	<b>14.76</b>
0.1- 0.20 m	0.19	12.00	5.62	3.83	m	<b>21.45</b>
0.2 - 0.40 m	0.70	54.02	11.46	8.74	m <sup>2</sup>	<b>74.22</b>
0.4 - 1.22 m	0.51	39.36	8.22	8.74	m <sup>2</sup>	<b>56.32</b>
exceeding 1.22 m	0.47	36.27	7.83	8.74	m <sup>2</sup>	<b>52.84</b>
Curved to one radius in one plane, 0.5 m radius, width						
ne 0.1 m	0.19	12.00	5.62	4.77	m	<b>22.40</b>
0.1- 0.20 m	0.25	15.79	7.39	4.97	m	<b>28.15</b>
0.2 - 0.40 m	0.90	69.46	14.73	9.88	m <sup>2</sup>	<b>94.07</b>
0.4 - 1.22 m	0.72	55.57	11.78	9.88	m <sup>2</sup>	<b>77.23</b>
exceeding 1.22 m	0.65	50.17	10.51	9.88	m <sup>2</sup>	<b>70.55</b>
Curved to one radius in one plane, 2 m radius, width						
ne 0.1 m	0.18	11.37	5.32	4.77	m	<b>21.46</b>
0.1- 0.20 m	0.22	13.90	6.50	4.97	m	<b>25.37</b>
0.2 - 0.40 m	0.84	64.83	13.75	9.88	m <sup>2</sup>	<b>88.45</b>
0.4 - 1.22 m	0.66	50.94	10.80	9.88	m <sup>2</sup>	<b>71.62</b>
exceeding 1.22 m	0.52	40.13	8.51	9.88	m <sup>2</sup>	<b>58.52</b>
For voids						
small void; depth ne 0.5 m	0.07	4.42	-	2.84	nr	<b>7.26</b>
small void; depth 0.5 - 1.0 m	0.12	7.58	-	5.47	nr	<b>13.05</b>
small void; depth ne 1.0 - 2.0 m	0.16	10.11	-	10.11	nr	<b>20.22</b>
large void; depth ne 0.5 m	0.14	8.84	-	8.47	nr	<b>17.32</b>
large void; depth 0.5 - 1.0 m	0.33	20.84	-	17.40	nr	<b>38.25</b>
large void; depth 1.0 - 2.0 m	0.58	36.64	-	35.13	nr	<b>71.77</b>
For concrete components of constant cross-section						
beams; 200 x 200 mm	0.48	30.32	14.19	4.13	m	<b>48.63</b>
beams; 500 x 500 mm	0.55	34.74	16.26	8.38	m	<b>59.38</b>
beams; 500 x 800 mm	0.67	42.32	19.81	9.45	m	<b>71.58</b>
columns; 200 x 200 mm	0.55	34.74	16.26	6.09	m	<b>57.09</b>
columns; 300 x 300 mm	0.55	34.74	16.26	8.19	m	<b>59.19</b>
columns; 300 x 500 mm	0.62	39.16	18.33	9.29	m	<b>66.78</b>
to walls; 1.0 m high thickness 250 mm	1.10	84.90	18.00	10.61	m	<b>113.51</b>
to walls; 1.5 m high thickness 300 mm	1.50	115.77	24.55	14.76	m	<b>155.08</b>
box culvert; 2 x 2 m internally and wall thickness 300 mm	4.50	347.30	73.64	106.94	m	<b>527.89</b>
projections (100 mm deep)	0.10	6.32	2.96	2.11	m	<b>11.38</b>
intrusions (100 mm deep)	0.10	6.32	2.96	2.11	m	<b>11.38</b>

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FORMWORK; ROUGH FINISH - cont'd</b>						
Allowance for additional craneage and rub up where required						
ADD to items measures linear	0.04	2.53	1.18	0.03	m	<b>3.74</b>
ADD to items measures m <sup>2</sup>	0.12	7.58	3.55	0.11	m <sup>2</sup>	<b>11.23</b>
<b>FORMWORK; FAIR FINISH</b>						
Plane horizontal, width						
ne 0.1 m	0.10	6.32	2.96	3.36	m	<b>12.63</b>
0.1- 0.20 m	0.18	11.37	5.32	3.60	m	<b>20.29</b>
0.2 - 0.40 m	0.40	30.87	6.55	10.26	m <sup>2</sup>	<b>47.68</b>
0.4 - 1.22 m	0.40	30.87	6.55	10.26	m <sup>2</sup>	<b>47.68</b>
exceeding 1.22 m	0.38	29.33	6.22	10.26	m <sup>2</sup>	<b>45.81</b>
Plane sloping, width						
ne 0.1 m	0.11	6.95	3.25	3.36	m	<b>13.56</b>
0.1- 0.20 m	0.20	12.63	3.27	3.60	m	<b>19.50</b>
0.2 - 0.40 m	0.43	33.19	22.45	16.67	m <sup>2</sup>	<b>72.31</b>
0.4 - 1.22 m	0.43	33.19	22.45	16.67	m <sup>2</sup>	<b>72.31</b>
exceeding 1.22 m	0.38	29.33	6.22	16.67	m <sup>2</sup>	<b>52.22</b>
Plane battered, width						
ne 0.1 m	0.12	7.58	3.55	6.45	m	<b>17.57</b>
0.1- 0.20 m	0.20	12.63	5.91	6.69	m	<b>25.23</b>
0.2 - 0.40 m	0.43	33.19	7.04	21.36	m <sup>2</sup>	<b>61.59</b>
0.4 - 1.22 m	0.43	33.19	7.04	21.36	m <sup>2</sup>	<b>61.59</b>
exceeding 1.22 m	0.40	30.87	6.55	21.36	m <sup>2</sup>	<b>58.78</b>
Plane vertical, width						
ne 0.1 m	0.12	7.58	3.55	5.75	m	<b>16.87</b>
0.1- 0.20 m	0.20	12.63	5.91	5.99	m	<b>24.53</b>
0.2 - 0.40 m	0.72	55.57	11.78	17.46	m <sup>2</sup>	<b>84.81</b>
0.4 - 1.22 m	0.53	40.90	8.68	17.46	m <sup>2</sup>	<b>67.04</b>
exceeding 1.22 m	0.48	37.05	7.86	17.46	m <sup>2</sup>	<b>62.36</b>
Curved to one radius in one plane, 0.5 m radius, width						
ne 0.1 m	0.20	12.63	5.91	8.95	m	<b>27.50</b>
0.1- 0.20 m	0.25	15.79	7.39	9.19	m	<b>32.38</b>
0.2 - 0.40 m	0.90	69.46	14.73	20.66	m <sup>2</sup>	<b>104.85</b>
0.4 - 1.22 m	0.72	55.57	11.78	20.66	m <sup>2</sup>	<b>88.01</b>
exceeding 1.22 m	0.65	50.17	10.64	20.66	m <sup>2</sup>	<b>81.47</b>
Curved to one radius in one plane, 2.0 m radius, width						
ne 0.1 m	0.18	11.37	5.32	8.95	m	<b>25.64</b>
0.1- 0.20 m	0.22	13.90	6.50	9.19	m	<b>29.59</b>
0.2 - 0.40 m	0.84	64.83	13.75	20.66	m <sup>2</sup>	<b>99.24</b>
0.4 - 1.22 m	0.66	50.94	10.80	20.66	m <sup>2</sup>	<b>82.40</b>
exceeding 1.22 m	0.52	40.13	8.51	20.66	m <sup>2</sup>	<b>69.30</b>
For voids, using void former						
small void; depth ne 0.5 m	0.07	4.42	-	3.61	nr	<b>8.03</b>
small void; depth 0.5 - 1.0 m	0.12	7.58	-	6.87	nr	<b>14.45</b>
small void; depth ne 1.0 - 2.0 m	0.16	10.11	-	13.11	nr	<b>23.22</b>
large void; depth ne 0.5 m	0.14	8.84	-	7.55	nr	<b>16.40</b>
large void; depth 0.5 - 1.0 m	0.33	20.84	-	15.71	nr	<b>36.55</b>
large void; depth 1.0 - 2.0 m	0.58	36.64	-	28.22	nr	<b>64.86</b>

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
For concrete components of constant cross-section						
beams; 200 x 200 mm	0.49	30.95	14.49	8.53	m	<b>53.97</b>
beams; 500 x 500 mm	0.57	36.00	16.85	14.63	m	<b>67.49</b>
beams; 500 x 800 mm	0.69	43.58	20.40	18.53	m	<b>82.52</b>
columns; 200 x 200 mm	0.57	36.00	16.85	10.58	m	<b>63.44</b>
columns; 300 x 300 mm	0.57	36.00	16.85	14.72	m	<b>67.58</b>
columns; 300 x 500 mm	0.64	40.43	18.92	17.25	m	<b>76.60</b>
to walls; 1.0 m high thickness 250 mm	1.20	92.61	19.64	19.79	m	<b>132.04</b>
to walls; 1.5 m high thickness 300 mm	1.60	123.49	26.18	28.53	m	<b>178.20</b>
box culvert; 2 x 2 m internally and wall thickness 300 mm	4.60	355.02	75.28	215.07	m	<b>645.37</b>
projections (100 mm deep)	0.10	6.32	2.96	4.40	m	<b>13.67</b>
intrusions (100 mm deep)	0.10	6.32	2.96	4.40	m	<b>13.67</b>
Allowance for additional craneage and rub up where required						
ADD to items measures linear	0.14	8.84	4.14	0.04	m	<b>13.02</b>
ADD to items measures m <sup>2</sup>	0.12	7.58	3.55	0.14	m <sup>2</sup>	<b>11.26</b>
<b>FORMWORK; EXTRA SMOOTH FINISH</b>						
Plane horizontal, width						
ne 0.1 m	0.10	6.32	2.96	3.49	m	<b>12.76</b>
0.1- 0.20 m	0.18	11.37	5.32	3.84	m	<b>20.54</b>
0.2 - 0.40 m	0.40	30.87	6.55	11.52	m <sup>2</sup>	<b>48.94</b>
0.4 - 1.22 m	0.40	30.87	6.55	11.52	m <sup>2</sup>	<b>48.94</b>
exceeding 1.22 m	0.38	29.33	6.21	11.52	m <sup>2</sup>	<b>47.06</b>
Plane sloping, width						
ne 0.1 m	0.11	6.95	3.25	3.49	m	<b>13.69</b>
0.1- 0.20 m	0.20	12.63	5.91	3.84	m	<b>22.39</b>
0.2 - 0.40 m	0.43	33.19	7.07	17.93	m <sup>2</sup>	<b>58.18</b>
0.4 - 1.22 m	0.43	33.19	7.07	17.93	m <sup>2</sup>	<b>58.18</b>
exceeding 1.22 m	0.38	29.33	6.22	17.93	m <sup>2</sup>	<b>53.48</b>
Plane battered, width						
ne 0.1 m	0.12	7.58	3.55	6.58	m	<b>17.71</b>
0.1- 0.20 m	0.20	12.63	5.91	6.93	m	<b>25.48</b>
0.2 - 0.40 m	0.43	33.19	7.07	22.62	m <sup>2</sup>	<b>62.87</b>
0.4 - 1.22 m	0.43	33.19	7.07	22.62	m <sup>2</sup>	<b>62.87</b>
exceeding 1.22 m	0.40	30.87	6.55	22.62	m <sup>2</sup>	<b>60.04</b>
Plane vertical, width						
ne 0.1 m	0.12	9.26	3.55	5.88	m	<b>18.69</b>
0.1- 0.20 m	0.20	12.63	5.91	6.23	m	<b>24.78</b>
0.2 - 0.40 m	0.74	57.11	12.11	18.72	m <sup>2</sup>	<b>87.94</b>
0.4 - 1.22 m	0.53	40.90	8.70	18.72	m <sup>2</sup>	<b>68.32</b>
exceeding 1.22 m	0.48	37.05	7.86	18.72	m <sup>2</sup>	<b>63.62</b>
Curved to one radius in one plane, 0.5 m radius, width						
ne 0.1 m	0.20	12.63	5.91	9.08	m	<b>27.63</b>
0.1- 0.20 m	0.25	15.79	7.39	6.23	m	<b>29.41</b>
0.2 - 0.40 m	0.90	69.46	14.73	21.92	m <sup>2</sup>	<b>106.11</b>
0.4 - 1.22 m	0.72	55.57	11.78	21.92	m <sup>2</sup>	<b>89.27</b>
exceeding 1.22 m	0.65	50.17	10.67	21.92	m <sup>2</sup>	<b>82.75</b>
Curved to one radius in one plane, 1.0 m radius, width						
ne 0.1 m	0.18	11.37	5.32	9.08	m	<b>25.77</b>
0.1- 0.20 m	0.22	13.90	6.50	6.23	m	<b>26.63</b>
0.2 - 0.40 m	0.84	64.83	24.30	21.92	m <sup>2</sup>	<b>111.05</b>
0.4 - 1.22 m	0.66	50.94	10.80	21.92	m <sup>2</sup>	<b>83.66</b>
exceeding 1.22 m	0.52	40.13	8.51	21.92	m <sup>2</sup>	<b>70.56</b>

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FORMWORK; EXTRA SMOOTH FINISH - cont'd</b>						
For voids, using void former						
small void; depth ne 0.5 m	0.07	4.42	-	6.07	nr	<b>10.49</b>
small void; depth 0.5 - 1.0 m	0.12	7.58	-	11.73	nr	<b>19.31</b>
small void; depth ne 1.0 - 2.0 m	0.16	10.11	-	22.27	nr	<b>32.37</b>
large void; depth ne 0.5 m	0.14	8.84	-	13.30	nr	<b>22.14</b>
large void; depth 0.5 - 1.0 m	0.33	20.84	-	26.07	nr	<b>46.92</b>
large void; depth 1.0 - 2.0 m	0.58	36.64	-	46.21	nr	<b>82.85</b>
For concrete components of constant cross-section						
beams; 200 x 200 mm	0.50	31.58	14.78	9.29	m	<b>55.65</b>
beams; 500 x 500 mm	0.57	36.00	9.31	16.52	m	<b>61.83</b>
beams; 500 x 800 mm	0.69	43.58	11.32	20.80	m	<b>75.71</b>
columns; 200 x 200 mm	0.57	36.00	9.31	11.59	m	<b>56.90</b>
columns; 300 x 300 mm	0.57	36.00	9.31	16.23	m	<b>61.54</b>
columns; 300 x 500 mm	0.64	40.43	10.47	19.27	m	<b>70.17</b>
to walls; 1.0 m high thickness 250 mm	1.20	92.61	19.64	22.31	m	<b>134.56</b>
to walls; 1.5 m high thickness 300 mm	1.60	123.49	26.18	32.30	m	<b>181.97</b>
box culvert; 2 x 2 m internally and wall thickness 300 mm	4.60	355.02	75.28	228.44	m	<b>658.74</b>
projections (100 mm deep)	0.10	6.32	2.96	4.65	m	<b>13.92</b>
intrusions (100 mm deep)	0.10	6.32	2.96	4.65	m	<b>13.92</b>
Allowance for additional craneage and rub up where required						
ADD to items measures linear	0.14	8.84	4.14	0.04	m	<b>13.02</b>
ADD to items measures m <sup>2</sup>	0.12	7.58	3.55	0.17	m <sup>2</sup>	<b>11.30</b>
<b>REINFORCEMENT</b>						
<b>Plain round mild steel bars to BS 4449</b>						
Bars; supplied in straight lengths						
6 mm nominal size	8.00	924.57	174.59	494.90	t	<b>1594.07</b>
8 mm nominal size	6.74	778.95	147.09	494.90	t	<b>1420.95</b>
10 mm nominal size	6.74	778.95	147.09	489.85	t	<b>1415.90</b>
12 mm nominal size	6.74	778.95	147.09	479.75	t	<b>1405.80</b>
16 mm nominal size	6.15	710.77	134.23	474.70	t	<b>1319.69</b>
20 mm nominal size	4.44	513.14	96.90	474.70	t	<b>1084.74</b>
25 mm nominal size	4.44	513.14	96.90	474.70	t	<b>1084.74</b>
32 mm nominal size	4.44	513.14	96.90	479.75	t	<b>1089.79</b>
40 mm nominal size	4.44	513.14	96.90	484.80	t	<b>1094.84</b>
Bars; supplied in bent and cut lengths						
6 mm nominal size	8.00	924.57	174.59	535.30	t	<b>1634.47</b>
8 mm nominal size	6.74	778.95	147.09	535.30	t	<b>1461.35</b>
10 mm nominal size	6.74	778.95	147.09	530.25	t	<b>1456.30</b>
12 mm nominal size	6.74	778.95	147.09	520.15	t	<b>1446.20</b>
16 mm nominal size	6.15	710.77	134.23	515.10	t	<b>1360.09</b>
20 mm nominal size	4.44	513.14	96.90	515.10	t	<b>1125.14</b>
25 mm nominal size	4.44	513.14	96.90	515.10	t	<b>1125.14</b>
32 mm nominal size	4.44	513.14	96.90	520.15	t	<b>1130.19</b>
40 mm nominal size	4.44	513.14	96.90	525.20	t	<b>1135.24</b>



**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Deformed high yield steel bars to BS 4449</b>						
Bars; supplied in straight lengths						
6 mm nominal size	8.00	924.57	174.59	515.10	t	<b>1614.27</b>
8 mm nominal size	6.74	778.95	147.09	515.10	t	<b>1441.15</b>
10 mm nominal size	6.74	778.95	147.09	510.05	t	<b>1436.10</b>
12 mm nominal size	6.74	778.95	147.09	499.95	t	<b>1426.00</b>
16 mm nominal size	6.15	710.77	134.23	494.90	t	<b>1339.89</b>
20 mm nominal size	4.44	513.14	96.90	494.90	t	<b>1104.94</b>
25 mm nominal size	4.44	513.14	96.90	494.90	t	<b>1104.94</b>
32 mm nominal size	4.44	513.14	96.90	499.95	t	<b>1109.99</b>
40 mm nominal size	4.44	513.14	96.90	505.00	t	<b>1115.04</b>
Bars; supplied in bent and cut lengths						
6 mm nominal size	8.00	924.57	174.59	555.50	t	<b>1654.67</b>
8 mm nominal size	6.74	778.95	147.09	550.45	t	<b>1476.50</b>
10 mm nominal size	6.74	778.95	147.09	550.45	t	<b>1476.50</b>
12 mm nominal size	6.74	778.95	147.09	540.35	t	<b>1466.40</b>
16 mm nominal size	6.15	710.77	134.23	535.30	t	<b>1380.29</b>
20 mm nominal size	4.44	513.14	96.90	535.30	t	<b>1145.34</b>
25 mm nominal size	4.44	513.14	96.90	535.30	t	<b>1145.34</b>
32 mm nominal size	4.44	513.14	96.90	540.35	t	<b>1150.39</b>
40 mm nominal size	4.44	513.14	96.90	545.40	t	<b>1155.44</b>
<b>Stainless steel bars</b>						
Bars; supplied in straight lengths						
8 mm nominal size	6.74	778.95	147.09	3250.00	t	<b>4176.05</b>
10 mm nominal size	6.74	778.95	147.09	3700.00	t	<b>4626.05</b>
12 mm nominal size	6.74	778.95	147.09	3250.00	t	<b>4176.05</b>
16 mm nominal size	6.15	710.77	134.23	3200.00	t	<b>4044.99</b>
20 mm nominal size	4.44	513.14	96.90	3100.00	t	<b>3710.04</b>
25 mm nominal size	4.44	513.14	96.90	3000.00	t	<b>3610.04</b>
32 mm nominal size	4.44	513.14	96.90	3000.00	t	<b>3610.04</b>
Bars; supplied in bent and cut lengths						
8 mm nominal size	6.74	778.95	147.09	3350.00	t	<b>4276.05</b>
10 mm nominal size	6.74	778.95	147.09	3800.00	t	<b>4726.05</b>
12 mm nominal size	6.74	778.95	147.09	3350.00	t	<b>4276.05</b>
16 mm nominal size	6.15	710.77	134.23	3300.00	t	<b>4144.99</b>
20 mm nominal size	4.44	513.14	96.90	3200.00	t	<b>3810.04</b>
25 mm nominal size	4.44	513.14	96.90	3100.00	t	<b>3710.04</b>
32 mm nominal size	4.44	513.14	96.90	3100.00	t	<b>3710.04</b>
<b>Additional allowances to bar reinforcement</b>						
Add to the above bars						
12-15 m long; mild steel to BS 4449	-	-	-	25.00	t	-
12-15 m long; high yield steel to BS 4449	-	-	-	18.00	t	-
Over 15 m long, per 500 mm increment; mild steel to BS 4449	-	-	-	10.00	t	-
Over 15 m long, per 500 mm increment; high yield steel to BS 4449	-	-	-	4.00	t	-
Add for cutting, bending, tagging and baling reinforcement on site						
6 mm nominal size	4.87	179.39	106.29	1.50	t	<b>287.18</b>
8 mm nominal size	4.58	168.70	99.95	1.50	t	<b>270.16</b>
10 mm nominal size	3.42	125.98	74.64	1.50	t	<b>202.11</b>
12 mm nominal size	2.55	93.93	55.66	1.50	t	<b>151.09</b>
16 mm nominal size	2.03	74.78	44.31	1.50	t	<b>120.59</b>
20 mm nominal size	1.68	61.88	36.66	1.50	t	<b>100.05</b>
25 mm nominal size	1.68	61.88	36.66	1.50	t	<b>100.05</b>
32 mm nominal size	1.39	51.20	30.34	1.50	t	<b>83.04</b>
40 mm nominal size	1.39	51.20	30.34	1.50	t	<b>83.04</b>

## CLASS G: CONCRETE ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>REINFORCEMENT - cont'd</b>						
<b>Special joints</b>						
Lenton type A couplers; threaded ends on reinforcing bars						
12 mm	0.09	10.40	-	11.34	nr	21.74
16 mm	0.09	10.40	-	13.08	nr	23.48
20 mm	0.09	10.40	-	18.70	nr	29.11
25 mm	0.09	10.40	-	25.43	nr	35.84
32 mm	0.09	10.40	-	35.00	nr	45.40
40 mm	0.09	10.40	-	48.35	nr	58.75
Lenton type B couplers; threaded ends on reinforcing bars						
12 mm	0.09	10.40	-	32.79	nr	43.19
16 mm	0.09	10.40	-	37.54	nr	47.94
20 mm	0.09	10.40	-	41.60	nr	52.01
25 mm	0.09	10.40	-	48.04	nr	58.44
32 mm	0.09	10.40	-	64.95	nr	75.35
40 mm	0.09	10.40	-	95.32	nr	105.72
<b>Steel fabric to BS 4483</b>						
Fabric						
nominal mass 0.77 kg/m <sup>2</sup> ; ref D49	0.02	2.31	0.44	1.90	m <sup>2</sup>	4.65
nominal mass 1.54 kg/m <sup>2</sup> ; ref D98	0.02	2.31	0.44	1.90	m <sup>2</sup>	4.65
nominal mass 1.54 kg/m <sup>2</sup> ; ref A98	0.03	3.47	0.66	1.74	m <sup>2</sup>	5.87
nominal mass 2.22 kg/m <sup>2</sup> ; ref A142	0.03	3.47	0.66	1.79	m <sup>2</sup>	5.92
nominal mass 2.61 kg/m <sup>2</sup> ; ref C283	0.03	3.47	0.66	2.13	m <sup>2</sup>	6.26
nominal mass 3.02 kg/m <sup>2</sup> ; ref A193	0.04	4.62	0.87	2.45	m <sup>2</sup>	7.95
nominal mass 3.05 kg/m <sup>2</sup> ; ref B196	0.04	4.62	0.87	2.47	m <sup>2</sup>	7.97
nominal mass 3.41 kg/m <sup>2</sup> ; ref C385	0.04	4.62	0.87	2.78	m <sup>2</sup>	8.28
nominal mass 3.73 kg/m <sup>2</sup> ; ref B283	0.04	4.62	0.87	3.05	m <sup>2</sup>	8.54
nominal mass 3.95 kg/m <sup>2</sup> ; ref A252	0.04	4.62	0.87	3.19	m <sup>2</sup>	8.68
nominal mass 4.34 kg/m <sup>2</sup> ; ref C503	0.05	5.78	1.10	3.53	m <sup>2</sup>	10.41
nominal mass 4.35 kg/m <sup>2</sup> ; ref B385	0.05	5.78	1.10	3.67	m <sup>2</sup>	10.55
nominal mass 5.55 kg/m <sup>2</sup> ; ref C636	0.05	5.78	1.10	4.52	m <sup>2</sup>	11.40
nominal mass 5.93 kg/m <sup>2</sup> ; ref B503	0.05	5.78	1.10	4.82	m <sup>2</sup>	11.70
nominal mass 6.16 kg/m <sup>2</sup> ; ref A393	0.07	8.09	1.54	4.99	m <sup>2</sup>	14.62
nominal mass 6.72 kg/m <sup>2</sup> ; ref C785	0.07	8.09	1.54	5.42	m <sup>2</sup>	15.04
nominal mass 8.14 kg/m <sup>2</sup> ; ref B785	0.08	9.25	1.75	6.59	m <sup>2</sup>	17.58
nominal mass 10.90 kg/m <sup>2</sup> ; ref B1131	0.09	10.40	1.97	8.83	m <sup>2</sup>	21.21
<b>RESOURCES - LABOUR</b>						
<b>Misc</b>						
<b>Formwork gang - small areas</b>						
1 foreman joiner (craftsman)		22.32				
1 joiner (craftsman)		19.15				
1 unskilled operative (general)		12.44				
1 plant operator (craftsman) - 50% of time		10.34				
Total Gang Rate / Hour	£	64.25				
<b>Formwork gang - large areas</b>						
1 foreman joiner (craftsman)		22.32				
2 joiners (craftsman)		38.30				
1 unskilled operative (general)		12.44				
1 plant operator (craftsman) - 25% of time		5.17				
Total Gang Rate / Hour	£	78.23				

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Reinforcement gang</b>						
1 foreman steel fixer (craftsman)		22.32				
4 steel fixers (craftsman)		76.60				
1 unskilled operative (general)		12.44				
1 plant operator (craftsman) - 25% of time		5.17				
Total Gang Rate / Hour		£ 116.53				
<b>Reinforcement - on-site bending/baling gang</b>						
1 steel fixer (craftsman)		19.15				
1 unskilled operative (general)		12.44				
1 plant operator (craftsman) - 25% of time		5.17				
Total Gang Rate / Hour		£ 36.76				
<b>Joints gang</b>						
1 ganger/chargehand (skill rate 4)		13.32				
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		£ 39.08				
<b>Concrete accessories gang</b>						
1 ganger/chargehand (skill rate 4)		13.32				
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		£ 39.08				
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Formwork - small areas</b>						
20t crawler crane - 50% of time			26.39			
22" diameter saw bench			2.08			
allowance for small power tools			1.09			
Total Rate / Hour		£	29.56			
<b>Formwork - large areas</b>						
20t crawler crane - 25% of time			13.19			
22" diameter saw bench			2.08			
allowance for small power tools			1.09			
Total Rate / Hour		£	16.37			
<b>Reinforcement</b>						
30 t crawler crane - 25% of time			15.78			
bar cropper			4.17			
small power tools			0.84			
support acrows, tiffors, kentledge, etc.			1.03			
Total Rate / Hour		£	21.82			

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - MATERIALS</b>						
<b>Formwork</b>						
Formwork materials include for shutter, bracing, ties, support, kentledge and all consumables. The following unit costs do not include for formwork outside the payline and are based on an optimum of a minimum 8 uses with 10% per use towards the cost of repairs / replacement of components damaged during disassembly ADD to formwork material costs generally depending on the number of uses :						
	Nr of uses	% Addition	% Waste			
	1	+ 90 to 170	+7			
	2	+ 50 to 80	+7			
	3	+ 15 to 30	+6			
	6	+ 5 to 10	+6			
	8	No change	+5			
	10	- 5 to 7	+5			
<b>Reinforcement</b>						
Reinforcement materials include for bars, tying wire, spacers, couplers and steel supports for bottom layer reinforcement (stools, chairs and risers).						
<b>JOINTS</b>						
<b>Misc</b>						
Open surface plain; average width						
	ne 0.5m; scabbling concrete for subsequent pour	0.04	1.56	1.67	-	m <sup>2</sup> <b>3.23</b>
	0.5 - 1m; scabbling concrete for subsequent pour	0.03	1.17	1.29	-	m <sup>2</sup> <b>2.46</b>
Open surface with filler; average width						
	ne 0.5m; 12mm Flexcell joint filler	0.04	1.56	1.67	3.40	m <sup>2</sup> <b>6.63</b>
	0.5 - 1m; 12mm Flexcell joint filler	0.04	1.56	1.67	3.40	m <sup>2</sup> <b>6.63</b>
	ne 0.5m; 19mm Flexcell joint filler	0.05	1.96	2.06	5.85	m <sup>2</sup> <b>9.86</b>
	0.5 - 1m; 19mm Flexcell joint filler	0.05	1.96	2.06	5.85	m <sup>2</sup> <b>9.86</b>
Formed surface plain; average width (including formwork)						
	ne 0.5m	0.24	9.38	9.99	8.43	m <sup>2</sup> <b>27.81</b>
	0.5 - 1.0m	0.24	9.38	9.99	8.43	m <sup>2</sup> <b>27.81</b>
Formed surface with filler; average width						
	ne 0.5m; 10mm Flexcell joint filler	0.40	15.64	12.55	11.83	m <sup>2</sup> <b>40.02</b>
	0.5 - 1m; 10mm Flexcell joint filler	0.41	16.03	17.05	11.83	m <sup>2</sup> <b>44.91</b>
	ne 0.5m; 19mm Flexcell joint filler	0.42	16.42	17.55	14.28	m <sup>2</sup> <b>48.25</b>
	0.5 - 1m; 19mm Flexcell joint filler	0.43	16.81	17.94	14.28	m <sup>2</sup> <b>49.04</b>
	ne 0.5m; 25mm Flexcell joint filler	0.45	17.60	18.71	15.86	m <sup>2</sup> <b>52.17</b>
	0.5 - 1m; 25mm Flexcell joint filler	0.47	18.38	19.61	15.86	m <sup>2</sup> <b>53.85</b>

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PVC</b>						
Plastics or rubber waterstops						
160 mm centre bulb	0.04	1.56	-	2.02	m	<b>3.58</b>
junction piece	0.04	1.56	-	40.53	nr	<b>42.09</b>
210 mm centre bulb	0.05	1.96	-	5.55	m	<b>7.51</b>
junction piece	0.04	1.56	-	79.59	nr	<b>81.15</b>
260 mm centre bulb	0.05	1.96	-	7.33	m	<b>9.28</b>
junction piece	0.05	1.96	-	8.04	nr	<b>10.00</b>
170 mm flat dumbell	0.04	1.56	-	4.42	m	<b>5.98</b>
junction piece	0.05	1.96	-	54.60	nr	<b>56.56</b>
210 mm flat dumbell	0.04	1.56	-	5.73	m	<b>7.30</b>
junction piece	0.07	2.74	-	61.42	nr	<b>64.16</b>
250 mm flat dumbell	0.05	1.96	-	7.19	m	<b>9.15</b>
junction piece	0.09	3.52	-	112.51	nr	<b>116.03</b>
<b>Polysulphide sealant; gun grade</b>						
Sealed rebates or grooves						
10 x 20 mm	0.05	1.96	-	-	m	<b>1.96</b>
20 x 20 mm	0.07	2.74	-	0.01	m	<b>2.74</b>
25 x 20 mm	0.08	3.13	-	0.01	m	<b>3.14</b>
<b>Mild steel</b>						
Dowels, plain or greased						
12 mm diameter x 500 mm long	0.04	1.56	-	0.54	nr	<b>2.10</b>
16 mm diameter x 750 mm long	0.05	1.76	-	1.49	nr	<b>3.25</b>
20 mm diameter x 750 mm long	0.05	1.76	-	2.34	nr	<b>4.10</b>
25 mm diameter x 750 mm long	0.05	1.76	-	3.64	nr	<b>5.40</b>
32 mm diameter x 750 mm long	0.05	1.76	-	5.99	nr	<b>7.74</b>
Dowels, sleeved or capped						
12 mm diameter x 500 mm long, debonding agent for 250 mm and capped with pvc dowel cap	0.05	1.76	-	0.55	nr	<b>2.31</b>
16 mm diameter x 750 mm long, debonding agent for 375 mm and capped with pvc dowel cap	0.05	2.07	-	1.50	nr	<b>3.58</b>
20 mm diameter x 750 mm long, debonding agent for 375 mm and capped with pvc dowel cap	0.05	2.07	-	2.35	nr	<b>4.43</b>
25 mm diameter x 750 mm long, debonding agent for 375 mm and capped with pvc dowel cap	0.06	2.35	-	3.66	nr	<b>6.00</b>
32 mm diameter x 750 mm long, debonding agent for 375 mm and capped with pvc dowel cap	0.07	2.54	-	6.00	nr	<b>8.54</b>

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>POST-TENSIONED PRESTRESSING</b>						
The design of prestressing is based on standard patented systems, each of which has produced its own method of anchoring, joining and stressing the cables or wires. The companies marketing the systems will either supply all the materials and fittings required together with the sale or hire of suitable jacks and equipment for prestressing and grouting or they will undertake to complete the work on a subcontract basis. The rates given below are therefore indicative only of the probable labour and plant costs and do not include for any permanent materials. The advice of specialist contractors should be sought for more accurate rates based on the design for a particular contract. Pretensioned prestressing is normally used only in the manufacture of precast units utilising special beds set up in the supplier's factory. Labour and plant cost in post-tensioning; material cost excluded						
form ducts to profile including supports and fixings; 50 mm internal diameter	1.00	1.32	3.57	-	m	<b>4.89</b>
Extra for grout vents	1.00	6.58	-	-	nr	<b>6.58</b>
form ducts to profile including supports and fixings; 80 mm internal diameter	1.00	2.06	4.19	-	m	<b>6.25</b>
Extra for grout vents	1.00	6.58	-	-	nr	<b>6.58</b>
form ducts to profile including supports and fixings; 100 mm internal diameter	1.00	2.82	4.41	-	m	<b>7.23</b>
Extra for grout vents	1.00	6.58	-	-	nr	<b>6.58</b>
grout ducts including provision of equipment; 50 mm internal diameter	1.00	1.96	0.62	-	m	<b>2.58</b>
grout ducts including provision of equipment; 80 mm internal diameter	1.00	1.96	0.78	-	m	<b>2.74</b>
grout ducts including provision of equipment; 100 mm internal diameter	1.00	2.68	0.92	-	m	<b>3.60</b>
form tendons including spacers etc. and pull through ducts; 7 Nr strands	0.25	7.60	4.23	-	m	<b>11.83</b>
form tendons including spacers etc. and pull through ducts; 12 Nr strands	0.45	13.68	7.62	-	m	<b>21.29</b>
form tendons including spacers etc. and pull through ducts; 19 Nr strands	0.65	19.75	11.00	-	m	<b>30.76</b>
dead end anchorage; 7 Nr strands	0.75	22.79	12.69	-	nr	<b>35.49</b>
dead end anchorage; 12 Nr strands	0.95	28.87	16.08	-	nr	<b>44.95</b>
dead end anchorage; 19 Nr strands	1.15	34.95	19.46	-	nr	<b>54.42</b>
looped buried dead end anchorage; 7 Nr strands	0.50	15.20	8.46	-	nr	<b>23.66</b>
looped buried dead end anchorage; 12 Nr strands	0.66	20.06	11.17	-	nr	<b>31.23</b>
looped buried dead end anchorage; 19 Nr strands	0.89	27.05	15.06	-	nr	<b>42.11</b>
end anchorage including reinforcement; 7 Nr strands	1.67	50.75	28.27	-	nr	<b>79.02</b>
add to last for anchorage coupling	0.46	13.98	7.79	-	nr	<b>21.77</b>
end anchorage including reinforcement; 12 Nr strands	2.04	62.00	34.53	-	nr	<b>96.53</b>
add to last for anchorage coupling	0.79	24.01	13.37	-	nr	<b>37.38</b>
end anchorage including reinforcement; 19 Nr strands	2.56	77.80	43.33	-	nr	<b>121.13</b>
add to last for anchorage coupling	1.20	36.47	20.31	-	nr	<b>56.78</b>
stress and lock off including multimatic jack; 7 Nr strands	3.21	97.56	54.33	-	nr	<b>151.89</b>

**CLASS G: CONCRETE ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
stress and lock off including multimatic jack; 12 Nr strands	4.19	127.34	70.92	-	nr	<b>198.26</b>
stress and lock off including multimatic jack; 19 Nr strands	5.58	169.59	94.45	-	nr	<b>264.03</b>
cut off and seal ends of tendons; 7 Nr strands	0.20	6.08	3.39	-	nr	<b>9.46</b>
cut off and seal ends of tendons; 12 Nr strands	0.35	10.64	5.92	-	nr	<b>16.56</b>
cut off and seal ends of tendons; 19 Nr strands	0.55	16.72	9.31	-	nr	<b>26.02</b>
<b>CONCRETE ACCESSORIES</b>						
Finishing of top surfaces						
wood float; level	0.02	0.78	-	-	m <sup>2</sup>	<b>0.78</b>
wood float; falls or cross-falls	0.03	1.17	-	-	m <sup>2</sup>	<b>1.17</b>
steel trowel; level	0.03	1.17	-	-	m <sup>2</sup>	<b>1.17</b>
wood float; falls or cross-falls	0.03	1.17	-	-	m <sup>2</sup>	<b>1.17</b>
steel trowel; falls or cross-falls	0.05	1.96	-	-	m <sup>2</sup>	<b>1.96</b>
granolithic finish 20 mm thick laid monolithically	0.07	2.74	0.83	8.74	m <sup>2</sup>	<b>12.31</b>
Finishing of formed surfaces						
aggregate exposure using retarder	0.05	1.96	-	0.70	m <sup>2</sup>	<b>2.66</b>
bush hammering; kango hammer	0.28	10.95	5.83	-	m <sup>2</sup>	<b>16.78</b>
rubbing down concrete surfaces after striking shutters	0.02	0.78	-	1.05	m <sup>2</sup>	<b>1.83</b>
Inserts totally within the concrete volume						
HDPE conduit 20 mm diameter	0.10	3.91	-	0.33	m	<b>4.24</b>
black enamelled steel conduit 20 mm diameter	0.10	3.91	-	1.30	m	<b>5.21</b>
galvanised steel conduit 20 mm diameter	0.10	3.91	-	2.11	m	<b>6.02</b>
Unistrut channel type P3270	0.20	7.82	-	10.62	m	<b>18.44</b>
Unistrut channel type P3370	0.20	7.82	-	8.82	m	<b>16.64</b>
Inserts projecting from surface(s) of the concrete						
expanding bolt; 10 mm diameter x 25 mm deep	0.05	1.96	-	6.61	nr	<b>8.57</b>
holding down bolt; 16 mm diameter x 250 mm deep	0.25	9.78	-	2.52	nr	<b>12.30</b>
holding down bolt; 16 mm diameter x 350 mm deep	0.25	9.78	-	3.53	nr	<b>13.30</b>
holding down bolt; 20 mm diameter x 250 mm deep	0.25	9.78	-	3.40	nr	<b>13.18</b>
holding down bolt; 20 mm diameter x 450 mm deep	0.25	9.78	-	5.72	nr	<b>15.50</b>
vitrified clay pipe to BS 65; 100 mm diameter x 1000 mm long	0.25	9.78	-	5.34	nr	<b>15.12</b>
cast iron pipe to BS 437; 100 mm diameter x 1000 mm long	0.25	9.78	-	1.98	nr	<b>11.76</b>
Grouting under plates; cement and sand (1:3)						
area ne 0.1 m <sup>2</sup>	0.10	3.91	-	0.24	nr	<b>4.15</b>
area 0.1 - 0.5 m <sup>2</sup>	0.45	17.60	-	1.16	nr	<b>18.76</b>
area 0.5 - 1.0 m <sup>2</sup>	0.78	30.50	-	2.31	nr	<b>32.81</b>
Grouting under plates; non-shrink cementitious grout						
area ne 0.1 m <sup>2</sup>	0.10	3.91	-	4.28	nr	<b>8.19</b>
area 0.1 - 0.5 m <sup>2</sup>	0.45	17.60	-	41.11	nr	<b>58.71</b>
area 0.5 - 1.0 m <sup>2</sup>	0.78	30.50	-	82.22	nr	<b>112.73</b>

**CLASS H: PRECAST CONCRETE**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
The cost of precast concrete items is very much dependant on the complexity of the moulds, the number of units to be cast from each mould and the size and weight of the unit to be handled. The unit rates below are for standard precast items that are often to be found on a civil engineering project. It would be misleading to quote for indicative costs for tailor-made precast concrete units and it is advisable to contact Specialist Manufacturers for guide prices.						
<b>BEAMS</b>						
<b>Concrete mix C20</b>						
Beams						
100 x 150 x 1050 mm long	1.00	5.74	-	13.38	nr	<b>19.11</b>
225 x 150 x 1200 mm long	1.00	7.99	1.90	38.68	nr	<b>48.57</b>
225 x 225 x 1800 mm long	1.00	10.20	3.96	68.65	nr	<b>82.81</b>
<b>PRESTRESSED PRE-TENSIONED BEAMS</b>						
<b>Concrete mix C20</b>						
Beams						
100 x 65 x 1050 mm long	1.00	3.72	-	6.09	nr	<b>9.81</b>
265 x 65 x 1800 mm long	1.00	4.65	2.53	22.96	nr	<b>30.14</b>
<b>Bridge beams</b>						
Inverted 'T' Beams, flange width 495 mm						
section T1; 8 m long, 380 mm deep; mass 1.88t	-	-	-	-	nr	<b>908.50</b>
section T2; 9 m long, 420 mm deep; mass 2.29t	-	-	-	-	nr	<b>1092.50</b>
section T3; 11 m long, 535 mm deep; mass 3.02t	-	-	-	-	nr	<b>1282.25</b>
section T4; 12 m long, 575 mm deep; mass 3.54t	-	-	-	-	nr	<b>1426.00</b>
section T5; 13 m long, 615 mm deep; mass 4.08t	-	-	-	-	nr	<b>1472.00</b>
section T6; 13 m long, 655 mm deep; mass 4.33t	-	-	-	-	nr	<b>1472.00</b>
section T7; 14 m long, 695 mm deep; mass 4.95t	-	-	-	-	nr	<b>1707.75</b>
section T8; 15 m long, 735 mm deep; mass 5.60t	-	-	-	-	nr	<b>1851.50</b>
section T9; 16 m long, 775 mm deep; mass 6.28t	-	-	-	-	nr	<b>1995.25</b>
section T10; 18 m long, 815 mm deep; mass 7.43t	-	-	-	-	nr	<b>2231.00</b>
'M' beams, flange width 970 mm						
section M2; 17 m long, 720 mm deep; mass 12.95t	-	-	-	-	nr	<b>4847.25</b>
section M3; 18 m long, 800 mm deep; mass 15.11t	-	-	-	-	nr	<b>4559.75</b>
section M6; 22 m long, 1040 mm deep; mass 20.48t	-	-	-	-	nr	<b>7314.00</b>
section M8; 25 m long, 1200 mm deep; mass 23.68t	-	-	-	-	nr	<b>9499.00</b>
'U' beams, base width 970 mm						
section U3; 16 m long, 900 mm deep; mass 19.24t	-	-	-	-	nr	<b>8170.75</b>
section U5; 20 m long, 1000 mm deep; mass 25.64t	-	-	-	-	nr	<b>10447.75</b>
section U8; 24 m long, 1200 mm deep; mass 34.56t	-	-	-	-	nr	<b>14156.50</b>
section U12; 30 m long, 1600 mm deep; mass 52.74t	-	-	-	-	nr	<b>19377.50</b>



**CLASS H: PRECAST CONCRETE**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SLABS</b>						
<b>Prestressed precast concrete flooring planks; Bison or similar; cement mortar grout between planks on bearings</b>						
100 mm thick floor						
400 mm wide planks	0.21	11.03	20.05	38.30	m <sup>2</sup>	<b>69.38</b>
1200 mm wide planks	0.12	6.15	11.18	39.40	m <sup>2</sup>	<b>56.73</b>
150 mm thick floor						
400 mm wide planks	0.26	13.79	25.07	38.30	m <sup>2</sup>	<b>77.15</b>
1200 mm wide planks	0.14	7.69	13.98	39.40	m <sup>2</sup>	<b>61.07</b>
<b>SEGMENTAL UNITS</b>						
<b>COPINGS, SILLS AND WEIR BLOCKS</b>						
<b>Concrete mix C30</b>						
Coping; weathered and throated						
178 x 64 mm	1.00	8.41	4.72	9.00	m	<b>22.13</b>
305 x 76 mm	1.00	6.33	3.37	18.31	m	<b>28.00</b>

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
The rates assume the most efficient items of plant (excavator) and are optimum rates assuming continuous output with no delays caused by other operations or works. Ground conditions are assumed to be good easily worked soil with no abnormal conditions that would affect outputs and consistency of work. Multiplier Table for labour and plant for various site conditions for working: out of sequence x 2.75 (minimum) in hard clay x 1.75 to 2.00 in running sand x 2.75 (minimum) in broken rock x 2.75 to 3.50 below water table x 2.00 (minimum)						
<b>Variance from CESMM3</b> Fittings are included with the pipe concerned, for convenience of reference, rather than in Class J.						
<b>RESOURCES - LABOUR</b>						
<b>Misc</b>						
<b>Drainage / pipework gang (small bore)</b>						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)		16.19				
1 plant operator (skill rate 3) - 50% of time		8.10				
Total Gang Rate/Hour		£ 69.62				
<b>Drainage / pipework gang (small bore - not in trenches)</b>						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
Total Gang Rate/Hour		£ 45.34				
<b>Drainage / pipework gang (large bore)</b>						
Note: relates to pipes exceeding 700 mm diameter.						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate/Hour		£ 61.53				
<b>Drainage / pipework gang (large bore - not in trenches)</b>						
Note: relates to pipes exceeding 700 mm diameter.						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
Total Gang Rate/Hour		£ 45.34				

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT</b>						
<b>Field drains</b>						
0.4 m <sup>3</sup> hydraulic backacter			35.24			
2t dumper - 30% of time			2.62			
Stihl saw, 12", petrol - 30% of time			0.64			
small pump - 30% of time			1.30			
Total Rate / Hour		£	<b>39.79</b>			
Add to the above for trench supports appropriate to trench depth (see below).						
<b>Field drains (not in trenches)</b>						
2t dumper - 30% of time			2.62			
Stihl saw, 12", petrol - 30% of time			0.64			
Total Rate / Hour		£	<b>3.25</b>			
<b>Drains/sewers (small bore)</b>						
1.0 m <sup>3</sup> hydraulic backacter			46.28			
2t dumper - 30% of time			2.62			
2.80 m <sup>3</sup> /min compressor, 2 tool - 30% of time			3.67			
disc saw - 30% of time			0.42			
extra 50ft / 15m hose - 30% of time			0.02			
small pump - 30% of time			1.30			
sundry tools - 30% of time			0.39			
Total Rate / Hour		£	<b>54.69</b>			
Add to the above for trench supports appropriate to trench depth (see below).						
<b>Drains/sewers (small bore - not in trenches)</b>						
2t dumper - 30% of time			2.62			
2.80 m <sup>3</sup> /min compressor, 2 tool - 30% of time			3.67			
disc saw - 30% of time			0.42			
extra 50ft / 15m hose - 30% of time			0.02			
sundry tools - 30% of time			0.39			
Total Rate / Hour		£	<b>7.11</b>			
<b>Drains/sewers (large bore)</b>						
1.0 m <sup>3</sup> hydraulic backacter			46.28			
20t crawler crane - 50% of time			26.39			
2t dumper (30% of time)			2.62			
2.80 m <sup>3</sup> /min compressor, 2 tool - 30% of time			3.67			
disc saw - 30% of time			0.42			
extra 50ft / 15m hose - 30% of time			0.02			
small pump - 30% of time			1.30			
sundry tools - 30% of time			0.39			
Total Rate / Hour		£	<b>81.08</b>			
Add to the above for trench supports appropriate to trench depth (see below).						
<b>Drains/sewers (large bore - not in trenches)</b>						
2t dumper (30% of time)			2.62			
2.80 m <sup>3</sup> /min compressor, 2 tool - 30% of time			3.67			
disc saw - 30% of time			0.42			
extra 50ft / 15m hose - 30% of time			0.02			
sundry tools - 30% of time			0.39			
Total Rate / Hour		£	<b>7.11</b>			

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT - cont'd</b>						
<b>Trench supports</b>						
In addition to the above, the following allowances for close sheeted trench supports are included in the following unit rates, assuming that the ground conditions warrants it:						
ne 1.50 m deep	-	-	-	-	-	-
1.50 - 2.00 m deep	-	-	3.54	-	m	3.54
2.00 - 2.50 m deep	-	-	4.94	-	m	4.94
2.50 - 3.00 m deep	-	-	4.72	-	m	4.72
3.00 - 3.50 m deep	-	-	5.94	-	m	5.94
3.50 - 4.00 m deep	-	-	7.23	-	m	7.23
4.00 - 4.50 m deep	-	-	8.13	-	m	8.13
4.50 - 5.00 m deep	-	-	9.05	-	m	9.05
5.00 - 5.50 m deep	-	-	15.44	-	m	15.44
	-	-	21.26	-	m	21.26
<b>CLAY PIPES</b>						
<b>Field drains to BS 1196, butt joints, nominal bore; excavation and supports, backfilling</b>						
75 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.07	5.04	m	7.83
ne 1.50 m deep	0.09	6.28	3.60	5.04	m	14.91
1.50 - 2.00 m deep	0.13	9.06	5.19	5.04	m	19.29
2.00 - 2.50 m deep	0.18	12.55	7.20	5.04	m	24.78
2.50 - 3.00 m deep	0.23	16.04	9.18	5.04	m	30.26
100 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.07	8.65	m	11.44
ne 1.50 m deep	0.10	6.97	4.00	8.65	m	19.63
1.50 - 2.00 m deep	0.14	9.76	5.60	8.65	m	24.01
2.00 - 2.50 m deep	0.19	13.25	7.58	8.65	m	29.48
2.50 - 3.00 m deep	0.24	16.73	9.59	8.65	m	34.97
150 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.07	17.69	m	20.48
ne 1.50 m deep	0.11	7.67	4.38	17.69	m	29.74
1.50 - 2.00 m deep	0.15	10.46	5.98	17.69	m	34.13
2.00 - 2.50 m deep	0.20	13.95	7.98	17.69	m	39.62
2.50 - 3.00 m deep	0.25	17.43	9.99	17.69	m	45.12
225 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.07	45.62	m	48.41
ne 1.50 m deep	0.13	9.06	5.19	45.62	m	59.87
1.50 - 2.00 m deep	0.17	11.85	6.79	45.62	m	64.26
2.00 - 2.50 m deep	0.22	15.34	8.79	45.62	m	69.75
2.50 - 3.00 m deep	0.27	18.83	10.78	45.62	m	75.22
<b>Vitrified clay perforated field drains to BS EN295, sleeved joints; excavation and supports, backfilling</b>						
100 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.07	11.57	m	14.37
ne 1.50 m deep	0.15	10.46	5.98	11.57	m	28.01
1.50 - 2.00 m deep	0.19	13.25	7.57	11.57	m	32.40
2.00 - 2.50 m deep	0.24	16.73	9.57	11.57	m	37.88
2.50 - 3.00 m deep	0.29	20.22	11.59	11.57	m	43.39
Extra for bend	0.08	5.58	-	7.88	nr	13.46
Extra for single junction	0.09	6.28	-	15.40	nr	21.68

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
150 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.07	18.98	m	21.77
ne 1.50 m deep	0.17	11.85	6.79	18.98	m	37.62
1.50 - 2.00 m deep	0.20	13.95	7.98	18.98	m	40.90
2.00 - 2.50 m deep	0.24	16.73	9.57	18.98	m	45.28
2.50 - 3.00 m deep	0.29	20.22	11.59	18.98	m	50.79
Extra for bend	0.13	8.72	-	15.40	nr	24.12
Extra for single junction	0.13	9.06	-	25.38	nr	34.44
225 mm pipes; in trench, depth						
not in trenches	0.08	3.63	0.07	35.81	m	39.51
ne 1.50 m deep	0.18	12.55	7.19	35.81	m	55.55
1.50 - 2.00 m deep	0.22	15.34	8.79	35.81	m	59.94
2.00 - 2.50 m deep	0.26	18.13	10.39	35.81	m	64.33
2.50 - 3.00 m deep	0.30	20.92	12.00	35.81	m	68.72
Extra for bend	0.12	8.37	-	88.13	nr	96.50
Extra for single junction	0.20	13.60	-	100.89	nr	114.49
300 mm pipes; in trench, depth						
not in trenches	0.10	4.54	0.33	66.42	m	71.29
ne 1.50 m deep	0.19	13.25	7.57	66.42	m	87.24
1.50 - 2.00 m deep	0.24	16.73	9.58	66.42	m	92.73
2.00 - 2.50 m deep	0.28	19.52	11.18	66.42	m	97.12
2.50 - 3.00 m deep	0.32	22.31	12.78	66.42	m	101.52
Extra for bend	0.24	16.73	-	148.67	nr	165.40
Extra for single junction	0.23	16.04	-	253.33	nr	269.37
<b>Vitrified clay pipes to BS EN295, plain ends with push-fit polypropylene flexible couplings; excavation and supports, backfilling</b>						
100 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.45	8.45	m	11.62
ne 1.50 m deep	0.15	10.46	7.77	8.45	m	26.68
1.50 - 2.00 m deep	0.19	13.25	10.40	8.45	m	32.09
2.00 - 2.50 m deep	0.24	16.73	13.16	8.45	m	38.34
2.50 - 3.00 m deep	0.29	20.22	15.92	8.45	m	44.59
3.00 - 3.50 m deep	0.36	25.10	19.75	8.45	m	53.30
3.50 - 4.00 m deep	0.44	30.68	24.16	8.45	m	63.29
4.00 - 4.50 m deep	0.55	38.35	30.20	8.45	m	76.99
4.50 - 5.00 m deep	0.70	48.81	38.50	8.45	m	95.75
5.00 - 5.50 m deep	0.90	62.75	49.51	8.45	m	120.71
Extra for bend	0.05	3.49	-	20.67	nr	24.15
Extra for rest bend	0.06	4.18	-	13.08	nr	17.26
Extra for single junction; equal	0.09	6.28	-	28.57	nr	34.84
Extra for saddle; oblique	0.23	16.04	-	22.42	nr	38.46
150 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.45	18.02	m	21.19
ne 1.50 m deep	0.17	11.85	9.33	18.02	m	39.21
1.50 - 2.00 m deep	0.20	13.95	10.96	18.02	m	42.93
2.00 - 2.50 m deep	0.24	16.73	13.16	18.02	m	47.91
2.50 - 3.00 m deep	0.29	20.22	15.92	18.02	m	54.16
3.00 - 3.50 m deep	0.39	27.19	21.38	18.02	m	66.60
3.50 - 4.00 m deep	0.45	31.38	24.72	18.02	m	74.12
4.00 - 4.50 m deep	0.58	40.44	31.89	18.02	m	90.35
4.50 - 5.00 m deep	0.75	52.30	41.20	18.02	m	111.52
5.00 - 5.50 m deep	0.96	66.94	52.78	18.02	m	137.74
Extra for bend	0.08	5.58	-	47.54	nr	53.12
Extra for rest bend	0.09	6.28	-	47.58	nr	53.85
Extra for single junction; equal	0.11	7.67	-	61.61	nr	69.28
Extra for taper reducer	0.07	4.88	-	35.59	nr	40.47
Extra for saddle; oblique	0.29	20.22	-	38.76	nr	58.98

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CLAY PIPES - cont'd</b>						
<b>Vitrified clay pipes to BS EN295, plain ends with push-fit polypropylene flexible couplings; excavation and supports, backfilling - cont'd</b>						
225 mm pipes; in trenches, depth						
not in trenches	0.08	3.63	0.57	42.43	m	<b>46.63</b>
ne 1.50 m deep	0.18	12.55	9.88	42.43	m	<b>64.86</b>
1.50 - 2.00 m deep	0.22	15.34	12.09	42.43	m	<b>69.86</b>
2.00 - 2.50 m deep	0.26	18.13	14.28	42.43	m	<b>74.85</b>
2.50 - 3.00 m deep	0.30	20.92	16.48	42.43	m	<b>79.84</b>
3.00 - 3.50 m deep	0.41	28.59	22.51	42.43	m	<b>93.53</b>
3.50 - 4.00 m deep	0.47	32.77	25.79	42.43	m	<b>101.00</b>
4.00 - 4.50 m deep	0.65	45.32	35.72	42.43	m	<b>123.48</b>
4.50 - 5.00 m deep	0.80	55.78	43.96	42.43	m	<b>142.18</b>
5.00 - 5.50 m deep	1.02	71.12	56.11	42.43	m	<b>169.66</b>
Extra for bend	0.10	6.97	-	91.13	nr	<b>98.11</b>
Extra for rest bend	0.11	7.67	-	122.84	nr	<b>130.51</b>
Extra for single junction; equal	0.16	11.16	-	120.79	nr	<b>131.95</b>
Extra for taper reducer	0.12	8.37	-	92.35	nr	<b>100.71</b>
Extra for saddle; oblique	0.36	25.10	-	110.28	nr	<b>135.38</b>
300 mm pipes; in trenches, depth						
not in trenches	0.10	4.54	0.73	76.05	m	<b>81.32</b>
ne 1.50 m deep	0.19	13.25	10.40	76.05	m	<b>99.69</b>
1.50 - 2.00 m deep	0.24	16.73	13.15	76.05	m	<b>105.93</b>
2.00 - 2.50 m deep	0.28	19.52	15.35	76.05	m	<b>110.92</b>
2.50 - 3.00 m deep	0.32	22.31	17.55	76.05	m	<b>115.91</b>
3.00 - 3.50 m deep	0.42	29.29	23.08	76.05	m	<b>128.41</b>
3.50 - 4.00 m deep	0.52	36.26	28.55	76.05	m	<b>140.86</b>
4.00 - 4.50 m deep	0.70	48.81	38.48	76.05	m	<b>163.34</b>
4.50 - 5.00 m deep	0.90	62.75	49.49	76.05	m	<b>188.29</b>
5.00 - 5.50 m deep	1.12	78.09	61.58	76.05	m	<b>215.72</b>
Extra for bend	0.15	10.46	-	201.66	nr	<b>212.12</b>
Extra for rest bend	0.16	11.16	-	270.96	nr	<b>282.12</b>
Extra for single junction; equal	0.19	13.25	-	217.46	nr	<b>230.71</b>
Extra for saddle; oblique	0.44	30.68	-	220.91	nr	<b>251.59</b>
<b>Vitrified clay pipes to BS EN295, spigot and socket joints with sealing ring; excavation and supports, backfilling</b>						
100 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.47	6.73	m	<b>9.93</b>
ne 1.50 m deep	0.15	10.46	8.39	6.73	m	<b>25.58</b>
1.50 - 2.00 m deep	0.19	13.25	10.40	6.73	m	<b>30.38</b>
2.00 - 2.50 m deep	0.24	16.73	13.16	6.73	m	<b>36.63</b>
2.50 - 3.00 m deep	0.29	20.22	15.92	6.73	m	<b>42.88</b>
3.00 - 3.50 m deep	0.36	25.10	19.75	6.73	m	<b>51.59</b>
3.50 - 4.00 m deep	0.44	30.68	24.16	6.73	m	<b>61.57</b>
4.00 - 4.50 m deep	0.55	38.35	30.20	6.73	m	<b>75.28</b>
4.50 - 5.00 m deep	0.70	48.81	38.50	6.73	m	<b>94.04</b>
5.00 - 5.50 m deep	0.90	62.75	49.51	6.73	m	<b>119.00</b>
Extra for bend	0.05	3.49	-	8.47	nr	<b>11.95</b>
Extra for rest bend	0.06	4.18	-	20.83	nr	<b>25.01</b>
Extra for single junction; equal	0.09	6.28	-	19.70	nr	<b>25.98</b>
Extra fro saddle; oblique	0.23	16.04	-	17.33	nr	<b>33.36</b>

**CLASS I: PIPEWORK - PIPES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
150 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.45	16.63	m	<b>19.80</b>
ne 1.50 m deep	0.17	11.85	9.33	16.63	m	<b>37.81</b>
1.50 - 2.00 m deep	0.20	13.95	10.96	16.63	m	<b>41.53</b>
2.00 - 2.50 m deep	0.24	16.73	13.16	16.63	m	<b>46.52</b>
2.50 - 3.00 m deep	0.29	20.22	15.92	16.63	m	<b>52.77</b>
3.00 - 3.50 m deep	0.39	27.19	21.38	16.63	m	<b>65.20</b>
3.50 - 4.00 m deep	0.45	31.38	24.72	16.63	m	<b>72.73</b>
4.00 - 4.50 m deep	0.58	40.44	31.89	16.63	m	<b>88.96</b>
4.50 - 5.00 m deep	0.75	52.30	41.20	16.63	m	<b>110.12</b>
5.00 - 5.50 m deep	0.96	66.94	52.78	16.63	m	<b>136.34</b>
Extra for bend	0.08	5.58	-	34.93	nr	<b>40.51</b>
Extra for rest bend	0.09	6.28	-	41.66	nr	<b>47.94</b>
Extra for single junction; equal	0.11	7.67	-	45.89	nr	<b>53.56</b>
Extra for double junction; equal	0.13	9.06	-	68.82	nr	<b>77.89</b>
Extra for taper reducer	0.07	4.88	-	18.23	nr	<b>23.11</b>
Extra for saddle; oblique	0.29	20.22	-	25.78	nr	<b>46.01</b>
225 mm pipes; in trenches, depth						
not in trenches	0.08	3.63	0.57	38.09	m	<b>42.29</b>
ne 1.50 m deep	0.18	12.55	9.89	38.09	m	<b>60.53</b>
1.50 - 2.00 m deep	0.22	15.34	12.09	38.09	m	<b>65.52</b>
2.00 - 2.50 m deep	0.26	18.13	14.28	38.09	m	<b>70.50</b>
2.50 - 3.00 m deep	0.30	20.92	16.48	38.09	m	<b>75.49</b>
3.00 - 3.50 m deep	0.41	28.59	22.51	38.09	m	<b>89.19</b>
3.50 - 4.00 m deep	0.47	32.77	25.77	38.09	m	<b>96.63</b>
4.00 - 4.50 m deep	0.65	45.32	35.72	38.09	m	<b>119.13</b>
4.50 - 5.00 m deep	0.80	55.78	43.96	38.09	m	<b>137.83</b>
5.00 - 5.50 m deep	1.02	71.12	56.11	38.09	m	<b>165.32</b>
Extra for bend	0.10	6.97	-	71.24	nr	<b>78.21</b>
Extra for rest bend	0.11	7.67	-	99.26	nr	<b>106.93</b>
Extra for single junction; equal	0.16	11.16	-	107.16	nr	<b>118.31</b>
Extra for double junction; equal	0.18	12.55	-	160.74	nr	<b>173.29</b>
Extra for taper reducer	0.12	8.37	-	63.34	nr	<b>71.71</b>
Extra for saddle; oblique	0.36	25.10	-	95.92	nr	<b>121.03</b>
300 mm pipes; in trenches, depth						
not in trenches	0.10	4.54	0.73	58.21	m	<b>63.48</b>
ne 1.50 m deep	0.19	13.25	10.40	58.21	m	<b>81.85</b>
1.50 - 2.00 m deep	0.24	16.73	13.15	58.21	m	<b>88.10</b>
2.00 - 2.50 m deep	0.28	19.52	15.35	58.21	m	<b>93.08</b>
2.50 - 3.00 m deep	0.32	22.31	17.55	58.21	m	<b>98.07</b>
3.00 - 3.50 m deep	0.42	29.29	23.08	58.21	m	<b>110.57</b>
3.50 - 4.00 m deep	0.52	36.26	28.55	58.21	m	<b>123.02</b>
4.00 - 4.50 m deep	0.70	48.81	38.48	58.21	m	<b>145.50</b>
4.50 - 5.00 m deep	0.90	62.75	49.49	58.21	m	<b>170.45</b>
5.00 - 5.50 m deep	1.12	78.09	61.58	58.21	m	<b>197.88</b>
Extra for bend	0.15	10.46	-	140.61	nr	<b>151.07</b>
Extra for rest bend	0.16	11.16	-	210.58	nr	<b>221.73</b>
Extra for single junction; equal	0.19	13.25	-	220.91	nr	<b>234.16</b>
Extra for double junction; equal	0.21	14.64	-	331.36	nr	<b>346.01</b>
Extra for taper reducer	0.15	10.46	-	157.37	nr	<b>167.83</b>
Extra for saddle; oblique	0.44	30.68	-	186.01	nr	<b>216.69</b>

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CLAY PIPES - cont'd</b>						
<b>Vitrified clay pipes to BS EN295, spigot and socket joints with sealing ring; excavation and supports, backfilling - cont'd</b>						
400 mm pipes; in trenches, depth						
not in trenches	0.10	4.54	0.73	93.30	m	98.57
ne 1.50 m deep	0.23	16.04	12.59	93.30	m	121.92
1.50 - 2.00 m deep	0.29	20.22	15.91	93.30	m	129.42
2.00 - 2.50 m deep	0.32	22.31	17.54	93.30	m	133.15
2.50 - 3.00 m deep	0.38	26.50	20.87	93.30	m	140.66
3.00 - 3.50 m deep	0.46	32.07	25.27	93.30	m	150.64
3.50 - 4.00 m deep	0.58	40.44	31.88	93.30	m	165.61
4.00 - 4.50 m deep	0.75	52.30	41.18	93.30	m	186.77
4.50 - 5.00 m deep	0.95	66.24	52.19	93.30	m	211.73
5.00 - 5.50 m deep	1.20	83.67	65.97	93.30	m	242.94
Extra for bend; 90°	0.24	16.73	-	380.80	nr	397.54
Extra for bend; 45°	0.24	16.73	-	380.80	nr	397.54
Extra for bend; 22.5°	0.24	16.73	-	380.80	nr	397.54
450 mm pipes; in trenches, depth						
not in trenches	0.23	10.44	1.62	153.81	m	165.87
ne 1.50 m deep	0.23	16.04	12.59	153.81	m	182.44
1.50 - 2.00 m deep	0.30	20.92	16.47	153.81	m	191.20
2.00 - 2.50 m deep	0.32	22.31	17.54	153.81	m	193.67
2.50 - 3.00 m deep	0.38	26.50	20.87	153.81	m	201.18
3.00 - 3.50 m deep	0.47	32.77	25.77	153.81	m	212.36
3.50 - 4.00 m deep	0.60	41.84	32.94	153.81	m	228.59
4.00 - 4.50 m deep	0.77	53.69	42.31	153.81	m	249.81
4.50 - 5.00 m deep	0.97	67.64	53.32	153.81	m	274.77
5.00 - 5.50 m deep	1.20	83.67	65.97	153.81	m	303.46
Extra for bend; 90°	0.29	20.22	-	501.46	nr	521.68
Extra for bend; 45°	0.29	20.22	-	501.46	nr	521.68
Extra for bend; 22.5°	0.29	20.22	-	501.46	nr	521.68
<b>CONCRETE PIPES</b>						
<b>Concrete porous pipes to BS 5911; excavation and supports, backfilling</b>						
150 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.44	5.09	m	8.25
ne 1.50 m deep	0.17	11.85	6.79	5.09	m	23.73
1.50 - 2.00 m deep	0.20	13.95	7.98	5.09	m	27.01
2.00 - 2.50 m deep	0.24	16.73	9.57	5.09	m	31.39
2.50 - 3.00 m deep	0.29	20.22	11.59	5.09	m	36.90
3.00 - 3.50 m deep	0.39	27.19	15.58	5.09	m	47.86
3.50 - 4.00 m deep	0.45	31.38	18.01	5.09	m	54.47
4.00 - 4.50 m deep	0.58	40.44	23.23	5.09	m	68.76
4.50 - 5.00 m deep	0.75	52.30	30.04	5.09	m	87.42
5.00 - 5.50 m deep	0.96	66.94	38.48	5.09	m	110.50
225 mm pipes; in trench, depth						
not in trenches	0.08	3.63	0.26	6.54	m	10.43
ne 1.50 m deep	0.18	12.55	7.19	6.54	m	26.28
1.50 - 2.00 m deep	0.22	15.34	8.79	6.54	m	30.67
2.00 - 2.50 m deep	0.26	18.13	10.39	6.54	m	35.06
2.50 - 3.00 m deep	0.30	20.92	12.00	6.54	m	39.45
3.00 - 3.50 m deep	0.41	28.59	16.39	6.54	m	51.52
3.50 - 4.00 m deep	0.47	32.77	18.80	6.54	m	58.11
4.00 - 4.50 m deep	0.65	45.32	26.03	6.54	m	77.89
4.50 - 5.00 m deep	0.80	55.78	32.04	6.54	m	94.36



## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
5.00 - 5.50 m deep	1.02	71.12	40.89	6.54	m	<b>118.55</b>
300 mm pipes; in trench, depth not in trenches	0.10	4.54	0.33	10.90	m	<b>15.76</b>
ne 1.50 m deep	0.19	13.25	7.57	10.90	m	<b>31.72</b>
1.50 - 2.00 m deep	0.24	16.73	9.58	10.90	m	<b>37.21</b>
2.00 - 2.50 m deep	0.28	19.52	11.18	10.90	m	<b>41.60</b>
2.50 - 3.00 m deep	0.32	22.31	12.78	10.90	m	<b>45.99</b>
3.00 - 3.50 m deep	0.42	29.29	16.80	10.90	m	<b>56.98</b>
3.50 - 4.00 m deep	0.52	36.26	20.80	10.90	m	<b>67.96</b>
4.00 - 4.50 m deep	0.70	48.81	28.03	10.90	m	<b>87.74</b>
4.50 - 5.00 m deep	0.90	62.75	36.06	10.90	m	<b>109.71</b>
5.00 - 5.50 m deep	1.12	78.09	44.89	10.90	m	<b>133.88</b>
<b>Concrete pipes with rebated flexible joints to BS 5911 Class 120; excavation and supports, backfilling</b>						
300 mm pipes; in trenches, depth not in trenches	0.12	5.45	0.45	15.90	m	<b>21.79</b>
ne 1.50 m deep	0.22	15.34	12.09	15.90	m	<b>43.33</b>
1.50 - 2.00 m deep	0.26	18.13	14.28	15.90	m	<b>48.31</b>
2.00 - 2.50 m deep	0.30	20.92	16.48	15.90	m	<b>53.30</b>
2.50 - 3.00 m deep	0.34	23.71	18.68	15.90	m	<b>58.29</b>
3.00 - 3.50 m deep	0.44	30.68	24.14	15.90	m	<b>70.72</b>
3.50 - 4.00 m deep	0.56	39.05	30.75	15.90	m	<b>85.69</b>
4.00 - 4.50 m deep	0.73	50.90	40.11	15.90	m	<b>106.92</b>
4.50 - 5.00 m deep	0.92	64.15	50.56	15.90	m	<b>130.61</b>
5.00 - 5.50 m deep	1.19	82.97	65.41	15.90	m	<b>164.28</b>
5.50 - 6.00 m deep	1.42	99.01	78.13	15.90	m	<b>193.05</b>
Extra for bend	0.08	5.58	4.05	95.38	nr	<b>105.01</b>
375 mm pipes; in trenches, depth not in trenches	0.15	6.81	1.06	19.60	m	<b>27.46</b>
ne 1.50 m deep	0.24	16.73	13.15	19.60	m	<b>49.49</b>
1.50 - 2.00 m deep	0.29	20.22	15.91	19.60	m	<b>55.73</b>
2.00 - 2.50 m deep	0.33	23.01	18.11	19.60	m	<b>60.72</b>
2.50 - 3.00 m deep	0.38	26.50	20.87	19.60	m	<b>66.97</b>
3.00 - 3.50 m deep	0.46	32.07	25.27	19.60	m	<b>76.95</b>
3.50 - 4.00 m deep	0.58	40.44	31.88	19.60	m	<b>91.92</b>
4.00 - 4.50 m deep	0.75	52.30	41.18	19.60	m	<b>113.08</b>
4.50 - 5.00 m deep	0.95	66.24	52.19	19.60	m	<b>138.03</b>
5.00 - 5.50 m deep	1.20	83.67	65.97	19.60	m	<b>169.25</b>
5.50 - 6.00 m deep	1.45	101.10	79.77	19.60	m	<b>200.47</b>
Extra for bend	0.10	6.97	5.63	120.52	nr	<b>133.13</b>
450 mm pipes; in trenches, depth not in trenches	0.17	7.71	1.22	23.50	m	<b>32.43</b>
ne 1.50 m deep	0.25	17.43	13.71	23.50	m	<b>54.65</b>
1.50 - 2.00 m deep	0.31	21.62	16.97	23.50	m	<b>62.09</b>
2.00 - 2.50 m deep	0.35	24.40	19.18	23.50	m	<b>67.09</b>
2.50 - 3.00 m deep	0.40	27.89	21.94	23.50	m	<b>73.33</b>
3.00 - 3.50 m deep	0.48	33.47	26.37	23.50	m	<b>83.34</b>
3.50 - 4.00 m deep	0.63	43.93	34.58	23.50	m	<b>102.00</b>
4.00 - 4.50 m deep	0.80	55.78	43.94	23.50	m	<b>123.23</b>
4.50 - 5.00 m deep	1.00	69.73	54.95	23.50	m	<b>148.18</b>
5.00 - 5.50 m deep	1.25	87.16	68.74	23.50	m	<b>179.40</b>
5.50 - 6.00 m deep	1.51	105.29	83.04	23.50	m	<b>211.83</b>
Extra for bend	0.13	9.06	8.10	151.39	nr	<b>168.55</b>

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CONCRETE PIPES - cont'd</b>						
<b>Concrete pipes with rebated flexible joints to BS 5911 Class 120; excavation and supports, backfilling - cont'd</b>						
525 mm pipes; in trenches, depth						
not in trenches	0.20	9.08	1.42	30.30	m	40.80
ne 1.50 m deep	0.27	18.83	14.78	30.30	m	63.91
1.50 - 2.00 m deep	0.33	23.01	18.10	30.30	m	71.41
2.00 - 2.50 m deep	0.37	25.80	20.30	30.30	m	76.40
2.50 - 3.00 m deep	0.42	29.29	23.07	30.30	m	82.65
3.00 - 3.50 m deep	0.49	34.17	26.90	30.30	m	91.37
3.50 - 4.00 m deep	0.65	45.32	35.70	30.30	m	111.33
4.00 - 4.50 m deep	0.83	57.87	45.58	30.30	m	133.75
4.50 - 5.00 m deep	1.03	71.82	56.59	30.30	m	158.71
5.00 - 5.50 m deep	1.28	89.25	70.37	30.30	m	189.92
5.50 - 6.00 m deep	1.55	108.08	85.24	30.30	m	223.62
Extra for bend	0.16	11.16	10.50	180.10	nr	201.76
750 mm pipes; in trenches, depth						
not in trenches	0.22	9.98	1.59	73.20	m	84.77
ne 1.50 m deep	0.30	18.48	24.39	73.20	m	116.07
1.50 - 2.00 m deep	0.36	22.18	29.23	73.20	m	124.61
2.00 - 2.50 m deep	0.41	25.26	33.31	73.20	m	131.77
2.50 - 3.00 m deep	0.47	28.96	38.17	73.20	m	140.32
3.00 - 3.50 m deep	0.58	35.73	47.16	73.20	m	156.09
3.50 - 4.00 m deep	0.80	49.29	65.04	73.20	m	187.52
4.00 - 4.50 m deep	1.05	64.69	85.40	73.20	m	223.29
4.50 - 5.00 m deep	1.30	80.09	105.78	73.20	m	259.07
5.00 - 5.50m deep	1.55	95.49	126.10	73.20	m	294.79
5.50 - 6.00 m deep	1.82	112.13	148.16	73.20	m	333.49
Extra for bends	0.24	14.79	30.66	415.69	nr	461.14
900 mm pipes; in trenches, depth						
not in trenches	0.25	11.34	1.79	98.00	m	111.13
ne 1.50 m deep	0.33	20.33	26.81	98.00	m	145.14
1.50 - 2.00 m deep	0.40	24.64	32.47	98.00	m	155.12
2.00 - 2.50 m deep	0.46	28.34	37.39	98.00	m	163.73
2.50 - 3.00 m deep	0.53	32.65	43.07	98.00	m	173.72
3.00 - 3.50 m deep	0.70	43.13	56.91	98.00	m	198.04
3.50 - 4.00 m deep	0.92	56.68	74.79	98.00	m	229.47
4.00 - 4.50 m deep	1.20	73.93	97.58	98.00	m	269.51
4.50 - 5.00 m deep	1.50	92.41	122.04	98.00	m	312.46
5.00 - 5.50m deep	1.80	110.89	146.46	98.00	m	355.35
5.50 - 6.00 m deep	2.10	129.38	170.95	98.00	m	398.33
Extra for bends	0.39	24.03	50.17	659.71	nr	733.90
1200 mm pipes; in trenches, depth						
not in trenches	0.25	11.34	1.79	168.90	m	182.03
ne 1.50 m deep	0.46	28.34	37.38	168.90	m	234.62
1.50 - 2.00 m deep	0.53	32.65	43.04	168.90	m	244.60
2.00 - 2.50 m deep	0.60	36.96	48.73	168.90	m	254.59
2.50 - 3.00 m deep	0.70	43.13	56.89	168.90	m	268.92
3.00 - 3.50 m deep	0.85	52.37	69.09	168.90	m	290.35
3.50 - 4.00 m deep	1.12	69.00	91.05	168.90	m	328.95
4.00 - 4.50 m deep	1.45	89.33	117.93	168.90	m	376.16
4.50 - 5.00 m deep	1.75	107.81	142.33	168.90	m	419.05
5.00 - 5.50m deep	2.05	126.29	166.82	168.90	m	462.01
5.50 - 6.00 m deep	2.36	145.39	192.08	168.90	m	506.38
Extra for bends	0.51	31.42	65.81	1036.97	nr	1134.20

**CLASS I: PIPEWORK - PIPES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
1500 mm pipes; in trenches, depth						
not in trenches	0.35	15.88	2.48	298.30	m	<b>316.66</b>
ne 1.50 m deep	0.60	36.96	48.71	298.30	m	<b>383.98</b>
1.50 - 2.00 m deep	0.70	43.13	56.86	298.30	m	<b>398.29</b>
2.00 - 2.50 m deep	0.81	49.90	65.80	298.30	m	<b>414.00</b>
2.50 - 3.00 m deep	0.92	56.68	74.74	298.30	m	<b>429.71</b>
3.00 - 3.50 m deep	1.05	64.69	85.34	298.30	m	<b>448.32</b>
3.50 - 4.00 m deep	1.27	78.24	103.23	298.30	m	<b>479.77</b>
4.00 - 4.50 m deep	1.70	104.73	138.27	298.30	m	<b>541.30</b>
4.50 - 5.00 m deep	2.05	126.29	166.77	298.30	m	<b>591.36</b>
5.00 - 5.50m deep	2.40	147.86	195.28	298.30	m	<b>641.44</b>
5.50 - 6.00 m deep	2.75	169.42	220.64	300.75	m	<b>690.81</b>
Extra for bends	0.63	38.81	81.30	1968.79	nr	<b>2088.91</b>
1800 mm pipes; in trenches, depth						
not in trenches	0.40	18.15	2.84	414.70	m	<b>435.70</b>
ne 1.50 m deep	0.77	47.44	62.53	414.70	m	<b>524.67</b>
1.50 - 2.00 m deep	0.91	56.06	73.86	414.70	m	<b>544.63</b>
2.00 - 2.50 m deep	1.03	63.46	83.63	414.70	m	<b>561.79</b>
2.50 - 3.00 m deep	1.12	69.00	90.98	414.70	m	<b>574.68</b>
3.00 - 3.50 m deep	1.20	73.93	97.51	414.70	m	<b>586.14</b>
3.50 - 4.00 m deep	1.52	93.64	123.57	414.70	m	<b>631.91</b>
4.00 - 4.50 m deep	2.00	123.21	162.64	414.70	m	<b>700.55</b>
4.50 - 5.00 m deep	2.40	147.86	195.22	414.70	m	<b>757.78</b>
5.00 - 5.50m deep	2.80	172.50	227.83	414.70	m	<b>815.03</b>
5.50 - 6.00 m deep	3.15	194.06	256.37	414.70	m	<b>865.13</b>
Extra for bends	0.77	47.44	99.40	2419.54	nr	<b>2566.38</b>
2100 mm pipes; in trenches, depth						
not in trenches	0.45	20.42	3.21	516.59	m	<b>540.22</b>
ne 1.50 m deep	0.98	60.38	79.59	516.59	m	<b>656.56</b>
1.50 - 2.00 m deep	1.13	69.62	91.76	516.59	m	<b>677.96</b>
2.00 - 2.50 m deep	1.23	75.78	99.79	516.59	m	<b>692.16</b>
2.50 - 3.00 m deep	1.30	80.09	105.64	516.59	m	<b>702.32</b>
3.00 - 3.50 m deep	1.50	92.41	121.92	516.59	m	<b>730.92</b>
3.50 - 4.00 m deep	1.82	112.13	147.99	516.59	m	<b>776.70</b>
4.00 - 4.50 m deep	2.35	144.78	191.08	516.59	m	<b>852.45</b>
4.50 - 5.00 m deep	2.80	172.50	227.76	516.59	m	<b>916.85</b>
5.00 - 5.50m deep	3.20	197.14	260.37	516.59	m	<b>974.11</b>
5.50 - 6.00 m deep	3.55	218.71	288.92	516.59	m	<b>1024.22</b>
Extra for bends	0.89	54.83	115.01	3473.55	nr	<b>3643.39</b>

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>IRON PIPES</b>						
<b>Cast iron pipes to BS 437 plain ended pipe with "Timesaver" mechanical coupling joints; excavation and supports, backfilling</b>						
75 mm pipes; in trenches, depth						
not in trenches	0.12	5.45	0.85	7.67	m	13.97
ne 1.50 m deep	0.19	13.25	9.85	7.67	m	30.77
1.50 - 2.00 m deep	0.21	14.64	11.52	7.67	m	33.84
2.00 - 2.50 m deep	0.28	19.52	15.35	7.67	m	42.55
2.50 - 3.00 m deep	0.34	23.71	18.68	7.67	m	50.06
3.00 - 3.50 m deep	0.43	29.98	23.58	7.67	m	61.23
3.50 - 4.00 m deep	0.55	38.35	30.18	7.67	m	76.21
4.00 - 4.50 m deep	0.71	49.51	38.99	7.67	m	96.16
4.50 - 5.00 m deep	0.89	62.06	48.92	7.67	m	118.65
5.00 - 5.50 m deep	1.15	80.19	63.21	7.67	m	151.07
Extra for bend; 87.5°	0.31	21.62	1.64	28.87	nr	52.13
Extra for bend; 45°	0.31	21.62	1.65	28.87	nr	52.13
Extra for single junction; equal	0.48	33.47	3.24	43.37	nr	80.08
Extra for taper reducer	0.27	18.83	1.65	33.14	nr	53.61
100 mm pipes; in trenches, depth						
not in trenches	0.13	5.90	0.37	6.68	m	12.95
ne 1.50 m deep	0.21	14.64	11.52	6.68	m	32.84
1.50 - 2.00 m deep	0.23	16.04	12.59	6.68	m	35.31
2.00 - 2.50 m deep	0.30	20.92	16.48	6.68	m	44.07
2.50 - 3.00 m deep	0.37	25.80	20.31	6.68	m	52.79
3.00 - 3.50 m deep	0.48	33.47	26.34	6.68	m	66.49
3.50 - 4.00 m deep	0.60	41.84	32.94	6.68	m	81.46
4.00 - 4.50 m deep	0.75	52.30	41.18	6.68	m	100.16
4.50 - 5.00 m deep	0.95	66.24	52.19	6.68	m	125.11
5.00 - 5.50 m deep	1.22	85.07	67.10	6.68	m	158.85
Extra for bend; 87.5°	0.38	26.50	2.46	44.22	nr	73.18
Extra for bend; 45°	0.38	26.50	2.46	46.89	nr	75.85
Extra for bend; long radius	0.38	26.50	2.46	71.91	nr	100.87
Extra for single junction; equal	0.59	41.14	4.06	36.17	nr	81.37
Extra for double junction; equal	0.80	55.78	6.47	99.89	nr	162.14
Extra for taper reducer	0.40	27.89	4.06	43.53	nr	75.48
150 mm pipes; in trenches, depth						
not in trenches	0.14	6.35	0.37	12.91	m	19.63
ne 1.50 m deep	0.24	16.73	13.15	12.91	m	42.79
1.50 - 2.00 m deep	0.28	19.52	15.34	12.91	m	47.77
2.00 - 2.50 m deep	0.34	23.71	18.68	12.91	m	55.29
2.50 - 3.00 m deep	0.40	27.89	21.94	12.91	m	62.74
3.00 - 3.50 m deep	0.54	37.65	29.66	12.91	m	80.22
3.50 - 4.00 m deep	0.61	42.53	33.51	12.91	m	88.95
4.00 - 4.50 m deep	0.79	55.08	43.38	12.91	m	111.37
4.50 - 5.00 m deep	1.05	73.21	57.72	12.91	m	143.84
5.00 - 5.50 m deep	1.32	92.04	72.57	12.91	m	177.52
Extra for bend; 87.5°	0.56	39.05	3.23	86.31	nr	128.58
Extra for bend; 45°	0.56	39.05	3.23	91.07	nr	133.34
Extra for bend; long radius	0.56	39.05	3.23	188.59	nr	230.86
Extra for single junction; equal	0.88	61.36	6.45	158.64	nr	226.45
Extra for taper reducer	0.56	39.05	6.45	47.11	nr	92.61
225 mm pipes; in trenches, depth						
not in trenches	0.15	6.81	0.37	56.97	m	64.14
ne 1.50 m deep	0.25	17.43	13.71	56.97	m	88.11
1.50 - 2.00 m deep	0.30	20.92	16.47	56.97	m	94.36
2.00 - 2.50 m deep	0.35	24.40	19.17	56.97	m	100.54
2.50 - 3.00 m deep	0.41	28.59	22.50	56.97	m	108.06

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
3.00 - 3.50 m deep	0.54	37.65	29.66	56.97	m	<b>124.28</b>
3.50 - 4.00 m deep	0.61	42.53	33.51	56.97	m	<b>133.01</b>
4.00 - 4.50 m deep	0.77	53.69	42.31	56.97	m	<b>152.97</b>
4.50 - 5.00 m deep	1.02	71.12	56.08	56.97	m	<b>184.17</b>
5.00 - 5.50 m deep	1.30	90.64	71.50	56.97	m	<b>219.11</b>
Extra for bend; 87.5°	0.77	53.69	3.23	328.95	nr	<b>385.87</b>
Extra for bend; 45°	0.77	53.69	3.23	355.90	nr	<b>412.82</b>
Extra for single junction; equal	1.21	84.37	7.28	678.56	nr	<b>770.21</b>
Extra for taper reducer	0.77	53.69	7.28	272.34	nr	<b>333.31</b>
<b>Ductile iron pipes to BS 4772, Tyton joints; excavation and supports, backfilling</b>						
100 mm pipes; in trenches, depth						
not in trenches	0.10	4.54	0.37	51.85	m	<b>56.76</b>
ne 1.50 m deep	0.19	13.25	9.90	51.85	m	<b>75.00</b>
1.50 - 2.00 m deep	0.20	13.95	10.96	51.85	m	<b>76.76</b>
2.00 - 2.50 m deep	0.26	18.13	14.28	51.85	m	<b>84.27</b>
2.50 - 3.00 m deep	0.32	22.31	17.55	51.85	m	<b>91.72</b>
3.00 - 3.50 m deep	0.42	29.29	23.08	51.85	m	<b>104.22</b>
3.50 - 4.00 m deep	0.53	36.96	29.12	51.85	m	<b>117.93</b>
4.00 - 4.50 m deep	0.66	46.02	36.28	51.85	m	<b>134.16</b>
4.50 - 5.00 m deep	0.84	58.57	46.16	51.85	m	<b>156.59</b>
5.00 - 5.50 m deep	1.08	75.30	59.38	51.85	m	<b>186.54</b>
Extra for bend; 90°	0.38	26.50	14.90	97.32	nr	<b>138.72</b>
Extra for single junction; equal	0.60	41.84	4.87	138.86	nr	<b>185.57</b>
150 mm pipes; in trenches, depth						
not in trenches	0.11	4.99	0.37	62.06	m	<b>67.42</b>
ne 1.50 m deep	0.21	14.64	11.52	62.06	m	<b>88.23</b>
1.50 - 2.00 m deep	0.25	17.43	13.71	62.06	m	<b>93.21</b>
2.00 - 2.50 m deep	0.30	20.92	16.48	62.06	m	<b>99.46</b>
2.50 - 3.00 m deep	0.37	25.80	20.31	62.06	m	<b>108.17</b>
3.00 - 3.50 m deep	0.49	34.17	26.90	62.06	m	<b>123.13</b>
3.50 - 4.00 m deep	0.55	38.35	30.18	62.06	m	<b>130.60</b>
4.00 - 4.50 m deep	0.72	50.20	39.55	62.06	m	<b>151.82</b>
4.50 - 5.00 m deep	0.94	65.54	51.69	62.06	m	<b>179.30</b>
5.00 - 5.50 m deep	1.19	82.97	65.41	62.06	m	<b>210.45</b>
Extra for bend; 90°	0.57	39.74	3.23	209.79	nr	<b>252.76</b>
Extra for single junction; equal	0.88	61.36	6.45	276.88	nr	<b>344.69</b>
250 mm pipes; in trenches, depth						
not in trenches	0.16	7.26	0.37	110.07	m	<b>117.70</b>
ne 1.50 m deep	0.24	16.73	13.15	110.07	m	<b>139.96</b>
1.50 - 2.00 m deep	0.30	20.92	16.47	110.07	m	<b>147.46</b>
2.00 - 2.50 m deep	0.35	24.40	19.18	110.07	m	<b>153.66</b>
2.50 - 3.00 m deep	0.42	29.29	23.07	110.07	m	<b>162.42</b>
3.00 - 3.50 m deep	0.56	39.05	30.73	110.07	m	<b>179.85</b>
3.50 - 4.00 m deep	0.64	44.63	35.14	110.07	m	<b>189.84</b>
4.00 - 4.50 m deep	0.81	56.48	44.51	110.07	m	<b>211.06</b>
4.50 - 5.00 m deep	1.02	71.12	56.08	110.07	m	<b>237.28</b>
5.00 - 5.50 m deep	1.27	88.55	69.81	110.07	m	<b>268.43</b>
Extra for bend; 90°	0.96	66.94	4.87	605.67	nr	<b>677.48</b>
Extra for single junction; equal	1.32	92.04	8.10	763.60	nr	<b>863.74</b>

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>IRON PIPES - cont'd</b>						
<b>Ductile iron pipes to BS 4772, Tyton joints; excavation and supports, backfilling - cont'd</b>						
400 mm pipes; in trenches, depth						
not in trenches	0.24	10.89	0.77	205.78	m	<b>217.45</b>
ne 1.50 m deep	0.33	23.01	18.10	205.78	m	<b>246.89</b>
1.50 - 2.00 m deep	0.43	29.98	23.55	205.78	m	<b>259.31</b>
2.00 - 2.50 m deep	0.48	33.47	26.31	205.78	m	<b>265.57</b>
2.50 - 3.00 m deep	0.57	39.74	31.28	205.78	m	<b>276.81</b>
3.00 - 3.50 m deep	0.71	49.51	38.94	205.78	m	<b>294.23</b>
3.50 - 4.00 m deep	0.91	63.45	49.95	205.78	m	<b>319.19</b>
4.00 - 4.50 m deep	1.16	80.88	63.72	205.78	m	<b>350.39</b>
4.50 - 5.00 m deep	1.47	102.50	80.77	205.78	m	<b>389.05</b>
5.00 - 5.50 m deep	1.77	123.42	97.33	205.78	m	<b>426.53</b>
600 mm pipes; in trenches, depth						
not in trenches	0.34	15.43	1.06	285.27	m	<b>301.76</b>
ne 1.50 m deep	0.47	32.77	25.74	285.27	m	<b>343.79</b>
1.50 - 2.00 m deep	0.55	38.35	30.12	285.27	m	<b>353.75</b>
2.00 - 2.50 m deep	0.66	46.02	36.21	285.27	m	<b>367.51</b>
2.50 - 3.00 m deep	0.78	54.39	42.81	285.27	m	<b>382.47</b>
3.00 - 3.50 m deep	0.89	62.06	48.85	285.27	m	<b>396.18</b>
3.50 - 4.00 m deep	1.09	76.00	59.86	285.27	m	<b>421.14</b>
4.00 - 4.50 m deep	1.37	95.53	75.27	285.27	m	<b>456.07</b>
4.50 - 5.00 m deep	1.70	118.54	93.45	285.27	m	<b>497.26</b>
5.00 - 5.50 m deep	2.03	141.55	111.59	285.27	m	<b>538.41</b>
<b>STEEL PIPES</b>						
<b>Carbon steel pipes to BS EN 10126; welded joints; (for protection and lining refer to manufacturer); excavation and supports, backfilling</b>						
100 mm pipes; in trenches, depth						
not in trenches	0.07	3.18	0.49	25.58	m	<b>29.24</b>
ne 1.50 m deep	0.15	10.46	8.20	25.58	m	<b>44.24</b>
1.50 - 2.00 m deep	0.17	11.85	9.33	25.58	m	<b>46.76</b>
2.00 - 2.50 m deep	0.22	15.34	12.09	25.58	m	<b>53.01</b>
2.50 - 3.00 m deep	0.27	18.83	14.79	25.58	m	<b>59.20</b>
3.00 - 3.50 m deep	0.35	24.40	19.19	25.58	m	<b>69.17</b>
3.50 - 4.00 m deep	0.44	30.68	24.16	25.58	m	<b>80.41</b>
4.00 - 4.50 m deep	0.55	38.35	30.20	25.58	m	<b>94.12</b>
4.50 - 5.00 m deep	0.70	48.81	53.75	25.58	m	<b>128.13</b>
5.00 - 5.50 m deep	0.87	60.66	47.82	25.58	m	<b>134.05</b>
Extra for bend; 45°	0.07	4.88	2.41	11.99	nr	<b>19.28</b>
Extra for bend; 90°	0.07	4.88	2.41	15.15	nr	<b>22.43</b>
Extra for single junction; equal	0.11	7.67	4.05	35.61	nr	<b>47.33</b>

**CLASS I: PIPEWORK - PIPES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
150 mm pipes; in trenches, depth						
not in trenches	0.07	3.18	0.49	39.40	m	<b>43.06</b>
ne 1.50 m deep	0.17	11.85	9.33	39.40	m	<b>60.59</b>
1.50 - 2.00 m deep	0.20	13.95	10.96	39.40	m	<b>64.31</b>
2.00 - 2.50 m deep	0.24	16.73	13.16	39.40	m	<b>69.29</b>
2.50 - 3.00 m deep	0.29	20.22	15.92	39.40	m	<b>75.54</b>
3.00 - 3.50 m deep	0.39	27.19	21.38	39.40	m	<b>87.98</b>
3.50 - 4.00 m deep	0.44	30.68	24.16	39.40	m	<b>94.24</b>
4.00 - 4.50 m deep	0.57	39.74	31.33	39.40	m	<b>110.47</b>
4.50 - 5.00 m deep	0.72	50.20	55.25	39.40	m	<b>144.86</b>
5.00 - 5.50 m deep	0.90	62.75	49.51	39.40	m	<b>151.67</b>
Extra for bend; 45°	0.09	6.28	3.23	25.18	nr	<b>34.68</b>
Extra for bend; 90°	0.09	6.28	3.23	33.91	nr	<b>43.42</b>
Extra for single junction; equal	0.16	11.16	6.45	62.99	nr	<b>80.60</b>
200 mm pipes; in trenches, depth						
not in trenches	0.09	4.08	2.27	41.67	m	<b>48.03</b>
ne 1.50 m deep	0.18	12.55	9.89	41.67	m	<b>64.12</b>
1.50 - 2.00 m deep	0.21	14.64	11.52	41.67	m	<b>67.84</b>
2.00 - 2.50 m deep	0.25	17.43	13.73	41.67	m	<b>72.83</b>
2.50 - 3.00 m deep	0.30	20.92	16.48	41.67	m	<b>79.08</b>
3.00 - 3.50 m deep	0.40	27.89	21.95	41.67	m	<b>91.51</b>
3.50 - 4.00 m deep	0.46	32.07	25.29	41.67	m	<b>99.04</b>
4.00 - 4.50 m deep	0.59	41.14	32.39	41.67	m	<b>115.21</b>
4.50 - 5.00 m deep	0.74	51.60	40.70	41.67	m	<b>133.97</b>
5.00 - 5.50 m deep	0.92	64.15	50.58	41.67	m	<b>156.40</b>
Extra for bend; 45°	0.12	8.37	3.23	53.23	nr	<b>64.82</b>
Extra for bend; 90°	0.12	8.37	3.23	69.47	nr	<b>81.06</b>
Extra for single junction; equal	0.21	14.64	6.40	120.99	nr	<b>142.03</b>
250 mm pipes; in trenches, depth						
not in trenches	0.10	4.54	0.73	52.41	m	<b>57.68</b>
ne 1.50 m deep	0.18	12.55	14.55	52.41	m	<b>79.51</b>
1.50 - 2.00 m deep	0.22	15.34	17.26	52.41	m	<b>85.01</b>
2.00 - 2.50 m deep	0.26	18.13	19.37	52.41	m	<b>89.90</b>
2.50 - 3.00 m deep	0.31	21.62	24.26	52.41	m	<b>98.28</b>
3.00 - 3.50 m deep	0.41	28.59	32.12	52.41	m	<b>113.12</b>
3.50 - 4.00 m deep	0.47	32.77	35.84	52.41	m	<b>121.02</b>
4.00 - 4.50 m deep	0.60	41.84	44.33	52.41	m	<b>138.58</b>
4.50 - 5.00 m deep	0.75	52.30	57.54	52.41	m	<b>162.24</b>
5.00 - 5.50 m deep	0.94	65.54	72.17	52.41	m	<b>190.12</b>
Extra for bend; 45°	0.13	9.06	3.23	93.64	nr	<b>105.93</b>
Extra for bend; 90°	0.13	9.06	3.23	123.17	nr	<b>135.46</b>
Extra for single junction; equal	0.23	16.04	6.45	225.59	nr	<b>248.08</b>
300 mm pipes; in trenches, depth						
not in trenches	0.11	4.99	0.77	60.09	m	<b>65.85</b>
ne 1.50 m deep	0.20	13.95	10.96	60.09	m	<b>84.99</b>
1.50 - 2.00 m deep	0.25	17.43	13.71	60.09	m	<b>91.23</b>
2.00 - 2.50 m deep	0.28	19.52	15.35	60.09	m	<b>94.96</b>
2.50 - 3.00 m deep	0.34	23.71	18.68	60.09	m	<b>102.47</b>
3.00 - 3.50 m deep	0.44	30.68	24.14	60.09	m	<b>114.91</b>
3.50 - 4.00 m deep	0.53	36.96	29.12	60.09	m	<b>126.16</b>
4.00 - 4.50 m deep	0.68	47.41	37.35	60.09	m	<b>144.85</b>
4.50 - 5.00 m deep	0.86	59.97	47.29	60.09	m	<b>167.34</b>
5.00 - 5.50 m deep	1.06	73.91	58.31	60.09	m	<b>192.30</b>
Extra for bend; 45°	0.14	9.76	4.87	125.18	nr	<b>139.81</b>
Extra for bend; 90°	0.14	9.76	4.87	168.54	nr	<b>183.18</b>
Extra for single junction; equal	0.25	17.43	10.50	348.33	nr	<b>376.26</b>

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>POLYVINYL CHLORIDE PIPES</b>						
<b>Unplasticised pvc perforated pipes; ring seal sockets; excavation and supports, backfilling; 6 m pipe lengths unless stated otherwise</b>						
82 mm pipes; in trench, depth						
not in trenches; 3.00 m pipe lengths	0.06	2.72	0.20	8.02	m	<b>10.94</b>
ne 1.50 m deep; 3.00 m pipe lengths	0.10	6.97	4.00	8.02	m	<b>18.99</b>
1.50 - 2.00 m deep	0.13	9.06	5.19	8.02	m	<b>22.28</b>
2.00 - 2.50 m deep	0.16	11.16	6.39	8.02	m	<b>25.56</b>
2.50 - 3.00 m deep	0.19	13.25	7.58	8.02	m	<b>28.85</b>
3.00 - 3.50 m deep	0.22	15.34	8.81	8.02	m	<b>32.17</b>
3.50 - 4.00 m deep	0.25	17.43	10.01	8.02	m	<b>35.46</b>
4.00 - 4.50 m deep	0.28	19.52	11.21	8.02	m	<b>38.75</b>
4.50 - 5.00 m deep	0.32	22.31	12.82	8.02	m	<b>43.15</b>
5.00 - 5.50 m deep	0.35	24.40	14.02	8.02	m	<b>46.45</b>
110 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.10	11.22	m	<b>14.04</b>
ne 1.50 m deep	0.10	6.97	4.00	11.22	m	<b>22.19</b>
1.50 - 2.00 m deep	0.13	9.06	5.19	11.22	m	<b>25.48</b>
2.00 - 2.50 m deep	0.16	11.16	6.39	11.22	m	<b>28.76</b>
2.50 - 3.00 m deep	0.19	13.25	7.58	11.22	m	<b>32.05</b>
3.00 - 3.50 m deep	0.22	15.34	8.81	11.22	m	<b>35.37</b>
3.50 - 4.00 m deep	0.25	17.43	10.01	11.22	m	<b>38.66</b>
4.00 - 4.50 m deep	0.28	19.52	11.21	11.22	m	<b>41.95</b>
4.50 - 5.00 m deep	0.32	22.31	12.82	11.22	m	<b>46.35</b>
5.00 - 5.50 m deep	0.36	25.10	14.43	11.22	m	<b>50.75</b>
160 mm pipes; in trench, depth						
not in trenches	0.06	2.72	0.20	28.67	m	<b>31.59</b>
ne 1.50 m deep	0.11	7.67	4.38	28.67	m	<b>40.72</b>
1.50 - 2.00 m deep	0.14	9.76	5.60	28.67	m	<b>44.03</b>
2.00 - 2.50 m deep	0.18	12.55	7.20	28.67	m	<b>48.42</b>
2.50 - 3.00 m deep	0.22	15.34	8.80	28.67	m	<b>52.81</b>
3.00 - 3.50 m deep	0.23	16.04	9.19	28.67	m	<b>53.89</b>
3.50 - 4.00 m deep	0.26	18.13	10.41	28.67	m	<b>57.21</b>
4.00 - 4.50 m deep	0.30	20.92	12.02	28.67	m	<b>61.61</b>
4.50 - 5.00 m deep	0.35	24.40	14.01	28.67	m	<b>67.09</b>
5.00 - 5.50 m deep	0.40	27.89	16.03	28.67	m	<b>72.59</b>
<b>Unplasticised pvc pipes; ring seal sockets; excavation and supports, backfilling; 6 m pipe lengths unless stated otherwise</b>						
82 mm pipes; in trenches, depth						
not in trenches; 3.00 m pipe lengths	0.06	2.72	0.45	6.97	m	<b>10.14</b>
ne 1.50 m deep; 3.00 m pipe lengths	0.10	6.97	5.20	6.97	m	<b>19.14</b>
1.50 - 2.00 m deep	0.13	9.06	7.14	6.97	m	<b>23.17</b>
2.00 - 2.50 m deep	0.16	11.16	8.77	6.97	m	<b>26.90</b>
2.50 - 3.00 m deep	0.19	13.25	10.41	6.97	m	<b>30.62</b>
3.00 - 3.50 m deep	0.22	15.34	12.10	6.97	m	<b>34.41</b>
3.50 - 4.00 m deep	0.25	17.43	13.74	6.97	m	<b>38.14</b>
4.00 - 4.50 m deep	0.28	19.52	15.38	6.97	m	<b>41.87</b>
4.50 - 5.00 m deep	0.32	22.31	17.59	6.97	m	<b>46.87</b>
5.00 - 5.50 m deep	0.35	24.40	19.23	6.97	m	<b>50.60</b>
Extra for bend; short radius (socket/spigot)	0.05	3.49	-	9.73	nr	<b>13.22</b>
Extra for branches; equal (socket/spigot)	0.07	4.88	-	12.30	nr	<b>17.18</b>



**CLASS I: PIPEWORK - PIPES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
110 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.45	9.76	m	<b>12.93</b>
ne 1.50 m deep	0.10	6.97	5.51	9.76	m	<b>22.24</b>
1.50 - 2.00 m deep	0.13	9.06	7.14	9.76	m	<b>25.96</b>
2.00 - 2.50 m deep	0.16	11.16	8.77	9.76	m	<b>29.68</b>
2.50 - 3.00 m deep	0.19	13.25	10.41	9.76	m	<b>33.41</b>
3.00 - 3.50 m deep	0.22	15.34	12.10	9.76	m	<b>37.20</b>
3.50 - 4.00 m deep	0.25	17.43	13.74	9.76	m	<b>40.93</b>
4.00 - 4.50 m deep	0.28	19.52	15.38	9.76	m	<b>44.66</b>
4.50 - 5.00 m deep	0.32	22.31	17.59	9.76	m	<b>49.66</b>
5.00 - 5.50 m deep	0.36	25.10	19.79	9.76	m	<b>54.65</b>
Extra for bend; short radius (socket/spigot)	0.05	3.49	-	14.78	nr	<b>18.27</b>
Extra for bend; adjustable (socket/spigot)	0.05	3.49	-	24.50	nr	<b>27.99</b>
Extra for reducer	0.05	3.49	-	5.46	nr	<b>8.95</b>
Extra for branches; equal (socket/spigot)	0.07	4.88	-	18.68	nr	<b>23.56</b>
160 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.45	24.83	m	<b>28.00</b>
ne 1.50 m deep	0.11	7.67	6.01	24.83	m	<b>38.51</b>
1.50 - 2.00 m deep	0.14	9.76	7.70	24.83	m	<b>42.29</b>
2.00 - 2.50 m deep	0.18	12.55	9.90	24.83	m	<b>47.28</b>
2.50 - 3.00 m deep	0.22	15.34	12.10	24.83	m	<b>52.27</b>
3.00 - 3.50 m deep	0.23	16.04	12.61	24.83	m	<b>53.47</b>
3.50 - 4.00 m deep	0.26	18.13	14.31	24.83	m	<b>57.27</b>
4.00 - 4.50 m deep	0.30	20.92	16.51	24.83	m	<b>62.26</b>
4.50 - 5.00 m deep	0.35	24.40	19.22	24.83	m	<b>68.45</b>
5.00 - 5.50 m deep	0.40	27.89	21.99	24.83	m	<b>74.71</b>
Extra for bend; short radius (socket/spigot)	0.05	3.49	-	57.31	nr	<b>60.80</b>
Extra for branches; equal (socket/spigot)	0.07	4.88	-	64.06	nr	<b>68.94</b>
225 mm pipes; in trenches, depth						
not in trenches	0.07	3.18	0.49	61.75	m	<b>65.41</b>
ne 1.50 m deep	0.12	8.37	6.58	61.75	m	<b>76.69</b>
1.50 - 2.00 m deep	0.15	10.46	8.20	61.75	m	<b>80.41</b>
2.00 - 2.50 m deep	0.20	13.95	10.96	61.75	m	<b>86.66</b>
2.50 - 3.00 m deep	0.23	16.04	12.60	61.75	m	<b>90.39</b>
3.00 - 3.50 m deep	0.24	16.73	13.17	61.75	m	<b>91.65</b>
3.50 - 4.00 m deep	0.27	18.83	14.81	61.75	m	<b>95.39</b>
4.00 - 4.50 m deep	0.32	22.31	17.58	61.75	m	<b>101.64</b>
4.50 - 5.00 m deep	0.36	25.10	19.78	61.75	m	<b>106.64</b>
5.00 - 5.50 m deep	0.45	31.38	24.76	61.75	m	<b>117.88</b>
Extra for bend; short radius 45° (double socket)	0.07	4.88	-	115.10	nr	<b>119.98</b>
Extra for branches; equal (all socket)	0.09	6.28	-	126.48	nr	<b>132.76</b>
300 mm pipes; in trenches, depth						
not in trenches	0.08	3.63	0.57	177.11	m	<b>181.31</b>
ne 1.50 m deep	0.13	9.06	7.14	177.11	m	<b>193.31</b>
1.50 - 2.00 m deep	0.16	11.16	8.77	177.11	m	<b>197.03</b>
2.00 - 2.50 m deep	0.21	14.64	11.53	177.11	m	<b>203.28</b>
2.50 - 3.00 m deep	0.23	16.04	12.60	177.11	m	<b>205.75</b>
3.00 - 3.50 m deep	0.25	17.43	13.73	177.11	m	<b>208.27</b>
3.50 - 4.00 m deep	0.28	19.52	15.37	177.11	m	<b>212.01</b>
4.00 - 4.50 m deep	0.34	23.71	18.71	177.11	m	<b>219.52</b>
4.50 - 5.00 m deep	0.38	26.50	20.91	177.11	m	<b>224.52</b>
5.00 - 5.50 m deep	0.47	32.77	25.82	177.11	m	<b>235.71</b>
Extra for bend; short radius 45° (double socket)	0.07	4.88	-	368.77	nr	<b>373.65</b>
Extra for branches; unequal (all socket)	0.09	6.28	-	442.76	nr	<b>449.04</b>

## CLASS I: PIPEWORK - PIPES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>POLYVINYL CHLORIDE PIPES - cont'd</b>						
<b>Unplasticised pvc pipes; polypropylene couplings; excavation and supports, backfilling; 6 m pipe lengths unless stated otherwise</b>						
110 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.45	11.90	m	15.07
ne 1.50 m deep	0.10	6.97	5.51	11.90	m	24.38
1.50 - 2.00 m deep	0.13	9.06	7.14	11.90	m	28.10
2.00 - 2.50 m deep	0.16	11.16	8.77	11.90	m	31.83
2.50 - 3.00 m deep	0.19	13.25	10.41	11.90	m	35.55
3.00 - 3.50 m deep	0.22	15.34	12.10	11.90	m	39.34
3.50 - 4.00 m deep	0.25	17.43	13.74	11.90	m	43.07
4.00 - 4.50 m deep	0.28	19.52	15.38	11.90	m	46.80
4.50 - 5.00 m deep	0.32	22.31	17.59	11.90	m	51.80
5.00 - 5.50 m deep	0.36	25.10	19.79	11.90	m	56.79
160 mm pipes; in trenches, depth						
not in trenches	0.06	2.72	0.46	25.27	m	28.45
ne 1.50 m deep	0.11	7.67	6.01	25.27	m	38.95
1.50 - 2.00 m deep	0.14	9.76	7.70	25.27	m	42.73
2.00 - 2.50 m deep	0.18	12.55	9.90	25.27	m	47.72
2.50 - 3.00 m deep	0.22	15.34	12.10	25.27	m	52.71
3.00 - 3.50 m deep	0.23	16.04	12.61	25.27	m	53.91
3.50 - 4.00 m deep	0.26	18.13	14.31	25.27	m	57.71
4.00 - 4.50 m deep	0.30	20.92	16.51	25.27	m	62.70
4.50 - 5.00 m deep	0.35	24.40	19.22	25.27	m	68.89
5.00 - 5.50 m deep	0.40	27.89	21.99	25.27	m	75.15
225 mm pipes; in trenches, depth						
not in trenches	0.07	3.18	0.49	53.74	m	57.40
ne 1.50 m deep	0.12	8.37	6.58	53.74	m	68.68
1.50 - 2.00 m deep	0.15	10.46	8.20	53.74	m	72.40
2.00 - 2.50 m deep	0.20	13.95	10.96	53.74	m	78.65
2.50 - 3.00 m deep	0.23	16.04	12.60	53.74	m	82.37
3.00 - 3.50 m deep	0.24	16.73	13.17	53.74	m	83.64
3.50 - 4.00 m deep	0.27	18.83	14.81	53.74	m	87.37
4.00 - 4.50 m deep	0.32	22.31	17.58	53.74	m	93.63
4.50 - 5.00 m deep	0.36	25.10	19.78	53.74	m	98.62
5.00 - 5.50 m deep	0.45	31.38	24.76	53.74	m	109.87
300 mm pipes; in trenches, depth						
not in trenches	0.08	3.63	0.57	104.21	m	108.41
ne 1.50 m deep	0.13	9.06	7.14	104.21	m	120.41
1.50 - 2.00 m deep	0.16	11.16	8.77	104.21	m	124.13
2.00 - 2.50 m deep	0.21	14.64	11.53	104.21	m	130.38
2.50 - 3.00 m deep	0.23	16.04	12.60	104.21	m	132.85
3.00 - 3.50 m deep	0.25	17.43	13.73	104.21	m	135.37
3.50 - 4.00 m deep	0.28	19.52	15.37	104.21	m	139.11
4.00 - 4.50 m deep	0.34	23.71	18.71	104.21	m	146.62
4.50 - 5.00 m deep	0.38	26.50	20.91	104.21	m	151.62
5.00 - 5.50 m deep	0.47	32.77	25.82	104.21	m	162.81

**CLASS I: PIPEWORK - PIPES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Ultrarib unplasticised pvc pipes; ring seal joints; excavation and supports, backfilling</b>						
150 mm pipes; in trenches, depth						
not in trenches	0.13	5.90	0.94	31.34	m	<b>38.18</b>
ne 1.50 m deep	0.16	11.16	8.77	31.34	m	<b>51.26</b>
1.50 - 2.00 m deep	0.19	13.25	10.40	31.34	m	<b>54.99</b>
2.00 - 2.50 m deep	0.22	15.34	12.10	31.34	m	<b>58.78</b>
2.50 - 3.00 m deep	0.24	16.73	13.16	31.34	m	<b>61.24</b>
3.00 - 3.50 m deep	0.24	16.73	13.17	31.34	m	<b>61.24</b>
3.50 - 4.00 m deep	0.27	18.83	14.81	31.34	m	<b>64.98</b>
4.00 - 4.50 m deep	0.32	22.31	17.58	31.34	m	<b>71.23</b>
4.50 - 5.00 m deep	0.36	25.10	19.78	31.34	m	<b>76.23</b>
5.00 - 5.50 m deep	0.45	31.38	24.76	31.34	m	<b>87.47</b>
Extra for bends; short radius (socket/spigot)	0.05	3.49	-	64.17	nr	<b>67.66</b>
Extra for branches; equal (socket/spigot)	0.09	6.28	-	66.59	nr	<b>72.87</b>
225 mm pipes; in trenches, depth						
not in trenches	0.08	3.63	0.57	35.91	m	<b>40.11</b>
ne 1.50 m deep	0.13	9.06	7.14	35.91	m	<b>52.12</b>
1.50 - 2.00 m deep	0.16	11.16	8.77	35.91	m	<b>55.84</b>
2.00 - 2.50 m deep	0.21	14.64	11.53	35.91	m	<b>62.08</b>
2.50 - 3.00 m deep	0.23	16.04	12.60	35.91	m	<b>64.55</b>
3.00 - 3.50 m deep	0.25	17.43	13.73	35.91	m	<b>67.08</b>
3.50 - 4.00 m deep	0.28	19.52	15.37	35.91	m	<b>70.81</b>
4.00 - 4.50 m deep	0.34	23.71	18.71	35.91	m	<b>78.33</b>
4.50 - 5.00 m deep	0.38	26.50	20.91	35.91	m	<b>83.32</b>
5.00 - 5.50 m deep	0.47	32.77	25.82	35.91	m	<b>94.51</b>
Extra for bends; short radius (socket/spigot)	0.05	3.49	-	148.87	nr	<b>152.36</b>
Extra for branches; equal (socket/spigot)	0.09	6.28	-	159.03	nr	<b>165.31</b>
300 mm pipes; in trenches, depth						
not in trenches	0.08	3.63	0.57	57.94	m	<b>62.14</b>
ne 1.50 m deep	0.13	9.06	7.14	57.94	m	<b>74.15</b>
1.50 - 2.00 m deep	0.16	11.16	8.77	57.94	m	<b>77.87</b>
2.00 - 2.50 m deep	0.21	14.64	11.53	57.94	m	<b>84.11</b>
2.50 - 3.00 m deep	0.23	16.04	12.60	57.94	m	<b>86.58</b>
3.00 - 3.50 m deep	0.25	17.43	13.73	57.94	m	<b>89.11</b>
3.50 - 4.00 m deep	0.28	19.52	15.37	57.94	m	<b>92.84</b>
4.00 - 4.50 m deep	0.34	23.71	18.71	57.94	m	<b>100.36</b>
4.50 - 5.00 m deep	0.38	26.50	20.91	57.94	m	<b>105.35</b>
5.00 - 5.50 m deep	0.47	32.77	25.82	57.94	m	<b>116.54</b>
EXtra for bends; short radius (socket/spigot)	0.07	4.88	-	234.48	nr	<b>239.36</b>
Extra for branches; equal (socket/spigot)	0.09	6.28	-	486.08	nr	<b>492.36</b>

**CLASS J: PIPEWORK - FITTINGS AND VALVES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>Fittings on pipes shown with the appropriate pipe in Class I</b>						
<b>RESOURCES - LABOUR</b>						
<b>Fittings and valves gang</b>						
Misc						
1 ganger/chargehand (skill rate 4) - 50% of time	1.00	7.14	-	-	-	<b>7.14</b>
1 skilled operative (skill rate 4)	1.00	13.32	-	-	-	<b>13.32</b>
2 unskilled operatives (general)	2.00	24.88	-	-	-	<b>24.88</b>
1 plant operator (skill rate 3)	1.00	16.19	-	-	-	<b>16.19</b>
Total Gang Rate / Hour	5.00	61.53	-	-	-	<b>61.53</b>
<b>RESOURCES - PLANT</b>						
Misc						
<b>Fittings and valves</b>						
1.0 m <sup>3</sup> hydraulic backacter	-	-	46.28	-	-	<b>46.28</b>
disc saw - 30% of time	-	-	0.42	-	-	<b>0.42</b>
2.80 m <sup>3</sup> /min compressor, 2 tool - 30% of time	-	-	3.67	-	-	<b>3.67</b>
2t dumper - 30% of time	-	-	2.62	-	-	<b>2.62</b>
compressor tools, extra 50ft / 15m hose - 30% of time	-	-	0.02	-	-	<b>0.02</b>
small pump - 30% of time	-	-	1.30	-	-	<b>1.30</b>
sundry tools - 30% of time	-	-	0.39	-	-	<b>0.39</b>
Total Rate / Hour	-	-	54.69	-	-	<b>54.69</b>
<b>VALVES AND PENSTOCKS</b>						
<b>Valves</b>						
Non-return valves; cast iron; single door; tidal flap						
250 mm	0.40	24.64	10.94	368.00	nr	<b>403.58</b>
350 mm	0.40	27.89	10.94	702.00	nr	<b>740.83</b>
450 mm	0.70	48.81	10.94	932.00	nr	<b>991.75</b>
600 mm	0.70	48.81	16.44	1265.00	nr	<b>1330.25</b>
800 mm	0.75	52.30	19.13	2248.89	nr	<b>2320.31</b>
Penstocks; cast iron; wall mounted; hand operated						
250 mm	1.66	115.75	19.13	518.89	nr	<b>653.76</b>
350 mm	2.30	160.37	21.88	732.46	nr	<b>914.71</b>
450 mm	2.90	202.21	24.63	904.89	nr	<b>1131.73</b>
600 x 600 mm	5.40	376.52	43.75	1461.75	nr	<b>1882.03</b>
1000 x 1000 mm	9.00	627.54	82.07	2616.61	nr	<b>3326.21</b>

**CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
The rates assume the most efficient items of plant (excavator) and are optimum rates assuming continuous output with no delays caused by other operations or works. Ground conditions are assumed to be good easily worked soil with no abnormal conditions that would affect outputs and consistency of work. Multiplier Table for labour and plant for various site conditions for working: out of sequence x 2.75 (minimum) in hard clay x 1.75 to 2.00 in running sand x 2.75 (minimum) in broken rock x 2.75 to 3.50 below water table x 2.00 (minimum)						
<b>RESOURCES - LABOUR</b>						
<b>Misc</b>						
<b>Gullies gang</b>						
1 chargehand pipelayer (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		£ 61.53				
<b>French/rubble drains, ditches and trenches gang; ducts and metal culverts gang</b>						
1 chargehand pipelayer (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		£ 61.53				
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Gullies</b>						
0.4 m <sup>3</sup> hydraulic excavator			35.24			
2t dumper (30% of time)			2.62			
2.80 m <sup>3</sup> /min compressor, 2 tool (30% of time)			3.67			
compaction plate / roller (30% of time)			0.86			
2.40 m <sup>3</sup> /min road breaker (30% of time)			0.62			
54mm poker vibrator (30% of time)			0.47			
extra 15ft / 50m hose (30% of time)			0.02			
disc saw (30% of time)			0.64			
small pump (30% of time)			1.30			
Total Rate / Hour		£	45.43			

## CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT - cont'd</b>						
<b>French/rubble drains, ditches and trenches; ducts and metal culverts</b>						
0.4m <sup>3</sup> hydraulic backacter			35.24			
2t dumper (30% of time)			2.62			
disc saw (30% of time)			0.64			
compaction plate / roller (30% of time)			0.86			
2.80 m <sup>3</sup> /min compressor, 2 tool (30% of time)			3.67			
small pump (30% of time)			1.30			
Total Rate / Hour		£	<b>44.32</b>			
<b>MANHOLES</b>						
<b>Brick construction</b>						
Design criteria used in models:						
* class A engineering bricks						
* 215 thick walls generally; 328 thick to chambers exceeding 2.5 m deep						
* 225 mm plain concrete C20/20 base slab						
* 300 mm reinforced concrete C20/20 reducing slab						
* 125 mm reinforced concrete C20/20 top slab						
* maximum height of working chamber 2.0 m above benching						
* 750 x 750 access shaft						
* plain concrete C15/20 benching, 150 mm clay main channel longitudinally and two 100 branch channels						
* step irons at 300 mm centres, doubled if depth to invert exceeds 3000 mm						
* heavy duty manhole cover and frame						
750 x 700 chamber 500 depth to invert						
excavation, support, backfilling and disposal						49.44
concrete base						158.68
brickwork chamber						266.13
concrete cover slab						176.95
concrete benching, main and branch channels						27.56
step irons						15.58
access cover and frame						330.00
TOTAL						£ <b>1024.33</b>
750 x 700 chamber 1000 depth to invert						
excavation, support, backfilling and disposal						98.88
concrete base						158.68
brickwork chamber						532.28
concrete cover slab						176.95
concrete benching and channels						27.56
step irons						32.57
access cover and frame						330.00
TOTAL						£ <b>1356.91</b>
750 x 700 chamber 1500 depth to invert						
excavation, support, backfilling and disposal						148.30
concrete base						158.68
brickwork chamber						798.41
concrete cover slab						176.95
concrete benching and channels						27.56
step irons						48.85
access cover and frame						330.00
TOTAL						£ <b>1688.75</b>

**CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
900 x 700 chamber 500 depth to invert						
excavation, support, backfilling and disposal						54.21
concrete base						176.40
brickwork chamber						285.69
concrete cover slab						193.51
concrete benching and channels						33.08
step irons						15.58
access cover and frame						330.00
TOTAL					£	<b>1088.47</b>
900 x 700 chamber 1000 depth to invert						
excavation, support, backfilling and disposal						108.42
concrete base						176.40
brickwork chamber						571.39
concrete cover slab						193.51
concrete benching and channels						33.08
step irons						32.57
access cover and frame						330.00
TOTAL					£	<b>1445.37</b>
900 x 700 chamber 1500 depth to invert						
excavation, support, backfilling and disposal						162.64
concrete base						176.40
brickwork chamber						857.08
concrete cover slab						193.51
concrete benching and channels						33.08
step irons						48.85
access cover and frame						330.00
TOTAL					£	<b>1801.56</b>
1050 x 700 chamber 1500 depth to invert						
excavation, support, backfilling and disposal						176.97
concrete base						194.13
brickwork chamber						915.77
concrete cover slab						210.07
concrete benching and channels						38.59
step irons						48.85
access cover and frame						330.00
TOTAL					£	<b>1914.38</b>
1050 x 700 chamber 2500 depth to invert						
excavation, support, backfilling and disposal						294.95
concrete base						194.13
brickwork chamber						1526.27
concrete cover slab						210.07
concrete benching and channels						38.59
step irons						81.42
access cover and frame						330.00
TOTAL					£	<b>2675.43</b>
1050 x 700 chamber 3500 depth to invert						
excavation, support, backfilling and disposal						412.93
concrete base						194.13
brickwork chamber						2136.78
access shaft						2182.41
reducing slab						210.07
concrete cover slab						171.44
concrete benching and channels						38.59
step irons						113.99
access cover and frame						330.00
TOTAL					£	<b>5790.33</b>

## CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>MANHOLES - cont'd</b>						
<b>Brick construction - cont'd</b>						
1350 x 700 chamber 2500 depth to invert						
excavation, support, backfilling and disposal						342.73
concrete base						229.56
brickwork chamber						1721.85
concrete cover slab						243.20
concrete benching and channels						49.61
step irons						81.42
access cover and frame						330.00
TOTAL					£	<b>2998.37</b>
1350 x 700 chamber 3500 depth to invert						
excavation, support, backfilling and disposal						479.81
concrete base						229.56
brickwork chamber						2410.60
access shaft						2182.41
reducing slab						243.20
concrete cover slab						171.44
concrete benching and channels						49.61
step irons						113.99
access cover and frame						330.00
TOTAL					£	<b>6210.62</b>
1350 x 700 chamber 4500 depth to invert						
excavation, support, backfilling and disposal						616.91
concrete base						229.56
brickwork chamber						3099.34
access shaft						2805.97
reducing slab						243.20
concrete cover slab						171.44
concrete benching and channels						49.61
step irons						146.56
access cover and frame						330.00
TOTAL					£	<b>7692.59</b>
<b>Precast concrete construction</b>						
Design criteria used in models:						
* circular shafts						
* 150 mm plain concrete C15/20 surround						
* 225 mm plain concrete C20/20 base slab						
* precast reducing slab						
* precast top slab						
* maximum height of working chamber 2.0 m above benching						
* 750 mm diameter access shaft						
* plain concrete C15/20 benching, 150 mm clay main channel longitudinally and two 100 branch channels						
* step irons at 300 mm centres, doubled if depth to invert exceeds 3000 mm						
* heavy duty manhole cover and frame						
* in manholes over 6 m deep, landings at maximum intervals 675 diameter x 500 depth to invert						
excavation, support, backfilling and disposal						30.00
concrete base						45.00
main chamber rings						21.60
cover slab						85.20
concrete benching and channels						58.75
concrete surround						46.25
step irons						15.58
access cover and frame						330.00
TOTAL					£	<b>632.38</b>



**CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
675 diameter x 750 depth to invert						
excavation, support, backfilling and disposal						40.00
concrete base						45.00
main chamber rings						49.20
cover slab						85.20
concrete benching and channels						58.75
concrete surround						67.50
step irons						-
access cover and frame						330.00
TOTAL					£	<b>699.01</b>
675 diameter x 1000 depth to invert						
excavation, support, backfilling and disposal						48.75
concrete base						45.00
main chamber rings						78.00
cover slab						85.20
concrete benching and channels						58.75
step irons						-
concrete surround						90.00
access cover and frame						330.00
TOTAL					£	<b>766.85</b>
675 diameter x 1250 depth to invert						
excavation, support, backfilling and disposal						57.50
concrete base						45.00
main chamber rings						106.80
cover slab						85.20
concrete benching and channels						58.75
concrete surround						111.25
step irons						40.71
access cover and frame						330.00
TOTAL					£	<b>835.21</b>
900 diameter x 750 depth to invert						
excavation, support, backfilling and disposal						128.16
concrete base						151.71
main chamber rings						68.62
cover slab						101.02
concrete benching and channels						33.08
concrete surround						85.83
step irons						-
access cover and frame						330.00
TOTAL					£	<b>842.58</b>
900 diameter x 1000 depth to invert						
excavation, support, backfilling and disposal						170.88
concrete base						151.71
main chamber rings						91.50
cover slab						101.02
concrete benching and channels						33.08
concrete surround						114.44
step irons						-
access cover and frame						330.00
TOTAL					£	<b>956.08</b>

**CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>MANHOLES - cont'd</b>						
<b>Precast concrete construction - cont'd</b>						
900 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal						256.31
concrete base						151.71
main chamber rings						137.24
cover slab						101.02
concrete benching and channels						33.08
concrete surround						171.65
step irons						48.85
access cover and frame						330.00
TOTAL					£	<b>1130.95</b>
1200 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal						317.43
concrete base						214.16
main chamber rings						144.44
concrete benching and channels						49.49
cover slab						129.42
concrete surround						221.50
step irons						48.85
access cover and frame						330.00
TOTAL					£	<b>1455.29</b>
1200 diameter x 2000 depth to invert						
excavation, support, backfilling and disposal						423.23
concrete base						214.16
main chamber rings						192.59
cover slab						129.42
concrete benching and channels						49.49
concrete surround						295.34
step irons						65.14
access cover and frame						330.00
TOTAL					£	<b>1699.36</b>
1200 diameter x 2500 depth to invert						
excavation, support, backfilling and disposal						529.04
concrete base						214.16
main chamber rings						240.74
cover slab						129.42
concrete benching and channels						49.49
concrete surround						369.18
step irons						81.42
access cover and frame						330.00
TOTAL					£	<b>1943.45</b>
1200 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal						634.84
concrete base						214.16
main chamber rings						288.89
cover slab						129.42
concrete benching and channels						49.49
concrete surround						443.01
step irons						97.70
access cover and frame						330.00
TOTAL					£	<b>2187.51</b>

**CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
1800 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal						461.11
concrete base						369.90
main chamber rings						434.70
cover slab						347.76
concrete benching and channels						111.35
concrete surround						321.21
step irons						48.85
access cover and frame						330.00
TOTAL					£	<b>2424.89</b>
1800 diameter x 2000 depth to invert						
excavation, support, backfilling and disposal						614.81
concrete base						369.90
main chamber rings						579.60
cover slab						347.76
concrete benching and channels						111.35
concrete surround						428.27
step irons						65.14
access cover and frame						330.00
TOTAL					£	<b>2846.83</b>
1800 diameter x 2500 depth to invert						
excavation, support, backfilling and disposal						768.51
concrete base						369.90
main chamber rings						724.50
cover slab						347.76
concrete benching and channels						111.35
concrete surround						535.35
step irons						81.42
access cover and frame						330.00
TOTAL					£	<b>3268.79</b>
1800 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal						922.21
concrete base						369.90
main chamber rings						869.40
cover slab						347.76
concrete surround						642.41
concrete benching and channels						111.35
step irons						97.70
access cover and frame						330.00
TOTAL					£	<b>3690.74</b>
1800 diameter x 3500 depth to invert						
excavation, support, backfilling and disposal						1075.92
concrete base						369.90
access shaft						320.23
main chamber rings						1014.30
reducing slab						389.16
cover slab						101.02
concrete benching and channels						111.35
concrete surround						749.49
step irons						113.99
access cover and frame						330.00
TOTAL					£	<b>4720.26</b>

## CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>MANHOLES - cont'd</b>						
<b>Precast concrete construction - cont'd</b>						
1800 diameter x 4000 depth to invert						
excavation, support, backfilling and disposal						1229.63
concrete base						369.90
access shaft						365.98
main chamber rings						1159.20
reducing slab						389.16
cover slab						101.02
concrete benching and channels						111.35
concrete surround						856.55
step irons						130.27
access cover and frame						330.00
TOTAL					£	<b>5043.05</b>
2400 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal						633.42
concrete base						566.79
main chamber rings						1105.38
cover slab						1010.16
concrete benching and channels						197.95
concrete surround						420.91
step irons						48.85
access cover and frame						330.00
TOTAL					£	<b>4313.47</b>
2400 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal						1266.85
concrete base						566.79
main chamber rings						2210.76
cover slab						1010.16
concrete benching and channels						197.95
concrete surround						841.83
step irons						97.70
access cover and frame						330.00
TOTAL					£	<b>6522.04</b>
2400 diameter x 4500 depth to invert						
excavation, support, backfilling and disposal						1900.29
concrete base						566.79
access shaft						411.72
main chamber rings						3316.14
reducing slab						1092.96
cover slab						101.02
concrete benching and channels						197.95
concrete surround						1262.72
step irons						146.56
access cover and frame						330.00
TOTAL					£	<b>9326.14</b>
2700 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal						730.33
concrete base						680.66
main chamber rings						1279.26
cover slab						1540.08
concrete benching and channels						250.53
concrete surround						470.76
step irons						48.85
access cover and frame						330.00
TOTAL					£	<b>5330.47</b>
2700 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal						1460.65
concrete base						680.66
main chamber rings						2558.52

## CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
cover slab						1540.08
concrete benching and channels						250.53
concrete surround						941.52
step irons						97.70
access cover and frame						330.00
TOTAL					£	<b>7859.67</b>
2700 diameter x 4500 depth to invert						
excavation, support, backfilling and disposal						2190.97
concrete base						680.66
access shaft						411.72
main chamber rings						3837.78
reducing slab						1788.48
cover slab						101.02
concrete benching and channels						250.53
concrete surround						1412.28
step irons						146.56
access cover and frame						330.00
TOTAL					£	<b>11149.99</b>
3000 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal						1668.75
concrete base						804.81
main chamber rings						3601.80
cover slab						1987.20
concrete benching and channels						309.29
concrete surround						1041.22
step irons						97.70
access cover and frame						330.00
TOTAL					£	<b>9840.78</b>
3000 diameter x 4500 depth to invert						
excavation, support, backfilling and disposal						2503.14
concrete base						804.81
access shaft						411.72
main chamber rings						5402.70
reducing slab						2277.00
cover slab						101.02
concrete benching and channels						309.29
concrete surround						1561.84
step irons						146.56
access cover and frame						330.00
TOTAL					£	<b>13848.07</b>
3000 diameter x 6000 depth to invert						
excavation, support, backfilling and disposal						3337.51
concrete base						804.81
access shaft						548.96
main chamber rings						7203.60
reducing slab						2277.00
cover slab						101.02
concrete benching and channels						309.29
concrete surround						2082.45
step irons						195.41
access cover and frame						330.00
TOTAL					£	<b>17190.05</b>

## CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>BACKDROPS TO MANHOLES</b>						
<b>Clayware vertical pipe complete with rest bend at base and tumbling bay junction to main drain complete with stopper; concrete grade C20 surround, 150 mm thick; additional excavation and disposal</b>						
100 pipe						
1.15 m to invert	-	-	-	-	nr	117.13
2.15 m to invert	-	-	-	-	nr	149.58
3.15 m to invert	-	-	-	-	nr	180.62
4.15 m to invert	-	-	-	-	nr	214.49
150 pipe						
1.15 m to invert	-	-	-	-	nr	180.62
2.15 m to invert	-	-	-	-	nr	217.32
3.15 m to invert	-	-	-	-	nr	259.65
4.15 m to invert	-	-	-	-	nr	301.98
225 pipe						
1.15 m to invert	-	-	-	-	nr	359.83
2.15 m to invert	-	-	-	-	nr	421.92
3.15 m to invert	-	-	-	-	nr	486.83
4.15 m to invert	-	-	-	-	nr	554.56
<b>GULLIES</b>						
<b>Vitrified clay; set in concrete grade C20, 150 mm thick; additional excavation and disposal</b>						
Road gully						
450 mm diameter x 900 mm deep, 100 mm or 150 mm outlet; PC £126.00.00*; cast iron road gully grating and frame group 4 434 x 434 mm, PC £49.00*, on Class B engineering brick seating	0.50	30.80	1.63	315.20	nr	347.64
Yard gully (mud); trapped with rodding eye; galvanised bucket; stopper						
225 mm diameter, 100 mm diameter outlet, PC £89.00*; cast iron hinged grate and frame	0.30	18.48	0.98	193.64	nr	213.10
Grease interceptors; internal access and bucket						
600 x 450 mm, PC £704.00*; metal tray and lid, square hopper with horizontal inlet	0.35	21.56	1.14	1019.56	nr	1042.26
<b>Precast concrete; set in concrete grade C20, 150 mm thick; additional excavation and disposal</b>						
Road gully; trapped with rodding eye; galvanised bucket; stopper						
450 mm diameter x 750 mm deep, PC £45.00*; cast iron road gully grating and frame group 4, 434 x 434 mm, PC £55.00*, on Class B engineering brick seating	0.50	30.80	1.63	204.52	nr	236.95
450 mm diameter x 900 mm deep, PC £46.00*; cast iron road gully grating and frame group 4, 434 x 434 mm, PC £55.00*, on Class B engineering brick seating	0.54	33.27	1.76	205.70	nr	240.73
450 mm diameter x 1050 mm deep, PC £50.00*; cast iron road gully grating and frame group 4, 434 x 434 mm, PC £55.00*, on Class B engineering brick seating	0.58	35.73	1.89	208.21	nr	245.83

**CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FRENCH DRAINS, RUBBLE DRAINS, DITCHES</b>						
The rates assume the most efficient items of plant (excavator) and are optimum rates assuming continuous output with no delays caused by other operations or works. Ground conditions are assumed to be good easily worked soil with no abnormal conditions that would affect outputs and consistency of work. Multiplier Table for labour and plant for various site conditions for working: out of sequence x 2.75 (minimum) in hard clay x 1.75 to 2.00 in running sand x 2.75 (minimum) in broken rock x 2.75 to 3.50 below water table x 2.00 (minimum) Excavation of trenches for unpiped rubble drains (excluding trench support); cross-sectional area						
0.25 - 0.50 m <sup>2</sup>	0.10	6.97	3.88	-	m	<b>10.85</b>
0.50 - 0.75 m <sup>2</sup>	0.12	8.37	4.65	-	m	<b>13.01</b>
0.75 - 1.00 m <sup>2</sup>	0.14	9.76	5.43	-	m	<b>15.19</b>
1.00 - 1.50 m <sup>2</sup>	0.17	11.85	6.58	-	m	<b>18.44</b>
1.50 - 2.00 m <sup>2</sup>	0.20	13.95	7.74	-	m	<b>21.69</b>
Filling French and rubble drains with graded material						
graded material; 20 mm stone aggregate; PC £4.45/t	0.30	20.92	11.62	26.79	m <sup>3</sup>	<b>59.33</b>
broken brick/concrete rubble; PC £3.42/t	0.29	20.22	11.23	19.32	m <sup>3</sup>	<b>50.77</b>
Excavation of rectangular section ditches; unlined; cross-sectional area						
0.25 - 0.50 m <sup>2</sup>	0.11	7.67	4.16	-	m	<b>11.83</b>
0.50 - 0.75 m <sup>2</sup>	0.13	9.06	4.92	-	m	<b>13.99</b>
0.75 - 1.00 m <sup>2</sup>	0.16	11.16	6.06	-	m	<b>17.21</b>
1.00 - 1.50 m <sup>2</sup>	0.20	13.95	7.57	-	m	<b>21.52</b>
1.50 - 2.00 m <sup>2</sup>	0.25	17.43	9.46	-	m	<b>26.90</b>
Excavation of rectangular ditches; lined with precast concrete slabs; cross-sectional area						
0.25 - 0.50 m <sup>2</sup>	0.15	10.46	6.28	11.81	m	<b>28.55</b>
0.50 - 0.75 m <sup>2</sup>	0.25	17.43	10.50	19.47	m	<b>47.39</b>
0.75 - 1.00 m <sup>2</sup>	0.36	25.10	15.10	27.86	m	<b>68.06</b>
1.00 - 1.50 m <sup>2</sup>	0.40	27.89	16.78	39.50	m	<b>84.16</b>
1.50 - 2.00 m <sup>2</sup>	0.45	31.38	18.89	55.58	m	<b>105.84</b>
Excavation of vee section ditches; unlined; cross-sectional area						
0.25 - 0.50 m <sup>2</sup>	0.10	6.97	4.44	-	m	<b>11.41</b>
0.50 - 0.75 m <sup>2</sup>	0.12	8.37	5.29	-	m	<b>13.66</b>
0.75 - 1.00 m <sup>2</sup>	0.14	9.76	6.20	-	m	<b>15.97</b>
1.00 - 1.50 m <sup>2</sup>	0.18	12.55	7.97	-	m	<b>20.52</b>
1.50 - 2.00 m <sup>2</sup>	0.22	15.34	9.73	-	m	<b>25.07</b>
<b>DUCTS AND METAL CULVERTS</b>						
<b>Galvanised steel culverts; bitumen coated</b>						
Sectional corrugated metal culverts, nominal internal diameter 0.5 - 1 m; 1000 mm nominal internal diameter, 1.6 mm thick						
not in trenches	0.15	9.24	1.03	97.71	m	<b>107.98</b>
in trenches, depth not exceeding 1.5 m	0.31	19.10	13.72	97.71	m	<b>130.53</b>
in trenches, depth 1.5 - 2 m	0.43	26.49	19.04	97.71	m	<b>143.24</b>
in trenches, depth 2 - 2.5 m	0.51	31.42	22.59	97.71	m	<b>151.71</b>
in trenches, depth 2.5 - 3 m	0.60	36.96	26.59	97.71	m	<b>161.26</b>

## CLASS K: PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DUCTS AND METAL CULVERTS - cont'd</b>						
<b>Galvanised steel culverts; bitumen coated - cont'd</b>						
Sectional corrugated metal culverts, nominal internal diameter exceeding 1.5 m; 1600 mm nominal internal diameter, 1.6 mm thick						
not in trenches	0.21	12.94	1.47	182.93	m	<b>197.33</b>
in trenches, depth 1.5 - 2 m	0.44	27.11	19.50	182.93	m	<b>229.54</b>
in trenches, depth 2 - 2.5 m	0.56	34.50	24.82	182.93	m	<b>242.25</b>
in trenches, depth 2.5 - 3 m	0.68	41.89	30.14	182.93	m	<b>254.96</b>
in trenches, depth 3 -3.5 m	0.82	50.52	36.37	182.93	m	<b>269.82</b>
Sectional corrugated metal culverts, nominal internal diameter exceeding 1.5 m; 2000 mm nominal internal diameter, 1.6 mm thick						
not in trenches	0.26	16.02	1.82	391.19	m	<b>409.03</b>
in trenches, depth 2 - 2.5 m	0.46	28.34	20.42	391.19	m	<b>439.94</b>
in trenches, depth 2.5 - 3 m	0.60	36.96	26.59	391.19	m	<b>454.74</b>
in trenches, depth 3 - 3.5 m	0.75	46.21	33.22	391.19	m	<b>470.62</b>
in trenches, depth 3.5 - 4 m	0.93	57.29	41.23	391.19	m	<b>489.71</b>
Sectional corrugated metal culverts, nominal internal diameter exceeding 1.5 m; 2200 mm nominal internal diameter, 1.6 mm thick						
not in trenches	0.33	20.33	2.30	440.98	m	<b>463.61</b>
in trenches, depth 2.5 - 3 m	0.64	39.43	28.36	440.98	m	<b>508.78</b>
in trenches, depth 3 - 3.5 m	0.77	47.44	34.14	440.98	m	<b>522.56</b>
in trenches, depth 3.5 - 4 m	1.02	62.84	45.24	440.98	m	<b>549.06</b>
in trenches, depth exceeding 4 m	1.32	81.32	58.50	440.98	m	<b>580.81</b>
<b>OTHER PIPEWORK ANCILLARIES</b>						
<b>Notes</b>						
Refer to Section G (Concrete and concrete ancillaries) for costs relevant to the construction of Headwall Structure.						
<b>Build Ends in</b>						
Connections to existing manholes and other chambers, pipe bore						
150 mm diameter	0.60	41.84	4.93	10.33	nr	<b>57.10</b>
225 mm diameter	0.95	66.24	7.79	19.23	nr	<b>93.26</b>
300 mm diameter	1.25	87.16	10.29	29.18	nr	<b>126.63</b>
375 mm diameter	1.45	101.10	11.93	38.45	nr	<b>151.48</b>
450 mm diameter	1.75	107.81	77.54	48.38	nr	<b>233.73</b>



**CLASS L: PIPEWORK SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
The rates assume the most efficient items of plant (excavator) and are optimum rates assuming continuous output with no delays caused by other operations or works. Ground conditions are assumed to be good easily worked soil with no abnormal conditions that would affect outputs and consistency of work. Multiplier Table for labour and plant for various site conditions for working:						
out of sequence		x 2.75 (minimum)				
in hard clay		x 1.75 to 2.00				
in running sand		x 2.75 (minimum)				
in broken rock		x 2.75 to 3.50				
below water table		x 2.00 (minimum)				
<b>RESOURCES - LABOUR</b>						
<b>Misc</b>						
<b>Supports and protection gang</b>						
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		£ 41.07				
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Supports and protection</b>						
0.40 m <sup>3</sup> hydraulic backacter			35.24			
Bomag BW 65S			7.07			
Total Rate / Hour			£ 42.31			
<b>EXTRAS TO EXCAVATION AND BACKFILLING</b>						
<b>Drainage sundries</b>						
Extra over any item of drainage for excavation in						
rock	0.65	26.74	37.70	-	m <sup>3</sup>	64.44
mass concrete	0.84	34.56	49.04	-	m <sup>3</sup>	83.60
reinforced concrete	1.18	48.54	68.76	-	m <sup>3</sup>	117.30
Excavation of soft spots, backfilling						
concrete grade C15P	0.30	12.34	17.41	94.93	m <sup>3</sup>	124.68
<b>SPECIAL PIPE LAYING METHODS</b>						
There are many factors, apart from design consideration, which influence the cost of pipe jacking, so that it is only possible to give guide prices for a sample of the work involved. For more reliable estimates it is advisable to seek the advice of a Specialist Contractor. The main cost considerations are:						
* the nature of the ground						
* length of drive						
* location						
* presence of water						
* depth below surface						
Provision of all plant, equipment and labour establishing						
thrust pit; 6 m x 4 m x 8 m deep	-	-	-	-	item	30000.00
reception pit; 4 m x 4 m x 8 m deep	-	-	-	-	item	22000.00
mobilise and set up pipe jacking equipment	-	-	-	-	item	44000.00

**CLASS L: PIPEWORK SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SPECIAL PIPE LAYING METHODS - cont'd</b>						
Pipe jacking, excluding the cost of non-drainage materials; concrete pipes BS 5911 Part 1 Class 120 with rebated joints, steel reinforcing band; length not exceeding 50 m; in sand and gravel						
900 mm nominal bore	-	-	-	-	m	<b>1421.40</b>
1200 mm nominal bore	-	-	-	-	m	<b>1835.40</b>
1500 mm nominal bore	-	-	-	-	m	<b>1932.50</b>
1800 mm nominal bore	-	-	-	-	m	<b>2185.50</b>
<b>BEDS</b>						
<b>Imported sand</b>						
100 mm deep bed for pipes nominal bore						
100 mm	0.02	0.82	0.70	2.64	m	<b>4.17</b>
150 mm	0.02	0.82	0.70	2.85	m	<b>4.38</b>
225 mm	0.03	1.23	1.06	3.32	m	<b>5.62</b>
300 mm	0.04	1.65	1.41	3.48	m	<b>6.53</b>
150 mm deep bed for pipes nominal bore						
150 mm	0.06	2.47	2.11	4.31	m	<b>8.89</b>
225 mm	0.07	2.88	2.47	4.98	m	<b>10.32</b>
300 mm	0.09	3.70	3.17	5.27	m	<b>12.14</b>
400 mm	0.12	4.94	4.23	5.89	m	<b>15.06</b>
450 mm	0.14	5.76	4.93	6.90	m	<b>17.59</b>
600 mm	0.17	6.99	5.99	8.53	m	<b>21.51</b>
750 mm	0.19	7.82	6.70	9.53	m	<b>24.05</b>
900 mm	0.21	8.64	7.40	11.16	m	<b>27.20</b>
1200 mm	0.25	10.28	8.81	13.13	m	<b>32.22</b>
<b>Imported granular material</b>						
100 mm deep bed for pipes nominal bore						
100 mm	0.02	0.82	0.70	1.78	m	<b>3.31</b>
150 mm	0.03	1.23	1.06	1.93	m	<b>4.22</b>
225 mm	0.04	1.65	1.41	2.21	m	<b>5.26</b>
300 mm	0.05	2.06	1.76	2.36	m	<b>6.18</b>
150 mm deep bed for pipes nominal bore						
150 mm	0.06	2.47	2.11	2.88	m	<b>7.47</b>
225 mm	0.08	3.29	2.82	3.32	m	<b>9.43</b>
300 mm	0.10	4.11	3.52	3.55	m	<b>11.18</b>
400 mm	0.13	5.35	4.58	4.00	m	<b>13.93</b>
450 mm	0.15	6.17	5.29	4.61	m	<b>16.06</b>
600 mm	0.18	7.40	6.34	5.74	m	<b>19.49</b>
750 mm	0.20	8.23	7.05	6.40	m	<b>21.68</b>
900 mm	0.22	9.05	7.75	7.51	m	<b>24.32</b>
1200 mm	0.26	10.70	9.16	8.82	m	<b>28.68</b>
<b>Mass concrete</b>						
100 mm deep bed for pipes nominal bore						
100 mm	0.07	2.88	2.47	7.26	m	<b>12.61</b>
150 mm	0.08	3.29	2.82	7.87	m	<b>13.98</b>
225 mm	0.09	3.70	3.17	9.09	m	<b>15.96</b>
300 mm	0.11	4.53	3.88	9.70	m	<b>18.10</b>

**CLASS L: PIPEWORK SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
150 mm deep bed for pipes nominal bore						
100 mm	0.10	4.11	3.52	10.91	m	<b>18.55</b>
150 mm	0.12	4.94	4.23	11.80	m	<b>20.97</b>
225 mm	0.14	5.76	4.93	13.63	m	<b>24.33</b>
300 mm	0.16	6.58	5.64	14.55	m	<b>26.77</b>
400 mm	0.19	7.82	6.70	16.32	m	<b>30.83</b>
450 mm	0.21	8.64	7.40	19.08	m	<b>35.12</b>
600 mm	0.24	9.87	8.46	23.60	m	<b>41.93</b>
750 mm	0.26	10.70	9.16	26.32	m	<b>46.18</b>
900 mm	0.28	11.52	9.87	30.88	m	<b>52.26</b>
1200 mm	0.32	13.16	11.28	36.31	m	<b>60.75</b>
<b>HAUNCHES</b>						
The following items allow for dressing the haunching material half-way up the pipe barrel for the full width of the bed and then dressing in triangular fashion to the crown of the pipe. The items exclude the drain bed.						
<b>Mass concrete</b>						
Haunches for pipes nominal bore						
150 mm	0.24	9.87	8.46	6.67	m	<b>25.00</b>
225 mm	0.29	11.93	10.22	10.45	m	<b>32.60</b>
300 mm	0.36	14.81	12.69	13.18	m	<b>40.67</b>
400 mm	0.43	17.69	15.15	17.43	m	<b>50.27</b>
450 mm	0.50	20.57	17.62	23.60	m	<b>61.79</b>
600 mm	0.56	23.04	19.73	36.54	m	<b>79.31</b>
750 mm	0.62	25.51	21.85	45.18	m	<b>92.53</b>
900 mm	0.69	28.39	24.32	61.83	m	<b>114.53</b>
1200 mm	0.75	30.85	26.43	80.93	m	<b>138.21</b>
<b>SURROUNDS</b>						
The following items provide for dressing around the pipe above the bed. sand and granular material is quantified on the basis of the full width of the bed to the stated distance above the crown, concrete as an ellipse from the top corners of the bed to a point at the stated distance above the crown. The items exclude the drain bed.						
<b>Imported sand</b>						
100 mm thick bed for pipes nominal bore						
100 mm	0.04	1.65	1.41	4.79	m	<b>7.84</b>
150 mm	0.05	2.06	1.76	6.87	m	<b>10.69</b>
225 mm	0.06	2.47	2.11	10.99	m	<b>15.58</b>
300 mm	0.08	3.29	2.82	15.32	m	<b>21.43</b>
150 mm thick bed for pipes nominal bore						
100 mm	0.10	4.11	3.52	5.81	m	<b>13.45</b>
150 mm	0.12	4.94	4.23	7.97	m	<b>17.13</b>
225 mm	0.14	5.76	4.93	12.29	m	<b>22.98</b>
300 mm	0.18	7.40	6.34	16.64	m	<b>30.39</b>
400 mm	0.24	9.87	8.46	24.29	m	<b>42.62</b>
450 mm	0.28	11.52	9.87	30.94	m	<b>52.32</b>
600 mm	0.34	13.99	11.98	49.99	m	<b>75.95</b>
750 mm	0.38	15.63	13.39	69.69	m	<b>98.72</b>
900 mm	0.42	17.28	14.80	97.03	m	<b>129.11</b>
1200 mm	0.50	20.57	17.62	154.65	m	<b>192.84</b>

**CLASS L: PIPEWORK SUPPORTS AND PROTECTION, ANCILLARIES TO LAYING AND EXCAVATION**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SPECIAL PIPE LAYING METHODS - cont'd</b>						
<b>Imported granular material</b>						
100 mm thick bed for pipes nominal bore						
100 mm	0.07	4.88	2.47	3.21	m	<b>10.56</b>
150 mm	0.10	6.97	3.52	4.58	m	<b>15.08</b>
225 mm	0.13	9.06	4.58	7.35	m	<b>21.00</b>
300 mm	0.16	11.16	5.64	10.26	m	<b>27.06</b>
150 mm thick bed for pipes nominal bore						
100 mm	0.10	4.11	3.52	3.88	m	<b>11.52</b>
150 mm	0.12	4.94	4.23	5.34	m	<b>14.50</b>
225 mm	0.14	5.76	4.93	8.22	m	<b>18.91</b>
300 mm	0.18	7.40	6.34	11.18	m	<b>24.93</b>
400 mm	0.24	9.87	8.46	16.30	m	<b>34.63</b>
450 mm	0.28	11.52	9.87	20.80	m	<b>42.18</b>
600 mm	0.34	13.99	11.98	33.44	m	<b>59.41</b>
750 mm	0.38	15.63	13.39	46.78	m	<b>75.80</b>
900 mm	0.42	17.28	14.80	65.10	m	<b>97.18</b>
1200 mm	0.50	20.57	17.62	103.79	m	<b>141.98</b>
<b>Mass concrete</b>						
100 mm thick bed for pipes nominal bore						
100 mm	0.14	5.76	4.93	13.12	m	<b>23.81</b>
150 mm	0.16	6.58	5.64	18.84	m	<b>31.07</b>
225 mm	0.18	7.40	6.34	30.17	m	<b>43.92</b>
300 mm	0.22	9.05	7.75	42.10	m	<b>58.90</b>
150 mm thick bed for pipes nominal bore						
150 mm	0.23	9.46	8.11	21.91	m	<b>39.47</b>
225 mm	0.26	10.70	9.16	33.72	m	<b>53.58</b>
300 mm	0.30	12.34	10.57	45.89	m	<b>68.80</b>
400 mm	0.36	14.81	12.69	66.94	m	<b>94.44</b>
450 mm	0.40	16.46	14.10	85.31	m	<b>115.86</b>
600 mm	0.45	18.51	15.86	137.14	m	<b>171.51</b>
750 mm	0.50	20.57	17.62	191.88	m	<b>230.07</b>
900 mm	0.55	22.63	19.38	266.90	m	<b>308.90</b>
1200 mm	0.61	25.09	21.50	425.39	m	<b>471.98</b>
<b>CONCRETE STOOLS AND THRUST BLOCKS</b>						
<b>Mass concrete</b>						
Concrete stools or thrust blocks (nett volume of concrete excluding volume occupied by pipes)						
0.1 m <sup>3</sup>	0.18	7.40	6.34	10.87	nr	<b>24.62</b>
0.1 - 0.2 m <sup>3</sup>	0.32	13.16	11.28	21.75	nr	<b>46.19</b>
0.2 - 0.5 m <sup>3</sup>	0.62	25.51	21.85	54.49	nr	<b>101.84</b>
0.5 - 1.0 m <sup>3</sup>	0.91	37.44	32.07	109.05	nr	<b>178.56</b>
1.0 - 2.0 m <sup>3</sup>	1.29	53.07	45.46	218.31	nr	<b>316.84</b>
2.0 - 4.0 m <sup>3</sup>	3.15	129.59	111.01	436.40	nr	<b>676.99</b>

**CLASS M: STRUCTURAL METALWORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
The following are guide prices for various structural members commonly found in a Civil Engineering contract. The list is by no means exhaustive and costs are very much dependent on the particular design and will vary greatly according to specific requirements. For more detailed prices, reference should be made to Specialist Contractors.						
<b>FABRICATION OF MEMBERS; STEELWORK</b>						
Columns						
universal beams; straight on plan	-	-	-	-	t	1638.00
circular hollow sections; straight on plan	-	-	-	-	t	3510.00
rectangular hollow sections; straight on plan	-	-	-	-	t	3250.00
Beams						
universal beams; straight on plan	-	-	-	-	t	1625.00
universal beams; curved on plan	-	-	-	-	t	2626.00
channels; straight on plan	-	-	-	-	t	1846.00
channels; curved on plan	-	-	-	-	t	3491.25
castellated beams; straight on plan	-	-	-	-	t	2340.00
Portal frames						
straight on plan	-	-	-	-	t	2160.00
Trestles, towers and built-up columns						
straight on plan	-	-	-	-	t	2470.00
Trusses and built-up girders						
straight on plan	-	-	-	-	t	2470.00
curved on plan	-	-	-	-	t	3250.00
Bracings						
angles; straight on plan	-	-	-	-	t	1690.00
circular hollow sections; straight on plan	-	-	-	-	t	3380.00
Purlins and cladding rails						
straight on plan	-	-	-	-	t	1950.00
Cold rolled purlins and rails						
straight on plan	-	-	-	-	t	3250.00
Anchorages and holding down bolt assemblies						
base plate and bolt assemblies complete	-	-	-	-	t	3770.00
<b>ERECTION OF FABRICATED MEMBERS ON SITE</b>						
Trial erection	-	-	-	-	t	384.00
Permanent erection	-	-	-	-	t	300.00
Site bolts						
black	-	-	-	-	t	3840.00
HSFG general grade	-	-	-	-	t	3840.00
HSFG higher	-	-	-	-	t	4320.00
HSFG load indicating or limit types, general grade	-	-	-	-	t	5040.00
HSFG load indicating or limit types, higher grade	-	-	-	-	t	5640.00
<b>OFF SITE SURFACE TREATMENT</b>						
Note: The following preparation and painting systems have been calculated on the basis of 20 m <sup>2</sup> per tonne						
Blast cleaning	-	-	-	-	m <sup>2</sup>	5.10
Galvanising	-	-	-	-	m <sup>2</sup>	18.75

**CLASS M: STRUCTURAL METALWORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>OFF SITE SURFACE TREATMENT - cont'd</b>						
Painting						
one coat zinc chromate primer	-	-	-	-	m <sup>2</sup>	<b>4.89</b>
one coat two pack epoxy zinc phosphate primer (75 microns dry film thickness)	-	-	-	-	m <sup>2</sup>	<b>9.06</b>
two coats epoxy micaceous iron oxide (100 microns dry film thickness per coat)	-	-	-	-	m <sup>2</sup>	<b>22.81</b>

**CLASS N: MISCELLANEOUS METALWORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>General</b>						
The following are guide prices for various structural members commonly found in a Civil Engineering contract. The list is by no means exhaustive and costs are very much dependent on the particular design and will vary greatly according to specific requirements. For more detailed prices, reference should be made to Specialist Contractors.						
<b>Cladding</b>						
CESMM3 N.2.1 requires cladding to be measured in square metres, the item so produced being inclusive of all associated flashings at wall corners and bases, eaves, gables, ridges and around openings. As the relative quantities of these flashings will depend very much on the complexity of the building shape, the guide prices shown below for these items are shown separately to help with the accuracy of the estimate.						
<b>Bridge bearings</b>						
Bridge bearings are manufactured and installed to individual specifications. The following guide prices are for different sizes of simple bridge bearings. If requirements are known, then advice ought to be obtained from specialist manufactureres such as CCL. If there is a requirement for testing bridge bearings prior to their being installed then the tests should be enumerated separately. Specialist advice should be sought once details are known.						
<b>RESOURCES - LABOUR</b>						
<b>Roofing - cladding gang</b>						
1 ganger/chargehand (skill rate 3) - 50% of time		7.92				
2 skilled operative (skill rate 3)		29.76				
1 unskilled operative (general) - 50% of time		6.22				
Total Gang Rate / Hour	£	<b>43.90</b>				
<b>Bridge bearing gang</b>						
1skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
Total Gang Rate / Hour	£	<b>38.20</b>				
<b>RESOURCES - PLANT</b>						
Cladding to roofs						
15 m telescopic access platform - 50% of time			10.52			
Total Gang Rate / Hour		£	<b>10.52</b>			
Cladding to walls						
15 m telescopic access platform			21.05			
Total Gang Rate / Hour		£	<b>21.05</b>			

## CLASS N: MISCELLANEOUS METALWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>MILD STEEL</b>						
<b>Mild steel</b>						
Stairways and landings	-	-	-	-	t	<b>5400.00</b>
Walkways and platforms	-	-	-	-	t	<b>5000.00</b>
Ladders						
cat ladder; 64 x 13 mm bar strings; 19 mm rungs at 250 mm centres; 450 mm wide with safety hoops	-	-	-	-	m	<b>110.42</b>
Miscellaneous framing						
angle section; 200 x 200 x 16 mm (equal)	-	-	-	-	m	<b>301.44</b>
angle section; 150 x 150 x 10 mm (equal)	-	-	-	-	m	<b>141.30</b>
angle section; 100 x 100 x 12 mm (equal)	-	-	-	-	m	<b>226.08</b>
angle section; 200 x 150 x 15 mm (unequal)	-	-	-	-	m	<b>197.82</b>
angle section; 150 x 75 x 10 mm (unequal)	-	-	-	-	m	<b>105.97</b>
universal beams; 914 x 419 mm	-	-	-	-	m	<b>2059.80</b>
universal beams; 533 x 210 mm	-	-	-	-	m	<b>732.00</b>
universal joists; 127 x 76 mm	-	-	-	-	m	<b>78.00</b>
channel section; 381 x 102 mm	-	-	-	-	m	<b>324.00</b>
channel section; 254 x 76 mm	-	-	-	-	m	<b>165.60</b>
channel section; 152 x 76 mm	-	-	-	-	m	<b>107.40</b>
tubular section; 100 x 100 x 10 mm	-	-	-	-	m	<b>164.40</b>
tubular section; 200 x 200 x 15 mm	-	-	-	-	m	<b>541.80</b>
tubular section; 76.1 x 5.0 mm	-	-	-	-	m	<b>52.62</b>
tubular section; 139.7 x 6.3 mm	-	-	-	-	m	<b>151.20</b>
<b>Mild steel; galvanised</b>						
Handrails						
76 mm diameter tubular handrail, 48 mm diameter standards at 750 mm centres, 48 mm diameter middle rail, 1070 mm high overall	-	-	-	-	m	<b>133.30</b>
Plate flooring						
8 mm (on plain) "Durbar" pattern floor plates, maximum weight each panel 50 kg	-	-	-	-	m <sup>2</sup>	<b>300.00</b>
<b>Mild steel; internally and externally acid dipped, rinse and hot dip galvanised, epoxy internal paint</b>						
Uncovered tanks						
1600 litre capacity open top water tank	-	-	-	-	nr	<b>973.65</b>
18180 litre capacity open top water tank	-	-	-	-	nr	<b>9937.11</b>
Covered tanks						
1600 litre capacity open top water tank with loose fitting lid;	-	-	-	-	nr	<b>1410.00</b>
18180 litre capacity open top water tank with loose fitting lid	-	-	-	-	nr	<b>14305.63</b>
<b>Corrugated steel plates to BS 1449 Pt 1, Gr H4, sealed and bolted; BS729 hot dip galvanised, epoxy internal and external paint</b>						
Uncovered tanks						
713 m <sup>3</sup> capacity bolted cylindrical open top tank	-	-	-	-	nr	<b>36860.00</b>



## CLASS N: MISCELLANEOUS METALWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PROPRIETARY WORK</b>						
<b>Galvanised steel troughed sheeting; 0.70 mm metal thickness, 75 mm deep corrugations; colour coating each side; fixing with plastic capped self-tapping screws to steel purlins or rails</b>						
Cladding upper surfaces inclined at an angle ne 30° to the horizontal	0.15	6.60	1.58	20.01	m <sup>2</sup>	<b>28.19</b>
Extra for : galvanised steel inner lining sheet, 0.40 mm thick, Plastisol colour coating	0.06	2.64	1.26	7.48	m <sup>2</sup>	<b>11.39</b>
galvanised steel inner lining sheet, 0.40 mm thick, Plastisol colour coating; insulation, 80 mm thick	0.08	3.52	0.84	13.15	m <sup>2</sup>	<b>17.52</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.16	7.04	3.37	16.53	m <sup>2</sup>	<b>26.94</b>
Extra for : galvanised steel inner lining sheet, 0.40 mm thick, Plastisol colour coating	0.11	4.84	2.32	7.48	m <sup>2</sup>	<b>14.64</b>
galvanised steel inner lining sheet, 0.40 mm thick, Plastisol colour coating; insulation, 80 mm thick	0.13	5.72	2.74	13.15	m <sup>2</sup>	<b>21.61</b>
<b>Galvanised steel flashings; 0.90 mm metal thickness; bent to profile; fixing with plastic capped self-tapping screws to steel purlins or rails; mastic sealant</b>						
Flashings to cladding						
250 mm girth	0.12	5.28	2.53	12.68	m	<b>20.48</b>
500 mm girth	0.18	7.92	3.79	19.69	m	<b>31.40</b>
750 mm girth	0.22	9.68	4.63	26.71	m	<b>41.02</b>
<b>Aluminium profiled sheeting; 0.90 mm metal thickness, 75 mm deep corrugations; colour coating each side; fixing with plastic capped self-tapping screws to steel purlins or rails</b>						
Cladding upper surfaces inclined at an angle exceeding 60° to the horizontal	0.20	8.80	4.21	23.46	m <sup>2</sup>	<b>36.47</b>
Extra for : aluminium inner lining sheet, 0.70 mm thick, Plastisol colour coating	0.13	5.72	2.79	18.69	m <sup>2</sup>	<b>27.20</b>
aluminium inner lining sheet, 0.70 mm thick, Plastisol colour coating; insulation, 80 mm thick	0.15	6.60	3.16	24.36	m <sup>2</sup>	<b>34.11</b>
<b>Aluminium profiled sheeting; 1.00 mm metal thickness, 75 mm deep corrugations; colour coating each side; fixing with plastic capped self-tapping screws to steel purlins or rails</b>						
Cladding upper surfaces inclined at an angle ne 30° to the horizontal	0.17	7.48	1.79	26.94	m <sup>2</sup>	<b>36.21</b>
Extra for : aluminium inner lining sheet, 0.70 mm thick, Plastisol colour coating	0.09	3.96	0.95	18.69	m <sup>2</sup>	<b>23.59</b>
aluminium inner lining sheet, 0.70 mm thick, Plastisol colour coating; insulation, 80 mm thick	0.11	4.84	1.16	24.36	m <sup>2</sup>	<b>30.35</b>

## CLASS N: MISCELLANEOUS METALWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PROPRIETARY WORK - cont'd</b>						
<b>Aluminium flashings; 0.90 mm metal thickness; bent to profile; fixing with plastic capped self-tapping screws to steel purlins or rails; mastic sealant</b>						
Flashings to cladding						
250 mm girth	0.12	5.28	2.53	14.07	m	21.87
500 mm girth	0.18	7.92	3.79	22.48	m	34.19
750 mm girth	0.22	9.68	4.63	30.89	m	45.20
<b>Flooring; Eurogrid; galvanised mild steel</b>						
Open grid flooring						
type 41/100; 3 x 25 mm bearer bar; 6mm diameter transverse bar	-	-	-	-	m <sup>2</sup>	51.13
type 41/100; 5 x 25 mm bearer bar; 6mm diameter transverse bar	-	-	-	-	m <sup>2</sup>	66.14
type 41/100; 3 x 30 mm bearer bar; 6mm diameter transverse bar	-	-	-	-	m <sup>2</sup>	59.34
<b>Duct covers; Stelduct; galvanised mild steel</b>						
Duct covers; pedestrian duty						
225 mm clear opening	-	-	-	-	m	99.92
450 mm clear opening	-	-	-	-	m	110.53
750 mm clear opening	-	-	-	-	m	131.12
Duct covers; medium duty						
225 mm clear opening	-	-	-	-	m	144.68
450 mm clear opening	-	-	-	-	m	163.54
750 mm clear opening	-	-	-	-	m	189.53
Duct covers; heavy duty						
225 mm clear opening	-	-	-	-	m	160.82
450 mm clear opening	-	-	-	-	m	239.76
750 mm clear opening	-	-	-	-	m	341.96
<b>Bridge bearings</b>						
Supply plain rubber bearings ( 3 m and 5 m lengths)						
150 x 20 mm	0.35	13.38	-	47.05	m	60.43
150 x 25 mm	0.35	13.38	-	60.31	m	73.70
Supply and place in position laminated elastomeric rubber bearing						
250 x 150 x 19 mm	0.25	9.56	-	17.41	nr	26.97
300 x 200 x 19 mm	0.25	9.56	-	26.45	nr	36.00
300 x 200 x 30 mm	0.27	10.32	-	41.92	nr	52.25
300 x 200 x 41 mm	0.27	10.32	-	56.12	nr	66.44
300 x 250 x 41 mm	0.30	11.47	-	70.95	nr	82.42
300 x 250 x 63 mm	0.30	11.47	-	109.65	nr	121.12
400 x 250 x 19 mm	0.32	12.23	-	43.86	nr	56.09
400 x 250 x 52 mm	0.32	12.23	-	118.81	nr	131.04
400 x 300 x 19 mm	0.32	12.23	-	52.57	nr	64.80
600 x 450 x 24 mm	0.35	13.38	-	147.06	nr	160.44
Adhesive fixings to laminated elastomeric rubber bearings						
2 mm thick epoxy adhesive	1.00	38.23	-	56.34	m <sup>2</sup>	94.57
15 mm thick epoxy mortar	1.50	57.35	-	346.81	m <sup>2</sup>	404.16
15 mm thick epoxy pourable grout	2.00	76.47	-	346.69	m <sup>2</sup>	423.16

**CLASS N: MISCELLANEOUS METALWORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Supply and install mechanical guides for laminated elastomeric rubber bearings						
500kN SLS design load; FP50 fixed pin Type 1	2.00	76.47	-	660.00	nr	<b>736.47</b>
500kN SLS design load; FP50 fixed pin Type 2	2.00	76.47	-	810.00	nr	<b>886.47</b>
750kN SLS design load; FP75 fixed pin Type 1	2.10	80.29	-	1032.00	nr	<b>1112.29</b>
750kN SLS design load; FP75 fixed pin Type 2	2.10	80.29	-	1170.00	nr	<b>1250.29</b>
300kN SLS design load; UG300 Uniguide Type 1	2.00	76.47	-	636.00	nr	<b>712.47</b>
300kN SLS design load; UG300 Uniguide Type 2	2.00	76.47	-	780.00	nr	<b>856.47</b>
Supply and install fixed pot bearings						
355 x 355; PF200	2.00	76.47	-	780.00	nr	<b>856.47</b>
425 x 425; PF300	2.10	80.29	-	840.00	nr	<b>920.29</b>
Supply and install free sliding pot bearings						
445 x 345; PS200	2.10	80.29	-	600.00	nr	<b>680.29</b>
520 x 415; PS300	2.20	84.12	-	960.00	nr	<b>1044.12</b>
Supply and install guided sliding pot bearings						
455 x 375; PG200	2.20	84.12	-	1020.00	nr	<b>1104.12</b>
545 x 435; PG300	2.30	87.94	-	1080.00	nr	<b>1167.94</b>
Testing; laminated elastomeric bearings						
compression test	-	-	-	78.75	nr	<b>78.75</b>
shear test	-	-	-	105.00	nr	<b>105.00</b>
bond test (Exclusive of cost of bearings as this is a destructive test)	-	-	-	420.00	nr	<b>420.00</b>

## CLASS O: TIMBER

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Timber gang</b>						
1 foreman carpenter/joiner (craftsman)		22.32				
1 carpenter/joiner (craftsman)		19.15				
1 unskilled operative (general)		12.44				
1 plant operator (skill rate 3) - 50% of time		8.10				
Total Gang Rate / Hour		£ 62.00				
<b>Timber fixings gang</b>						
1 carpenter/joiner (craftsman)		22.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		£ 34.76				
<b>RESOURCES - PLANT</b>						
<b>Timber</b>						
tractor / trailer			24.07			
10t crawler crane (25% of time)			13.14			
5.6t rough terrain forklift (25% of time)			5.84			
7.5 KVA diesel generator			5.94			
two K637 rotary hammers			1.94			
two electric screwdrivers			1.71			
Total Gang Rate / Hour		£	52.64			
<b>RESOURCES - MATERIALS</b>						
The timber material prices shown below are averages, actual prices being very much affected by availability of suitably sized forest timbers capable of conversion to the sizes shown. Apart from the practicality of being able to obtain the larger sizes in one timber, normal practice and drive for economy would lead to their being built up using smaller timbers.						
<b>HARDWOOD COMPONENTS</b>						
<b>Greenheart</b>						
100 x 75 mm						
length not exceeding 1.5 m	0.15	9.14	7.94	7.01	m	24.09
length 1.5 - 3 m	0.13	7.92	6.89	7.01	m	21.82
length 3 - 5 m	0.12	7.31	6.32	7.01	m	20.64
length 5 - 8 m	0.11	6.70	5.84	7.19	m	19.73
150 x 75 mm						
length not exceeding 1.5 m	0.17	10.36	9.15	8.49	m	28.00
length 1.5 - 3 m	0.15	9.14	7.94	8.29	m	25.37
length 3 - 5 m	0.14	8.53	7.37	8.29	m	24.19
length 5 - 8 m	0.12	7.31	8.60	8.49	m	24.40
200 x 100 mm						
length not exceeding 1.5 m	0.24	14.62	12.63	16.98	m	44.23
length 1.5 - 3 m	0.21	12.79	11.25	16.98	m	41.02
length 3 - 5 m	0.20	11.88	10.29	16.98	m	39.15
length 5 - 8 m	0.18	10.97	9.47	16.98	m	37.42
length 8 - 12 m	0.16	9.75	8.42	20.72	m	38.89

**CLASS O: TIMBER**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
200 x 200 mm						
length not exceeding 1.5 m	0.42	25.59	22.11	29.38	m	<b>77.07</b>
length 1.5 - 3 m	0.40	24.37	21.05	29.38	m	<b>74.80</b>
length 3 - 5 m	0.38	23.15	20.00	29.38	m	<b>72.53</b>
length 5 - 8 m	0.34	20.71	17.89	29.38	m	<b>67.99</b>
length 8 - 12 m	0.30	18.28	16.17	31.68	m	<b>66.13</b>
225 x 100 mm						
length not exceeding 1.5 m	0.27	16.45	14.41	16.98	m	<b>47.84</b>
length 1.5 - 3 m	0.24	14.62	12.63	16.98	m	<b>44.23</b>
length 3 - 5 m	0.22	13.40	11.96	16.98	m	<b>42.34</b>
length 5 - 8 m	0.20	12.18	14.33	16.98	m	<b>43.49</b>
length 8 - 12 m	0.18	10.97	9.85	20.72	m	<b>41.54</b>
300 x 100 mm						
length not exceeding 1.5 m	0.36	21.93	18.95	22.21	m	<b>63.09</b>
length 1.5 - 3 m	0.33	20.10	17.57	22.21	m	<b>59.88</b>
length 3 - 5 m	0.30	18.28	16.17	22.21	m	<b>56.65</b>
length 5 - 8 m	0.27	16.45	14.41	24.74	m	<b>55.60</b>
length 8 - 12 m	0.24	14.62	12.63	3.01	m	<b>30.26</b>
300 x 200 mm						
length not exceeding 1.5 m	0.50	30.46	26.32	44.40	m	<b>101.18</b>
length 1.5 - 3 m	0.45	27.41	23.89	44.40	m	<b>95.70</b>
length 3 - 5 m	0.40	24.37	21.05	44.40	m	<b>89.82</b>
length 5 - 8 m	0.35	21.32	18.62	47.13	m	<b>87.07</b>
length 8 - 12 m	0.30	18.28	15.79	47.13	m	<b>81.20</b>
300 x 300 mm						
length not exceeding 1.5 m	0.52	31.68	27.37	66.61	m	<b>125.66</b>
length 1.5 - 3 m	0.48	29.24	25.27	66.61	m	<b>121.11</b>
length 3 - 5 m	0.44	26.80	23.16	66.61	m	<b>116.57</b>
length 5 - 8 m	0.40	24.37	21.05	70.83	m	<b>116.25</b>
length 8 - 12 m	0.36	21.93	18.95	70.83	m	<b>111.71</b>
450 x 450 mm						
length not exceeding 1.5 m	0.98	59.70	51.97	146.71	m	<b>258.37</b>
length 1.5 - 3 m	0.90	54.83	47.76	146.71	m	<b>249.29</b>
length 3 - 5 m	0.83	50.56	43.89	146.71	m	<b>241.16</b>
length 5 - 8 m	0.75	45.69	39.68	150.37	m	<b>235.74</b>
length 8 - 12 m	0.68	41.42	35.80	157.71	m	<b>234.93</b>
<b>SOFTWOOD COMPONENTS</b>						
<b>Softwood; stress graded SC3/4</b>						
100 x 75 mm						
up to 3.00 m long	0.10	6.09	4.57	2.39	m	<b>13.06</b>
3.00 - 5.00 m long	0.10	6.09	4.57	3.05	m	<b>13.72</b>
150 x 75 mm						
up to 3.00 m long	0.13	7.92	5.93	3.88	m	<b>17.73</b>
3.00 - 5.00 m long	0.11	6.70	5.03	4.87	m	<b>16.60</b>
200 x 100 mm						
up to 3.00 m long	0.16	9.75	7.31	7.57	m	<b>24.62</b>
3.00 - 5.00 m long	0.14	8.53	6.40	9.98	m	<b>24.91</b>
200 x 200 mm						
up to 3.00 m long	0.25	15.23	11.41	17.89	m	<b>44.53</b>
3.00 - 5.00 m long	0.23	14.01	10.50	23.37	m	<b>47.88</b>
5.00 - 8.00 m long	0.20	12.18	9.14	20.54	m	<b>41.86</b>
300 x 200 mm						
up to 3.00 m long	0.27	16.45	12.33	28.44	m	<b>57.22</b>
3.00 - 5.00 m long	0.25	15.23	11.41	37.07	m	<b>63.71</b>
5.00 - 8.00 m long	0.23	14.01	10.50	31.23	m	<b>55.75</b>

**CLASS O: TIMBER**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SOFTWOOD COMPONENTS - cont'd</b>						
<b>Softwood; stress graded SC3/4 - cont'd</b>						
300 x 300 mm						
up to 3.00 m long	0.30	18.28	13.71	43.73	m	<b>75.72</b>
3.00 - 5.00 m long	0.27	16.45	12.33	57.18	m	<b>85.96</b>
5.00 - 8.00 m long	0.25	15.23	11.41	48.18	m	<b>74.82</b>
450 x 450 mm						
up to 3.00 m long	0.35	21.32	15.99	103.82	m	<b>141.13</b>
3.00 - 5.00 m long	0.31	18.88	14.16	135.78	m	<b>168.83</b>
5.00 - 8.00 m long	0.28	17.06	12.79	113.99	m	<b>143.83</b>
600 x 600 mm						
3.00 - 5.00 m long	0.39	23.76	14.92	182.47	m	<b>221.15</b>
5.00 - 8.00 m long	0.37	22.54	16.89	212.63	m	<b>252.06</b>
ADD to the above prices for vacuum / pressure impregnating to minimum 5.30 kg/m <sup>3</sup> salt retention	-	-	-	33.83	m <sup>3</sup>	<b>33.83</b>
<b>HARDWOOD DECKING</b>						
<b>Greenheart; wrought finish</b>						
Thickness 25-50 mm						
150 x 50 mm	0.58	35.33	26.50	53.82	m <sup>2</sup>	<b>115.65</b>
Thickness 50-75 mm						
200 x 75 mm	0.75	45.69	34.25	67.66	m <sup>2</sup>	<b>147.60</b>
Thickness 75-100 mm						
250 x 100 mm	0.95	57.87	42.14	85.95	m <sup>2</sup>	<b>185.96</b>
<b>SOFTWOOD DECKING</b>						
<b>Douglas Fir</b>						
Thickness 25-50 mm						
150 x 50 mm	0.39	23.76	17.82	24.87	m <sup>2</sup>	<b>66.44</b>
Thickness 50-75 mm						
200 x 75 mm	0.50	30.46	22.84	32.94	m <sup>2</sup>	<b>86.25</b>
Thickness 75-100 mm						
250 x 100 mm	0.65	39.60	41.18	36.97	m <sup>2</sup>	<b>117.75</b>
<b>FITTINGS AND FASTENINGS</b>						
<b>Metalwork</b>						
Spikes; mild steel material rosehead						
14 x 14 x 275 mm long	0.13	4.37	-	0.99	nr	<b>5.36</b>
Metric mild steel bolts, nuts and washers						
M6 x 25mm long	0.05	1.68	-	0.10	nr	<b>1.78</b>
M6 x 50mm long	0.05	1.68	-	0.11	nr	<b>1.79</b>
M6 x 75mm long	0.05	1.68	-	0.15	nr	<b>1.83</b>
M6 x 100mm long	0.06	2.02	-	0.17	nr	<b>2.19</b>
M6 x 120mm long	0.06	2.02	-	0.29	nr	<b>2.31</b>
M6 x 150mm long	0.06	2.02	-	0.37	nr	<b>2.39</b>
M8 x 25mm long	0.05	1.68	-	0.13	nr	<b>1.81</b>
M8 x 50mm long	0.05	1.68	-	0.16	nr	<b>1.84</b>
M8 x 75mm long	0.06	2.02	-	0.21	nr	<b>2.22</b>
M8 x 100mm long	0.06	2.02	-	0.25	nr	<b>2.26</b>
M8 x 120mm long	0.07	2.35	-	0.42	nr	<b>2.78</b>
M8 x 150mm long	0.07	2.35	-	0.52	nr	<b>2.87</b>
M10 x 25mm long	0.05	1.68	-	0.21	nr	<b>1.89</b>
M10 x 50mm long	0.06	2.02	-	0.25	nr	<b>2.26</b>
M10 x 75mm long	0.06	2.02	-	0.30	nr	<b>2.31</b>
M10 x 100mm long	0.07	2.35	-	0.37	nr	<b>2.73</b>

**CLASS O: TIMBER**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
M10 x 120mm long	0.07	2.35	-	0.40	nr	<b>2.75</b>
M10 x 150mm long	0.07	2.35	-	0.75	nr	<b>3.10</b>
M10 x 200mm long	0.08	2.69	-	1.37	nr	<b>4.06</b>
M12 x 25mm long	0.06	2.02	-	0.29	nr	<b>2.31</b>
M12 x 50mm long	0.06	2.02	-	0.34	nr	<b>2.35</b>
M12 x 75mm long	0.07	2.35	-	0.41	nr	<b>2.76</b>
M12 x 100mm long	0.07	2.35	-	0.49	nr	<b>2.84</b>
M12 x 120mm long	0.08	2.69	-	0.55	nr	<b>3.24</b>
M12 x 150mm long	0.08	2.69	-	0.78	nr	<b>3.46</b>
M12 x 200mm long	0.08	2.69	-	1.15	nr	<b>3.84</b>
M12 x 240mm long	0.09	3.02	-	1.84	nr	<b>4.86</b>
M12 x 300mm long	0.10	3.36	-	1.99	nr	<b>5.35</b>
M16 x 50mm long	0.07	2.35	-	0.59	nr	<b>2.94</b>
M16 x 75mm long	0.07	2.35	-	0.69	nr	<b>3.04</b>
M16 x 100mm long	0.08	2.69	-	0.81	nr	<b>3.50</b>
M16 x 120mm long	0.08	2.69	-	0.99	nr	<b>3.68</b>
M16 x 150mm long	0.09	3.02	-	1.14	nr	<b>4.17</b>
M16 x 200mm long	0.09	3.02	-	1.69	nr	<b>4.71</b>
M16 x 240mm long	0.10	3.36	-	2.51	nr	<b>5.87</b>
M16 x 300mm long	0.10	3.36	-	2.78	nr	<b>6.14</b>
M20 x 50mm long	0.07	2.35	-	0.85	nr	<b>3.20</b>
M20 x 75mm long	0.08	2.69	-	1.12	nr	<b>3.81</b>
M20 x 100mm long	0.08	2.69	-	1.32	nr	<b>4.00</b>
M20 x 120mm long	0.09	3.02	-	1.71	nr	<b>4.73</b>
M20 x 150mm long	0.09	3.02	-	1.86	nr	<b>4.88</b>
M20 x 200mm long	0.10	3.36	-	2.53	nr	<b>5.89</b>
M20 x 240mm long	0.10	3.36	-	3.52	nr	<b>6.88</b>
M20 x 300mm long	0.11	3.70	-	3.95	nr	<b>7.65</b>
M24 x 50mm long	0.08	2.69	-	2.11	nr	<b>4.80</b>
M24 x 75mm long	0.08	2.69	-	2.35	nr	<b>5.04</b>
M24 x 100mm long	0.09	3.02	-	2.46	nr	<b>5.48</b>
M24 x 120mm long	0.09	3.02	-	2.70	nr	<b>5.72</b>
M24 x 150mm long	0.10	3.36	-	3.15	nr	<b>6.51</b>
M24 x 200mm long	0.11	3.70	-	3.78	nr	<b>7.48</b>
M24 x 240mm long	0.11	3.70	-	5.16	nr	<b>8.85</b>
M24 x 300mm long	0.12	4.03	-	5.77	nr	<b>9.80</b>
M30 x 100mm long	0.09	3.02	-	6.04	nr	<b>9.06</b>
M30 x 120mm long	0.10	3.36	-	6.37	nr	<b>9.73</b>
M30 x 150mm long	0.11	3.70	-	6.87	nr	<b>10.56</b>
M30 x 200mm long	0.11	3.70	-	7.70	nr	<b>11.40</b>
Carriage bolts, nuts and washer						
M6 x 25mm long	0.05	1.68	-	0.06	nr	<b>1.74</b>
M6 x 50mm long	0.05	1.68	-	0.08	nr	<b>1.76</b>
M6 x 75mm long	0.05	1.68	-	0.09	nr	<b>1.77</b>
M6 x 100mm long	0.06	2.02	-	0.14	nr	<b>2.15</b>
M6 x 150mm long	0.06	2.02	-	0.19	nr	<b>2.20</b>
M8 x 25mm long	0.05	1.68	-	0.09	nr	<b>1.77</b>
M8 x 50mm long	0.05	1.68	-	0.11	nr	<b>1.79</b>
M8 x 75mm long	0.06	2.02	-	0.13	nr	<b>2.14</b>
M8 x 100mm long	0.06	2.02	-	0.19	nr	<b>2.21</b>
M8 x 150mm long	0.07	2.35	-	0.26	nr	<b>2.61</b>
M8 x 200mm long	0.07	2.35	-	0.63	nr	<b>2.99</b>
M10 x 25mm long	0.05	1.68	-	0.19	nr	<b>1.87</b>
M10 x 50mm long	0.06	2.02	-	0.17	nr	<b>2.19</b>
M10 x 75mm long	0.06	2.02	-	0.20	nr	<b>2.22</b>
M10 x 100mm long	0.07	2.35	-	0.27	nr	<b>2.62</b>
M10 x 150mm long	0.07	2.35	-	0.38	nr	<b>2.73</b>
M10 x 200mm long	0.08	2.69	-	0.76	nr	<b>3.45</b>
M10 x 240mm long	0.08	2.69	-	1.78	nr	<b>4.47</b>

**CLASS O: TIMBER**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FITTINGS AND FASTENINGS - cont'd</b>						
<b>Metalwork - cont'd</b>						
Metric mild steel bolts, nuts and washers - cont'd						
M10 x 300mm long	0.09	3.02	-	1.96	nr	<b>4.98</b>
M12 x 25mm long	0.06	2.02	-	0.32	nr	<b>2.34</b>
M12 x 50mm long	0.06	2.02	-	0.26	nr	<b>2.28</b>
M12 x 75mm long	0.07	2.35	-	0.28	nr	<b>2.63</b>
M12 x 100mm long	0.07	2.35	-	0.38	nr	<b>2.73</b>
M12 x 150mm long	0.08	2.69	-	0.52	nr	<b>3.20</b>
M12 x 200mm long	0.08	2.69	-	1.04	nr	<b>3.73</b>
M12 x 240mm long	0.09	3.02	-	1.83	nr	<b>4.86</b>
M12 x 300mm long	0.10	3.36	-	2.02	nr	<b>5.38</b>
<b>Galvanised steel</b>						
Straps						
30 x 2.5 x 600 mm girth	0.13	4.37	-	1.86	nr	<b>6.23</b>
30 x 2.5 x 800 mm girth	0.13	4.37	-	2.48	nr	<b>6.85</b>
30 x 2.5 x 1000 mm girth	0.13	4.37	-	3.09	nr	<b>7.46</b>
30 x 2.5 x 1200 mm girth	0.15	5.04	-	3.71	nr	<b>8.75</b>
30 x 2.5 x 1400 mm girth	0.13	4.37	-	4.33	nr	<b>8.69</b>
30 x 2.5 x 1600 mm girth	0.15	5.04	-	4.95	nr	<b>9.99</b>
30 x 2.5 x 1800 mm girth	0.15	5.04	-	5.57	nr	<b>10.61</b>
30 x 5 x 600 mm girth	0.13	4.37	-	3.71	nr	<b>8.07</b>
30 x 5 x 800 mm girth	0.13	4.37	-	4.95	nr	<b>9.31</b>
30 x 5 x 1000 mm girth	0.13	4.37	-	6.18	nr	<b>10.55</b>
30 x 5 x 1200 mm girth	0.15	5.04	-	7.42	nr	<b>12.46</b>
30 x 5 x 1400 mm girth	0.13	4.37	-	8.65	nr	<b>13.02</b>
30 x 5 x 1600 mm girth	0.15	5.04	-	9.89	nr	<b>14.93</b>
30 x 5 x 1800 mm girth	0.15	5.04	-	11.13	nr	<b>16.17</b>
Timber connectors; round toothed plate, single sided for 10 mm or 12 mm bolts						
38 mm diameter	0.01	0.17	-	0.55	nr	<b>0.72</b>
50 mm diameter	0.01	0.17	-	0.58	nr	<b>0.75</b>
63 mm diameter	0.01	0.27	-	0.85	nr	<b>1.12</b>
75 mm diameter	0.01	0.27	-	1.26	nr	<b>1.52</b>
Timber connectors; round toothed plate, double sided for 10 mm or 12 mm bolts						
38 mm diameter	0.01	0.17	-	0.60	nr	<b>0.77</b>
50 mm diameter	0.01	0.17	-	0.66	nr	<b>0.83</b>
63 mm diameter	0.01	0.27	-	0.94	nr	<b>1.21</b>
75 mm diameter	0.01	0.27	-	1.31	nr	<b>1.58</b>
Split ring connectors						
50 mm diameter	0.06	2.02	-	2.73	nr	<b>4.75</b>
63 mm diameter	0.01	0.20	-	2.73	nr	<b>2.93</b>
101 mm diameter	0.01	0.20	-	7.29	nr	<b>7.49</b>
Shear plate connectors						
67 mm diameter	0.01	0.20	-	4.37	nr	<b>4.58</b>
101 mm diameter	0.01	0.20	-	18.95	nr	<b>19.16</b>
Flitch plates						
200 x 75 x 10 mm	0.07	2.35	-	6.18	nr	<b>8.54</b>
300 x 100 x 10 mm	0.09	3.02	-	12.37	nr	<b>15.39</b>
450 x 150 x 12 mm	0.15	5.04	-	33.38	nr	<b>38.42</b>



**CLASS O: TIMBER**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Stainless steel</b>						
<b>Straps</b>						
30 x 2.5 x 600 mm girth	0.13	4.37	-	5.21	nr	<b>9.58</b>
30 x 2.5 x 800 mm girth	0.13	4.37	-	7.24	nr	<b>11.61</b>
30 x 2.5 x 1000 mm girth	0.13	4.37	-	3.09	nr	<b>7.46</b>
30 x 2.5 x 1200 mm girth	0.15	5.04	-	3.71	nr	<b>8.75</b>
30 x 2.5 x 1400 mm girth	0.13	4.37	-	4.33	nr	<b>8.69</b>
30 x 2.5 x 1600 mm girth	0.15	5.04	-	4.95	nr	<b>9.99</b>
30 x 2.5 x 1800 mm girth	0.15	5.04	-	5.57	nr	<b>10.61</b>
30 x 5 x 600 mm girth	0.13	4.37	-	8.40	nr	<b>12.77</b>
30 x 5 x 800 mm girth	0.13	4.37	-	11.20	nr	<b>15.57</b>
30 x 5 x 1000 mm girth	0.13	4.37	-	6.18	nr	<b>10.55</b>
30 x 5 x 1200 mm girth	0.15	5.04	-	7.42	nr	<b>12.46</b>
30 x 5 x 1400 mm girth	0.13	4.37	-	8.65	nr	<b>13.02</b>
30 x 5 x 1600 mm girth	0.15	5.04	-	9.89	nr	<b>14.93</b>
30 x 5 x 1800 mm girth	0.15	5.04	-	11.13	nr	<b>16.17</b>
<b>Coach screws</b>						
5.0 mm diameter x 75 mm long	0.04	1.34	-	-	nr	<b>1.35</b>
7.0 mm diameter x 105 mm long	0.05	1.68	-	0.01	nr	<b>1.69</b>
7.0 mm diameter x 140 mm long	0.06	2.02	-	0.01	nr	<b>2.02</b>
10.0 mm diameter x 95 mm long	0.06	2.02	-	0.01	nr	<b>2.02</b>
10.0 mm diameter x 165 mm long	0.07	2.35	-	0.01	nr	<b>2.36</b>
<b>Timber connectors; round toothed plate, single sided for 10 mm or 12 mm bolts</b>						
38 mm diameter	0.01	0.17	-	3.08	nr	<b>3.24</b>
50 mm diameter	0.01	0.17	-	3.19	nr	<b>3.36</b>
63 mm diameter	0.01	0.27	-	3.56	nr	<b>3.83</b>
75 mm diameter	0.01	0.27	-	4.05	nr	<b>4.32</b>
<b>Timber connectors; round toothed plate, double sided for 10 mm or 12 mm bolts</b>						
38 mm diameter	0.01	0.17	-	3.08	nr	<b>3.24</b>
50 mm diameter	0.01	0.17	-	3.19	nr	<b>3.36</b>
63 mm diameter	0.01	0.27	-	3.56	nr	<b>3.83</b>
75 mm diameter	0.01	0.27	-	4.05	nr	<b>4.32</b>
<b>Split ring connectors</b>						
63 mm diameter	0.06	2.02	-	13.51	nr	<b>15.52</b>
101 mm diameter	0.06	2.02	-	26.51	nr	<b>28.53</b>
<b>Shear plate connectors</b>						
67 mm diameter	0.06	2.02	-	0.46	nr	<b>2.48</b>
101 mm diameter	0.06	2.02	-	1.04	nr	<b>3.05</b>

**CLASS P: PILING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERALLY</b>						
<p>There are a number of different types of piling which are available for use in differing situations. Selection of the most suitable type of piling for a particular site will depend on a number of factors including the physical conditions likely to be encountered during driving, the loads to be carried, the design of superstructure, etc. The most commonly used systems are included in this section. It is essential that a thorough and adequate site investigation is carried out to ascertain details of the ground strata and bearing capacities to enable a proper assessment to be made of the most suitable and economical type of piling to be adopted. There are so many factors, apart from design considerations, which influence the cost of piling that it is not possible to give more than an approximate indication of costs. To obtain reliable costs for a particular contract advice should be sought from a company specialising in the particular type of piling proposed. Some Specialist Contractors will also provide a design service if required.</p>						
<b>BORED CAST IN PLACE CONCRETE PILES</b>						
<b>Generally</b>						
<p>The items "number of piles" are calculated based on the following: allowance for provision of all plant, equipment and labour including transporting to and from site and establishing and dismantling at £6,000 in total.</p> <p>moving the rig to and setting up at each pile position; preparing to commence driving; £40.00, £60.00 and 75.00 per 300 mm, 450 mm and 600 mm diameter piles using the tripod mounted percussion rig .</p> <p>Standing time is quoted at £100.00 per hour for tripod rig, £195.00 per hour for mobile rig and £120.00 per hour for continuous flight auger..</p>						
<b>Disposal of material arising from pile bores</b>						
<p>The disposal of excavated material is shown separately, partly as this task is generally carried out by the main contractor rather than the piling specialist, but also to allow for simple adjustment should contaminated ground be envisaged. Disposal of material arising from pile bores; collection from around piling operations</p>						
storage on site; 100 m maximum distance; using 22.5 t ADT	0.05	0.90	3.37	-	m <sup>3</sup>	4.27
removal; 5 km distance; using 20 t tipper	0.12	2.17	6.54	-	m <sup>3</sup>	8.71
removal; 15 km distance; using 20 t tipper	0.22	3.97	11.99	-	m <sup>3</sup>	15.97
Add to the above rates where tipping charges apply (excluding Landfill Tax):						
non-hazardous waste	-	-	-	-	m <sup>3</sup>	29.62
hazardous waste	-	-	-	-	m <sup>3</sup>	74.25
special waste	-	-	-	-	m <sup>3</sup>	90.75
contaminated liquid	-	-	-	-	m <sup>3</sup>	94.88
contaminated sludge	-	-	-	-	m <sup>3</sup>	123.75

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Add to the above rates where Landfill Tax applies:						
exempted material	-	-	-	-	m <sup>3</sup>	-
inactive or inert material	-	-	-	-	m <sup>3</sup>	3.75
other material	-	-	-	-	m <sup>3</sup>	48.00
<b>Concrete 35 N/mm<sup>2</sup>, 20 mm aggregate; installed by tripod-mounted percussion rig</b>						
The following unit costs cover the construction of small diameter bored piling using light and compact tripod rigs requiring no expensive site levelling or access ways. Piling can be constructed in very restricted headroom or on confined and difficult sites. Standard diameters are between 400 and 600 mm with a normal maximum depth of 20 m. The costs are based on installing 100 piles on a clear site with reasonable access. Diameter: 300 mm						
number of piles (see above)	-	-	-	-	nr	121.58
concreted length	-	-	-	-	m	8.96
depth bored to 10 m maximum depth	-	-	-	-	m	49.56
depth bored to 15 m maximum depth	-	-	-	-	m	54.58
depth bored to 20 m maximum depth	-	-	-	-	m	59.59
Diameter: 450 mm						
number of piles ( see above)	-	-	-	-	nr	146.95
concreted length	-	-	-	-	m	34.29
depth bored to 10 m maximum depth	-	-	-	-	m	92.17
depth bored to 15 m maximum depth	-	-	-	-	m	102.44
depth bored to 20 m maximum depth	-	-	-	-	m	112.84
Diameter: 600 mm						
number of piles (see above)	-	-	-	-	nr	165.96
concreted length	-	-	-	-	m	35.85
depth bored to 10 m maximum depth	-	-	-	-	m	164.82
depth bored to 15 m maximum depth	-	-	-	-	m	178.77
depth bored to 20 m maximum depth	-	-	-	-	m	192.72
<b>Concrete 35 N/mm<sup>2</sup>, 20 mm aggregate; installed by lorry/crawler-mounted rotary rig</b>						
The following unit costs cover the construction of small diameter bored piles using lorry or crawler mounted rotary boring rigs. This type of plant is more mobile and faster in operation than the tripod rigs and is ideal for large contracts in cohesive ground. Construction of piles under bentonite suspension can be carried out to obviate the use of liners. Standard diameters of 450 - 900 mm diameter can be constructed to depths of 30 m. The costs are based on installing 100 piles on a clear site with reasonable access. Diameter: 300 mm						
number of piles (see above)	-	-	-	-	nr	266.24
concreted length	-	-	-	-	m	11.66
depth bored to 10 m maximum depth	-	-	-	-	m	58.33
depth bored to 15 m maximum depth	-	-	-	-	m	58.33
depth bored to 20 m maximum depth	-	-	-	-	m	58.33
Diameter: 450 mm						
number of piles (see above)	-	-	-	-	nr	266.24
concreted length	-	-	-	-	m	23.33
depth bored to 10 m maximum depth	-	-	-	-	m	72.91
depth bored to 15 m maximum depth	-	-	-	-	m	72.91
depth bored to 20 m maximum depth	-	-	-	-	m	72.91

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>BORED CAST IN PLACE CONCRETE PILES - cont'd</b>						
<b>Concrete 35 N/mm<sup>2</sup>, 20 mm aggregate; installed by lorry/crawler-mounted rotary rig - cont'd</b>						
Diameter: 600 mm						
number of piles (see above)	-	-	-	-	nr	266.24
concreted length	-	-	-	-	m	60.15
depth bored to 10 m maximum depth	-	-	-	-	m	131.22
depth bored to 15 m maximum depth	-	-	-	-	m	131.22
depth bored to 20 m maximum depth	-	-	-	-	m	131.22
<b>Concrete 35 N/mm<sup>2</sup>, 20 mm aggregate; installed by continuous flight auger</b>						
The following unit costs cover the construction of piles by screwing a continuous flight auger into the ground to a design depth (Determined prior to commencement of piling operations and upon which the rates are based and subsequently varied to actual depths). Concrete is then pumped through the hollow stem of the auger to the bottom and the pile formed as the auger is withdrawn. Spoil is removed by the auger as it is withdrawn. This is a fast method of construction without causing disturbance or vibration to adjacent ground. No casing is required even in unsuitable soils. Reinforcement can be placed after grouting is complete.						
The costs are based on installing 100 piles on a clear site with reasonable access. Diameter: 300 mm						
number of piles	-	-	-	-	nr	54.00
concreted length	-	-	-	-	m	10.81
depth bored to 10 m maximum depth	-	-	-	-	nr	22.82
depth bored to 15 m maximum depth	-	-	-	-	nr	22.82
depth bored to 20 m maximum depth	-	-	-	-	nr	22.82
Diameter: 450 mm						
number of piles	-	-	-	-	nr	54.00
concreted length	-	-	-	-	m	23.41
depth bored to 10 m maximum depth	-	-	-	-	nr	29.03
depth bored to 15 m maximum depth	-	-	-	-	nr	29.03
depth bored to 20 m maximum depth	-	-	-	-	nr	29.03
Diameter: 600 mm						
number of piles	-	-	-	-	nr	54.00
concreted length	-	-	-	-	m	56.63
depth bored to 10 m maximum depth	-	-	-	-	nr	32.38
depth bored to 15 m maximum depth	-	-	-	-	nr	32.38
depth bored to 20 m maximum depth	-	-	-	-	nr	32.38

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DRIVEN CAST IN PLACE CONCRETE PILES</b>						
<b>Generally</b>						
The items "number of piles" are calculated based on the following: allowance for provision of all plant, equipment and labour including transporting to and from site and establishing and dismantling at £6,250 in total for piles using the Temporary Steel Casing Method and £10,500 in total for piles using the Segmental Casing Method.						
moving the rig to and setting up at each pile position; preparing to commence driving; £110.00 per pile.						
For the Temporary Steel Casing Method, obstructions (where within the capabilities of the normal plant) are quoted at £160.00 per hour and standing time at £152.50 per hour. For the Segmental Steel Casing Method, obstructions (where within the capabilities of the normal plant) are quoted at £275.00 per hour and standing time at £252.00 per hour.						
<b>Temporary steel casing method; concrete 35 N/mm<sup>2</sup>; reinforced for 750 kN</b>						
The following unit costs cover the construction of piles by driving a heavy steel tube into the ground either by using an internal hammer acting on a gravel or concrete plug, as is more usual, or by using an external hammer on a driving helmet at the top of the tube. After driving to the required depth an enlarged base is formed by hammering out successive charges of concrete down the tube. The tube is then filled with concrete which is compacted as the tube is vibrated and withdrawn. Piles of 350 to 500 mm diameter can be constructed with rakes up to 1 in 4 to carry working loads up to 120 t per pile. The costs are based on installing 100 piles on a clear site with reasonable access. Diameter 430 mm; drive shell and form pile						
number of piles	-	-	-	-	nr	170.58
concreted length	-	-	-	-	m	26.83
depth driven; bottom-driven method	-	-	-	-	m	7.66
depth driven; top-driven method	-	-	-	-	m	4.40
<b>Segmental casing method; concrete 35 N/mm<sup>2</sup>; nominal reinforcement</b>						
The following unit costs cover the construction of piles by driving into hard material using a serrated thick walled tube. It is oscillated and pressed into the hard material using a hydraulic attachment to the piling rig. The hard material is broken up using chiselling methods and is then removed by mechanical grab. The costs are based on installing 100 piles on a clear site with reasonable access.						

**CLASS P: PILING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DRIVEN CAST IN PLACE CONCRETE PILES - cont'd</b>						
<b>Diameter 620 mm</b>						
number of piles	-	-	-	-	nr	<b>227.50</b>
concreted length	-	-	-	-	m	<b>147.60</b>
depth bored or driven to 15 m maximum depth	-	-	-	-	m	<b>10.95</b>
<b>Diameter 1180 mm</b>						
number of piles	-	-	-	-	nr	<b>227.50</b>
concreted length	-	-	-	-	m	<b>160.19</b>
depth bored or driven to 15 m maximum depth	-	-	-	-	m	<b>16.43</b>
<b>Diameter 1500 mm</b>						
number of piles	-	-	-	-	nr	<b>227.50</b>
concreted length	-	-	-	-	m	<b>215.18</b>
depth bored or driven to 15 m maximum depth	-	-	-	-	m	<b>26.02</b>
<b>PREFORMED CONCRETE PILES</b>						
<p>The following unit costs cover the installation of driven precast concrete piles by using a hammer acting on shoe fitted or cast into the precast concrete pile unit. Single pile lengths are normally a maximum of 13m long, at which point, a mechanical interlocking joint is required to extend the pile. These joints are most economically and practically formed at works. Lengths, sizes of sections, reinforcement details and concrete mixes vary for differing contractors, whose specialist advice should be sought for specific designs. The following unit costs are based on installing 100 piles on a clear site with reasonable access. The items "number of piles" are calculated based on the following:</p> <p>allowance for provision of all plant, equipment and labour including transporting to and from site and establishing and dismantling at £3,150 in total for piles up to 275 x 275 mm and £3,850 in total for piles 350 x 350 mm and over.</p> <p>moving the rig to and setting up at each pile position; preparing to commence driving; piles up to 275 x 275 mm £35.00 each; piles 350 x 350 mm and over, £55.00 each. an allowance for the cost of the driving head and shoe; £35.00 for 235 x 235 mm piles, £45.00 for 275 x 275 mm and £55.00 for 350 x 350 mm.</p> <p>cost of providing the pile of the stated length</p> <p>Typical allowances for standing time are £138.50 per hour for 235 x 235 mm piles, £157.50 for 275 x 275 mm and £189.50 for 350 x 350 mm.</p>						

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Concrete 50 N/mm<sup>2</sup>; reinforced for 600 kN</b>						
<b>The costs are based on installing 100 piles on a clear site with reasonable access.</b>						
Cross-sectional area: 0.05-0.1 m <sup>2</sup> ; 235 x 235 mm						
number of piles of 10 m length	-	-	-	-	nr	335.00
number of piles of 15 m length	-	-	-	-	nr	436.15
number of piles of 20 m length	-	-	-	-	nr	537.29
number of piles of 25 m length	-	-	-	-	nr	638.43
add for mechanical interlocking joint	-	-	-	-	nr	49.63
depth driven	-	-	-	-	m	3.04
Cross-sectional area: 0.05-0.1 m <sup>2</sup> ; 275 x 275 mm						
number of piles of 10 m length	-	-	-	-	nr	345.32
number of piles of 15 m length	-	-	-	-	nr	451.64
number of piles of 20 m length	-	-	-	-	nr	557.96
number of piles of 25 m length	-	-	-	-	nr	664.27
add for mechanical interlocking joint	-	-	-	-	nr	56.72
depth driven	-	-	-	-	m	3.54
Cross-sectional area: 0.1-0.15 m <sup>2</sup> ; 350 x 350 mm						
number of piles of 10 m length	-	-	-	-	nr	574.48
number of piles of 15 m length	-	-	-	-	nr	778.21
number of piles of 20 m length	-	-	-	-	nr	981.93
number of piles of 25 m length	-	-	-	-	nr	1185.65
number of piles of 30 m length	-	-	-	-	nr	1389.37
add for mechanical interlocking joint	-	-	-	-	nr	70.91
depth driven	-	-	-	-	m	4.25
<b>TIMBER PILES</b>						
The items "number of piles" are calculated based on the following: allowance for provision of all plant, equipment and labour including transporting to and from site and establishing and dismantling at £6,000 in total.						
moving the rig to and setting up at each pile position and preparing to drive at £75.00 per pile.						
allowance for the cost of the driving head and shoe at £40.00 per 225 x 225 mm pile, £50.00 for 300 x 300 mm, £60.00 for 350 x 350 mm and £70.00 for 450 x 450mm. cost of providing the pile of the stated length						
A typical allowance for standing time is £245.50 per hour.						
<b>Douglas Fir; hewn to mean pile size</b>						
The costs are based on installing 100 piles on a clear site with reasonable access. Cross-sectional area: 0.05-0.1 m <sup>2</sup> ; 225 x 225 mm						
number of piles of 10 m length	-	-	-	-	nr	528.68
number of piles of 15 m length	-	-	-	-	nr	696.08
number of piles of 20 m length	-	-	-	-	nr	863.48
depth driven	-	-	-	-	m	3.42
Cross-sectional area: 0.05-0.1 m <sup>2</sup> ; 300 x 300 mm						
number of piles of 10 m length	-	-	-	-	nr	801.87
number of piles of 15 m length	-	-	-	-	nr	1099.53
number of piles of 20 m length	-	-	-	-	nr	1397.19
depth driven	-	-	-	-	m	4.09

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>TIMBER PILES - cont'd</b>						
<b>Douglas Fir; hewn to mean pile size - cont'd</b>						
Cross-sectional area: 0.1-0.15 m <sup>2</sup> ; 350 x 350 mm						
number of piles of 10 m length	-	-	-	-	nr	1029.60
number of piles of 15 m length	-	-	-	-	nr	1434.78
number of piles of 20 m length	-	-	-	-	nr	1839.96
depth driven	-	-	-	-	m	4.69
Cross-sectional area: 0.15-0.25 m <sup>2</sup> ; 450 x 450 mm						
number of piles of 10 m length	-	-	-	-	nr	1571.47
number of piles of 15 m length	-	-	-	-	nr	2241.25
number of piles of 20 m length	-	-	-	-	nr	2911.03
number of piles of 25 m length	-	-	-	-	nr	3580.81
depth driven	-	-	-	-	m	6.15
<b>Greenheart; hewn to mean pile size</b>						
The costs are based on installing 100 piles on a clear site with reasonable access. Cross-sectional area: 0.05-0.1 m <sup>2</sup> ; 225 x 225 mm						
number of piles of 10 m length	-	-	-	-	nr	595.76
number of piles of 15 m length	-	-	-	-	nr	796.70
number of piles of 20 m length	-	-	-	-	nr	997.64
depth driven	-	-	-	-	m	3.42
Cross-sectional area: 0.05-0.1 m <sup>2</sup> ; 300 x 300 mm						
number of piles of 10 m length	-	-	-	-	nr	921.03
number of piles of 15 m length	-	-	-	-	nr	1278.27
number of piles of 20 m length	-	-	-	-	nr	1635.51
depth driven	-	-	-	-	m	4.09
Cross-sectional area: 0.1-0.15 m <sup>2</sup> ; 350 x 350 mm						
number of piles of 10 m length	-	-	-	-	nr	1191.60
number of piles of 15 m length	-	-	-	-	nr	1677.78
number of piles of 20 m length	-	-	-	-	nr	2163.96
depth driven	-	-	-	-	m	4.69
Cross-sectional area: 0.15-0.25 m <sup>2</sup> ; 450 x 450 mm						
number of piles of 10 m length	-	-	-	-	nr	1844.35
number of piles of 15 m length	-	-	-	-	nr	2650.57
number of piles of 20 m length	-	-	-	-	nr	3456.79
number of piles of 25 m length	-	-	-	-	nr	4263.01
depth driven	-	-	-	-	m	6.15



**CLASS P: PILING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ISOLATED STEEL PILES</b>						
Steel bearing piles are commonly carried out by a Specialist Contractor and whose advice should be sought to arrive at accurate costing. However the following items can be used to assess a budget cost for such work. The following unit costs are based upon driving 100 nr steel bearing piles on a clear site with reasonable access.						
The items "number of piles" are calculated based on the following:						
allowance for provision of all plant, equipment and labour including transporting to and from site and establishing and dismantling at £6,600 in total up to a maximum 100 miles radius from base and £16,050 up to a maximum 250 miles radius from base.						
moving the rig to and setting up at each pile position; preparing to commence driving; £193.15 per pile.						
cost of providing the pile of the stated length						
A typical allowance for standing time is £283.90 per hour.						
<b>Steel EN 10025 grade S275; within 100 miles of steel plant</b>						
The costs are based upon installing 100 nr on a clear site with reasonable access. Mass 45 kg/m; 203 x 203 mm						
number of piles: length 10 m	-	-	-	762.83	nr	<b>762.83</b>
number of piles: length 15 m	-	-	-	1019.79	nr	<b>1019.79</b>
number of piles: length 20 m	-	-	-	1274.28	nr	<b>1274.28</b>
depth driven; vertical	-	-	-	-	m	<b>11.95</b>
depth driven; raking	-	-	-	-	m	<b>14.45</b>
Mass 54 kg/m; 203 x 203 mm						
number of piles; length 10 m	-	-	-	864.13	nr	<b>864.13</b>
number of piles; length 15 m	-	-	-	1172.48	nr	<b>1172.48</b>
number of piles; length 20 m	-	-	-	1477.87	nr	<b>1477.87</b>
depth driven; vertical	-	-	-	-	m	<b>11.95</b>
depth driven; raking	-	-	-	-	m	<b>14.45</b>
Mass 63 kg/m; 254 x 254 mm						
number of piles; length 10 m	-	-	-	972.36	nr	<b>972.36</b>
number of piles; length 15 m	-	-	-	1335.57	nr	<b>1335.57</b>
number of piles; length 20 m	-	-	-	1695.32	nr	<b>1695.32</b>
depth driven; vertical	-	-	-	-	m	<b>12.80</b>
depth driven; raking	-	-	-	-	m	<b>15.49</b>
Mass 71 kg/m; 254 x 254 mm						
number of piles; length 10 m	-	-	-	1063.28	nr	<b>1063.28</b>
number of piles; length 15 m	-	-	-	1472.62	nr	<b>1472.62</b>
number of piles; length 20 m	-	-	-	1878.05	nr	<b>1878.05</b>
depth driven; vertical	-	-	-	-	m	<b>12.80</b>
depth driven; raking	-	-	-	-	m	<b>15.49</b>
Mass 85 kg/m; 254 x 254 mm						
number of piles; length 10 m	-	-	-	1222.40	nr	<b>1222.40</b>
number of piles; length 15 m	-	-	-	1712.45	nr	<b>1712.45</b>
number of piles; length 20 m	-	-	-	2197.82	nr	<b>2197.82</b>
depth driven; vertical	-	-	-	-	m	<b>12.80</b>
depth driven; raking	-	-	-	-	m	<b>15.49</b>

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ISOLATED STEEL PILES - cont'd</b>						
<b>Steel EN 10025 grade S275; within 100 miles of steel plant - cont'd</b>						
Mass 79 kg/m; 305 x 305 mm						
number of piles; length 10 m	-	-	-	1171.59	nr	<b>1171.59</b>
number of piles; length 15 m	-	-	-	1635.73	nr	<b>1635.73</b>
number of piles; length 20 m	-	-	-	2095.53	nr	<b>2095.54</b>
depth driven; vertical	-	-	-	-	m	<b>12.80</b>
depth driven; raking	-	-	-	-	m	<b>15.49</b>
Mass 95 kg/m; 305 x 305 mm						
number of piles; length 10 m	-	-	-	1356.96	nr	<b>1356.96</b>
number of piles; length 15 m	-	-	-	1915.11	nr	<b>1915.11</b>
number of piles; length 20 m	-	-	-	2468.03	nr	<b>2468.03</b>
depth driven; vertical	-	-	-	-	m	<b>13.64</b>
depth driven; raking	-	-	-	-	m	<b>16.54</b>
Mass 110 kg/m; 305 x 305 mm						
number of piles; length 10 m	-	-	-	1530.74	nr	<b>1530.74</b>
number of piles; length 15 m	-	-	-	2177.02	nr	<b>2177.02</b>
number of piles; length 20 m	-	-	-	2817.25	nr	<b>2817.25</b>
depth driven; vertical	-	-	-	-	m	<b>13.64</b>
depth driven; raking	-	-	-	-	m	<b>16.54</b>
Mass 109 kg/m; 356 x 368 mm						
number of piles; length 10 m	-	-	-	1543.13	nr	<b>1543.13</b>
number of piles; length 15 m	-	-	-	2195.53	nr	<b>2195.53</b>
number of piles; length 20 m	-	-	-	2841.93	nr	<b>2841.93</b>
depth driven; vertical	-	-	-	-	m	<b>13.64</b>
depth driven; raking	-	-	-	-	m	<b>16.54</b>
Mass 126 kg/m; 305 x 305 mm						
number of piles; length 10 m	-	-	-	1716.11	nr	<b>1716.11</b>
number of piles; length 15 m	-	-	-	2456.39	nr	<b>2456.39</b>
number of piles; length 20 m	-	-	-	3189.74	nr	<b>3189.75</b>
driving piles; vertical	-	-	-	-	m	<b>11.60</b>
driving piles; raking	-	-	-	-	m	<b>17.55</b>
Mass 149 kg/m; 305 x 305 mm						
number of piles; length 10 m	-	-	-	1982.57	nr	<b>1982.58</b>
number of piles; length 15 m	-	-	-	2857.99	nr	<b>2857.99</b>
number of piles; length 20 m	-	-	-	3725.21	nr	<b>3725.21</b>
driving piles; vertical	-	-	-	-	m	<b>11.60</b>
driving piles; raking	-	-	-	-	m	<b>17.55</b>
Mass 186 kg/m; 305 x 305 mm						
number of piles; length 10 m	-	-	-	2411.24	nr	<b>2411.24</b>
number of piles; length 15 m	-	-	-	3504.04	nr	<b>3504.04</b>
number of piles; length 20 m	-	-	-	4586.61	nr	<b>4586.61</b>
driving piles; vertical	-	-	-	-	m	<b>15.36</b>
drive piles; raking	-	-	-	-	m	<b>15.70</b>
Mass 223 kg/m; 305 x 305 mm						
number of piles; length 10 m	-	-	-	2839.90	nr	<b>2839.90</b>
number of piles; length 15 m	-	-	-	4150.09	nr	<b>4150.09</b>
number of piles; length 20 m	-	-	-	5448.01	nr	<b>5448.01</b>
driving piles; vertical	-	-	-	-	m	<b>13.65</b>
driving piles; raking	-	-	-	-	m	<b>20.66</b>
Mass 133 kg/m; 356 x 368 mm						
number of piles; length 10 m	-	-	-	1826.47	nr	<b>1826.47</b>
number of piles; length 15 m	-	-	-	2622.51	nr	<b>2622.51</b>
number of piles; length 20 m	-	-	-	3411.23	nr	<b>3411.23</b>
driving piles; vertical	-	-	-	-	m	<b>11.60</b>
driving piles; raking	-	-	-	-	m	<b>17.55</b>

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Mass 152 kg/m; 356 x 368 mm						
number of piles; length 10 m	-	-	-	2050.77	nr	<b>2050.77</b>
number of piles; length 15 m	-	-	-	2960.53	nr	<b>2960.53</b>
number of piles; length 20 m	-	-	-	3861.93	nr	<b>3861.93</b>
driving piles; vertical	-	-	-	-	m	<b>15.36</b>
driving piles; raking	-	-	-	-	m	<b>18.60</b>
Mass 174 kg/m; 356 x 368 mm						
number of piles; length 10 m	-	-	-	2312.41	nr	<b>2312.41</b>
number of piles; length 15 m	-	-	-	3354.80	nr	<b>3354.80</b>
number of piles; length 20 m	-	-	-	4387.62	nr	<b>4387.62</b>
driving piles; vertical	-	-	-	-	m	<b>15.36</b>
driving piles; raking	-	-	-	-	m	<b>18.60</b>
<b>INTERLOCKING STEEL PILES</b>						
Sheet steel piling is commonly carried out by a Specialist Contractor, whose advice should be sought to arrive at accurate costings. However the following items can be used to assess a budget for such work.						
Note: area of driven piles will vary from area supplied dependant upon pitch line of piling and provision for such allowance has been made in PC for supply. The materials cost below includes the manufacturers tariffs for a 200 mile delivery radius from works, delivery 10 - 20t loads and with an allowance of 10% to cover waste / projecting piles etc.						
<b>Arcelor Mittal Z section steel piles; EN 10248 grade S270GP steel</b>						
The following unit costs are based on driving/ extracting 1,500 m <sup>2</sup> of sheet piling on a clear site with reasonable access. Provision of all plant, equipment and labour including transport to and from the site and establishing and dismantling for						
driving of sheet piling	-	-	-	-	sum	<b>6132.10</b>
extraction of sheet piling	-	-	-	-	sum	<b>5449.60</b>
Standing time	-	-	-	-	hr	<b>383.84</b>
Section modulus 800 - 1200 cm <sup>3</sup> /m; section reference AZ 12; mass 98.7 kg/m <sup>2</sup> ; sectional modulus 1200 cm <sup>3</sup> /m; EN 10248 grade S270GP steel						
length of welded corner piles	-	-	-	-	m	<b>92.72</b>
length of welded junction piles	-	-	-	-	m	<b>99.84</b>
driven area	-	-	-	-	m <sup>2</sup>	<b>45.21</b>
area of piles of length not exceeding 14 m	-	-	-	80.43	m <sup>2</sup>	<b>80.43</b>
area of piles of length 14 - 24 m	-	-	-	85.51	m <sup>2</sup>	<b>85.51</b>
area of piles of length exceeding 24 m	-	-	-	85.51	m <sup>2</sup>	<b>85.51</b>
Section modulus 1200 - 20000 cm <sup>3</sup> /m; section reference AZ 17; mass 108.6 kg/m <sup>2</sup> ; sectional modulus 1665 cm <sup>3</sup> /m; EN 10248 grade S270GP steel						
length of welded corner piles	-	-	-	-	m	<b>92.72</b>
length of welded junction piles	-	-	-	-	m	<b>99.84</b>
driven area	-	-	-	-	m <sup>2</sup>	<b>31.59</b>
area of piles of length not exceeding 14 m	-	-	-	84.42	m <sup>2</sup>	<b>84.42</b>
area of piles of length 14 - 24 m	-	-	-	85.51	m <sup>2</sup>	<b>85.51</b>
area of piles of length exceeding 24 m	-	-	-	85.51	m <sup>2</sup>	<b>85.51</b>

## CLASS P: PILING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>INTERLOCKING STEEL PILES - cont'd</b>						
<b>Arcelor Mittal Z section steel piles; EN 10248 grade S270GP steel - cont'd</b>						
Section modulus 2000 - 3000 cm <sup>3</sup> /m; section reference AZ 26; mass 155.2 kg/m <sup>2</sup> ; sectional modulus 2600 cm <sup>3</sup> /m; EN 10248 grade S270GP steel driven area	-	-	-	-	m <sup>2</sup>	<b>36.44</b>
area of piles of length 6 - 18 m	-	-	-	95.65	m <sup>2</sup>	<b>95.65</b>
area of piles of length 18 - 24 m	-	-	-	96.89	m <sup>2</sup>	<b>96.89</b>
Section modulus 3000 - 4000 cm <sup>3</sup> /m; section reference AZ 36; mass 194.0 kg/m <sup>2</sup> ; sectional modulus 3600 cm <sup>3</sup> /m; EN 10248 grade S270GP steel driven area	-	-	-	-	m <sup>2</sup>	<b>40.12</b>
area of piles of length 6 - 18 m	-	-	-	116.80	m <sup>2</sup>	<b>116.80</b>
area of piles of length 18 - 24 m	-	-	-	118.31	m <sup>2</sup>	<b>118.31</b>
Straight section modulus ne 500 cm <sup>3</sup> /m; section reference AS 500-12 mass 149 kg/m <sup>2</sup> ; sectional modulus 51 cm <sup>3</sup> /m; EN 10248 grade S270GP steel driven area	-	-	-	-	m <sup>2</sup>	<b>36.44</b>
area of piles of length 6 - 18 m	-	-	-	145.53	m <sup>2</sup>	<b>145.53</b>
area of piles of length 18 - 24 m	-	-	-	147.41	m <sup>2</sup>	<b>147.41</b>
One coat black tar vinyl (PC1) protective treatment applied all surfaces at shop to minimum dry film thickness up to 150 microns to steel piles	-	-	-	-		
section reference AZ 12; pile area	-	-	-	11.05	m <sup>2</sup>	<b>11.05</b>
section reference AZ 17; pile area	-	-	-	11.30	m <sup>2</sup>	<b>11.30</b>
section reference AZ 26; pile area	-	-	-	12.35	m <sup>2</sup>	<b>12.35</b>
section reference AZ 36; pile area	-	-	-	13.15	m <sup>2</sup>	<b>13.15</b>
section reference AS 500 - 12; pile area	-	-	-	13.73	m <sup>2</sup>	<b>13.73</b>
One coat black high build isocyanate cured epoxy pitch (PC2) protective treatment applied all surfaces at shop to minimum dry film thickness up to 450 microns to steel piles	-	-	-	-		
section reference AZ 12; pile area	-	-	-	17.36	m <sup>2</sup>	<b>17.36</b>
section reference AZ 17; pile area	-	-	-	17.75	m <sup>2</sup>	<b>17.75</b>
section reference AZ 26; pile area	-	-	-	19.40	m <sup>2</sup>	<b>19.40</b>
section reference AZ 36; pile area	-	-	-	20.66	m <sup>2</sup>	<b>20.66</b>
section reference AS 500 - 12; pile area	-	-	-	21.58	m <sup>2</sup>	<b>21.58</b>
<b>Arcelor Mittal U section steel piles; EN 10248 grade S270GP steel</b>						
The following unit costs are based on driving/ extracting 1,500 m <sup>2</sup> of sheet piling on a clear site with reasonable access. Provision of plant, equipment and labour including transport to and from the site and establishing and dismantling						
driving of sheet piling	-	-	-	-	sum	<b>6200.00</b>
extraction of sheet piling	-	-	-	-	sum	<b>5500.00</b>
Standing time	-	-	-	-	hr	<b>383.84</b>
Section modulus 500 - 800 cm <sup>3</sup> /m; section reference PU 6; mass 76.0 kg/m <sup>2</sup> ; sectional modulus 600 cm <sup>3</sup> /m driven area	-	-	-	-	m <sup>2</sup>	<b>49.82</b>
area of piles of length 6 - 18 m	-	-	-	69.07	m <sup>2</sup>	<b>69.07</b>
area of piles of length 18 - 24 m	-	-	-	70.00	m <sup>2</sup>	<b>70.00</b>

**CLASS P: PILING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Section modulus 800 - 1200 cm <sup>3</sup> /m; section reference PU 8; mass 90.9 kg/m <sup>2</sup> ; sectional modulus 830 cm <sup>3</sup> /m driven area	-	-	-	-	m <sup>2</sup>	<b>42.46</b>
area of piles of length 6 - 18 m	-	-	-	73.05	m <sup>2</sup>	<b>73.05</b>
area of piles of length 18 - 24 m	-	-	-	74.05	m <sup>2</sup>	<b>74.05</b>
Section modulus 1200 - 2000 cm <sup>3</sup> /m; section reference PU 12; mass 110.1 kg/m <sup>2</sup> ; sectional modulus 1200 cm <sup>3</sup> /m driven area	-	-	-	-	m <sup>2</sup>	<b>37.84</b>
area of piles of length 6 - 18 m	-	-	-	86.33	m <sup>2</sup>	<b>86.33</b>
area of piles of length 18 - 24 m	-	-	-	87.50	m <sup>2</sup>	<b>87.50</b>
Section modulus 1200 - 2000 cm <sup>3</sup> /m; section reference PU 18; mass 128.2 kg/m <sup>2</sup> ; sectional modulus 1800 cm <sup>3</sup> /m driven area	-	-	-	-	m <sup>2</sup>	<b>33.67</b>
area of piles of length 6 - 18 m	-	-	-	100.28	m <sup>2</sup>	<b>100.28</b>
area of piles of length 18 - 24 m	-	-	-	101.64	m <sup>2</sup>	<b>101.64</b>
Section modulus 2000 - 3000 cm <sup>3</sup> /m; section reference PU 22; mass 143.6 kg/m <sup>2</sup> ; sectional modulus 2200 cm <sup>3</sup> /m driven area	-	-	-	-	m <sup>2</sup>	<b>33.67</b>
area of piles of length 6 - 18 m	-	-	-	112.53	m <sup>2</sup>	<b>112.53</b>
area of piles of length 18 - 24 m	-	-	-	114.05	m <sup>2</sup>	<b>114.05</b>
Section modulus 3000 - 4000 cm <sup>3</sup> /m; section reference PU 32; mass 190.2 kg/m <sup>2</sup> ; sectional modulus 3200 cm <sup>3</sup> /m driven area	-	-	-	-	m <sup>2</sup>	<b>26.75</b>
area of piles of length 6 - 18 m	-	-	-	127.21	m <sup>2</sup>	<b>127.21</b>
area of piles of length 18 - 24 m	-	-	-	128.94	m <sup>2</sup>	<b>128.94</b>
One coat black tar vinyl (PC1) protective treatment applied all surfaces at shop to minimum dry film thickness up to 150 microns to steel piles	-	-	-	10.15	m <sup>2</sup>	<b>10.15</b>
section reference PU 6; pile area	-	-	-	9.97	m <sup>2</sup>	<b>9.97</b>
section reference PU 8; pile area	-	-	-	10.61	m <sup>2</sup>	<b>10.61</b>
section reference PU 12; pile area	-	-	-	11.38	m <sup>2</sup>	<b>11.38</b>
section reference PU 18; pile area	-	-	-	11.79	m <sup>2</sup>	<b>11.79</b>
section reference PU 22; pile area	-	-	-	11.97	m <sup>2</sup>	<b>11.97</b>
section reference PU 32; pile area	-	-	-	11.97	m <sup>2</sup>	<b>11.97</b>
One coat black high build isocyanate cured epoxy pitch (PC2) protective treatment applied all surfaces at shop to minimum dry film thickness up to 450 microns to steel piles	-	-	-	15.95	m <sup>2</sup>	<b>15.95</b>
section reference PU 6; pile area	-	-	-	15.68	m <sup>2</sup>	<b>15.68</b>
section reference PU 8; pile area	-	-	-	16.66	m <sup>2</sup>	<b>16.66</b>
section reference PU 12; pile area	-	-	-	17.88	m <sup>2</sup>	<b>17.88</b>
section reference PU 18; pile area	-	-	-	18.54	m <sup>2</sup>	<b>18.54</b>
section reference PU 22; pile area	-	-	-	18.81	m <sup>2</sup>	<b>18.81</b>
section reference PU 32; pile area	-	-	-	18.81	m <sup>2</sup>	<b>18.81</b>

## CLASS Q: PILING ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CAST IN PLACE CONCRETE PILES</b>						
<b>Bored; tripod-mounted percussion rig</b>						
Backfilling empty bore with selected excavated material						
diameter 500mm	-	-	-	-	m	3.56
Permanent casings; each length not exceeding 13 m						
diameter 500mm	-	-	-	-	m	70.11
Permanent casings; each length exceeding 13 m						
diameter 500mm	-	-	-	-	m	75.66
Enlarged bases						
diameter 1500 mm; to 500mm diameter pile	-	-	-	-	nr	263.20
Cutting off surplus lengths						
diameter 500mm	-	-	-	-	m	28.57
Preparing heads						
500mm diameter	-	-	-	-	nr	42.84
<b>Bored; lorry/crawler mounted rotary rig</b>						
Backfilling empty bore with selected excavated material						
diameter 500mm	-	-	-	-	m	3.56
Permanent casings; each length not exceeding 13 m						
diameter 500mm	-	-	-	-	m	70.11
Permanent casings; each length exceeding 13 m						
diameter 500mm	-	-	-	-	m	75.66
Enlarged bases						
diameter 1500 mm; to 500mm diameter pile	-	-	-	-	nr	263.20
Cutting off surplus lengths						
diameter 500mm	-	-	-	-	m	28.57
Preparing heads						
500mm diameter	-	-	-	-	nr	42.84
<b>Bored; continuous flight auger</b>						
Backfilling empty bore with selected excavated material						
450 mm diameter piles	-	-	-	-	m	2.86
600 mm diameter piles	-	-	-	-	m	3.93
750 mm diameter piles	-	-	-	-	m	4.28
Permanent casings; each length not exceeding 13 m						
450 mm diameter piles	-	-	-	-	m	63.00
600 mm diameter piles	-	-	-	-	m	85.55
750 mm diameter piles	-	-	-	-	m	107.10
Permanent casings ;each length exceeding 13 m						
450 mm diameter piles	-	-	-	-	m	65.50
600 mm diameter piles	-	-	-	-	m	91.00
750 mm diameter piles	-	-	-	-	m	112.60
Enlarged bases						
diameter 1400 mm; to 450 mm diameter piles	-	-	-	-	nr	240.64
diameter 1800 mm; to 600 mm diameter piles	-	-	-	-	nr	293.28
diameter 2100 mm; to 750 mm diameter piles	-	-	-	-	nr	329.93
Cutting off surplus lengths						
450 mm diameter piles	-	-	-	-	m	24.99
600 mm diameter piles	-	-	-	-	m	35.70
750 mm diameter piles	-	-	-	-	m	42.84

## CLASS Q: PILING ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Preparing heads						
450 mm diameter piles	-	-	-	-	nr	26.74
600 mm diameter piles	-	-	-	-	nr	42.84
750 mm diameter piles	-	-	-	-	nr	64.25
Collection from around pile heads of spoil accruing from piling operations and depositing in spoil heaps (For final disposal see <a href="#">Class E - Excavation Ancillaries</a> )	-	-	-	-	m <sup>3</sup>	3.10
<b>Reinforcement; mild steel</b>						
Straight bars, nominal size						
6 mm	-	-	-	-	t	590.00
8 mm	-	-	-	-	t	590.00
10 mm	-	-	-	-	t	585.00
12 mm	-	-	-	-	t	575.00
16 mm	-	-	-	-	t	570.00
25 mm	-	-	-	-	t	570.00
32 mm	-	-	-	-	t	575.00
50 mm	-	-	-	-	t	580.00
Helical bars, nominal size						
6 mm	-	-	-	-	t	610.00
8 mm	-	-	-	-	t	610.00
10 mm	-	-	-	-	t	605.00
12 mm	-	-	-	-	t	595.00
<b>Reinforcement; high tensile steel</b>						
Straight bars, nominal size						
6 mm	-	-	-	-	t	610.00
8 mm	-	-	-	-	t	610.00
10 mm	-	-	-	-	t	605.00
12 mm	-	-	-	-	t	595.00
16 mm	-	-	-	-	t	590.00
25 mm	-	-	-	-	t	590.00
32 mm	-	-	-	-	t	595.00
50 mm	-	-	-	-	t	600.00
Helical bars, nominal size						
6 mm	-	-	-	-	t	630.00
8 mm	-	-	-	-	t	630.00
10 mm	-	-	-	-	t	625.00
12 mm	-	-	-	-	t	615.00
Couplers; Lenton type A; threaded ends on reinforcing bars						
12 mm	0.09	10.40	-	11.34	nr	21.74
16 mm	0.09	10.40	-	13.08	nr	23.48
20 mm	0.09	10.40	-	18.70	nr	29.11
25 mm	0.09	10.40	-	25.43	nr	35.84
32 mm	0.09	10.40	-	35.00	nr	45.40
40 mm	0.09	10.40	-	48.35	nr	58.75
Couplers; Lenton type B; threaded ends on reinforcing bars						
12 mm	0.09	10.40	-	32.79	nr	43.19
16 mm	0.09	10.40	-	37.54	nr	47.94
20 mm	0.09	10.40	-	41.60	nr	52.01
25 mm	0.09	10.40	-	48.04	nr	58.44
32 mm	0.09	10.40	-	64.95	nr	75.35
40 mm	0.09	10.40	-	95.32	nr	105.72

## CLASS Q: PILING ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PREFORMED CONCRETE PILES</b>						
<b>General</b>						
Preparing heads						
235 x 235 mm piles	-	-	-	-	nr	29.32
275 x 275 mm piles	-	-	-	-	nr	40.05
350 x 350 mm piles	-	-	-	-	nr	61.59
<b>TIMBER PILES</b>						
<b>Douglas Fir</b>						
Cutting off surplus lengths						
cross-sectional area: 0.025-0.05 m <sup>2</sup>	-	-	-	-	nr	2.94
cross-sectional area: 0.05-0.1 m <sup>2</sup>	-	-	-	-	nr	5.25
cross-sectional area: 0.1-0.15 m <sup>2</sup>	-	-	-	-	nr	6.73
cross-sectional area: 0.15-0.25 m <sup>2</sup>	-	-	-	-	nr	12.89
Preparing heads						
cross-sectional area: 0.025-0.05 m <sup>2</sup>	-	-	-	-	nr	2.94
cross-sectional area: 0.05-0.1 m <sup>2</sup>	-	-	-	-	nr	5.25
cross-sectional area: 0.1-0.15 m <sup>2</sup>	-	-	-	-	nr	6.73
cross-sectional area: 0.15-0.25 m <sup>2</sup>	-	-	-	-	nr	12.89
<b>Greenheart</b>						
Cutting off surplus lengths						
cross-sectional area: 0.025-0.05 m <sup>2</sup>	-	-	-	-	nr	5.81
cross-sectional area: 0.05-0.1 m <sup>2</sup>	-	-	-	-	nr	10.44
cross-sectional area: 0.1-0.15 m <sup>2</sup>	-	-	-	-	nr	13.52
cross-sectional area: 0.15-0.25 m <sup>2</sup>	-	-	-	-	nr	25.05
Preparing heads						
cross-sectional area: 0.025-0.05 m <sup>2</sup>	-	-	-	-	nr	5.81
cross-sectional area: 0.05-0.1 m <sup>2</sup>	-	-	-	-	nr	10.44
cross-sectional area: 0.1-0.15 m <sup>2</sup>	-	-	-	-	nr	13.52
cross-sectional area: 0.15-0.25 m <sup>2</sup>	-	-	-	-	nr	25.05
<b>ISOLATED STEEL PILES</b>						
<b>Steel bearing piles</b>						
Steel bearing piles are commonly carried out by a Specialist Contractor and whose advice should be sought to arrive at accurate costing. However the following items can be used to assess a budget cost for such work. The item for number of pile extensions includes for the cost of setting up the rig at the pile position together with welding the extension to the top of the steel bearing pile. The items for length of pile extension cover the material only, the driving cost being included in Class P. Number of pile extensions						
at each position	-	-	-	-	nr	255.50
Length of pile extensions, each length not exceeding 3 m; steel EN 10025 grade S275						
mass 45 kg/m	-	-	-	50.90	m	50.90
mass 54 kg/m	-	-	-	61.08	m	61.08
mass 63 kg/m	-	-	-	71.95	m	71.95
mass 71 kg/m	-	-	-	81.09	m	81.09
mass 79 kg/m	-	-	-	91.96	m	91.96
mass 85 kg/m	-	-	-	97.07	m	97.07
mass 95 kg/m	-	-	-	110.58	m	110.58
mass 109 kg/m	-	-	-	129.28	m	129.28
mass 110 kg/m	-	-	-	128.05	m	128.05



**CLASS Q: PILING ANCILLARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
mass 126 kg/m	-	-	-	146.67	m	<b>146.67</b>
mass 149 kg/m	-	-	-	173.44	m	<b>173.44</b>
mass 133 kg/m	-	-	-	157.75	m	<b>157.75</b>
mass 152 kg/m	-	-	-	180.28	m	<b>180.28</b>
mass 174 kg/m	-	-	-	206.56	m	<b>206.56</b>
mass 186 kg/m	-	-	-	216.51	m	<b>216.51</b>
mass 223 kg/m	-	-	-	259.58	m	<b>259.58</b>
Length of pile extensions, each length exceeding 3 m; steel EN 10025 grade S275						
mass 45 kg/m	-	-	-	50.90	m	<b>50.90</b>
mass 54 kg/m	-	-	-	61.08	m	<b>61.08</b>
mass 63 kg/m	-	-	-	71.95	m	<b>71.95</b>
mass 71 kg/m	-	-	-	81.09	m	<b>81.09</b>
mass 79 kg/m	-	-	-	91.96	m	<b>91.96</b>
mass 85 kg/m	-	-	-	97.07	m	<b>97.07</b>
mass 95 kg/m	-	-	-	110.58	m	<b>110.58</b>
mass 109 kg/m	-	-	-	129.28	m	<b>129.28</b>
mass 110 kg/m	-	-	-	128.05	m	<b>128.05</b>
mass 126 kg/m	-	-	-	146.67	m	<b>146.67</b>
mass 149 kg/m	-	-	-	173.44	m	<b>173.44</b>
mass 133 kg/m	-	-	-	157.75	m	<b>157.75</b>
mass 152 kg/m	-	-	-	180.28	m	<b>180.28</b>
mass 174 kg/m	-	-	-	206.56	m	<b>206.56</b>
mass 186 kg/m	-	-	-	216.51	m	<b>216.51</b>
mass 223 kg/m	-	-	-	259.58	m	<b>259.58</b>
Number of pile extensions						
section size 203 x 203 x any kg/m	-	-	-	-	nr	<b>136.49</b>
section size 254 x 254 x any kg/m	-	-	-	-	nr	<b>170.61</b>
section size 305 x 305 x any kg/m	-	-	-	-	nr	<b>204.74</b>
section size 356 x 368 x any kg/m	-	-	-	-	nr	<b>238.85</b>
Cutting off surplus lengths						
mass 30-60 kg/m	-	-	-	-	nr	<b>7.08</b>
mass 60-120 kg/m	-	-	-	-	nr	<b>10.64</b>
mass 120-250 kg/m	-	-	-	-	nr	<b>11.35</b>
Burning off tops of piles to level						
mass 30-60 kg/m	-	-	-	-	nr	<b>7.08</b>
mass 60-120 kg/m	-	-	-	-	nr	<b>10.64</b>
mass 120-250 kg/m	-	-	-	-	nr	<b>11.35</b>
<b>INTERLOCKING STEEL PILES</b>						
<b>Arcelor Mittal Z section steel piles; EN 10248 grade S270GP steel</b>						
Steel bearing piles are commonly carried out by a Specialist Contractor and whose advice should be sought to arrive at accurate costing. However the following items can be used to assess a budget cost for such work. The item for number of pile extensions includes for welding the extension to the top of the steel bearing pile. The items for length of pile extension cover the material only, the driving cost being included in Class P.						
Number of pile extensions Cutting off surplus lengths						
section modulus 500 - 800 cm <sup>3</sup> /m	-	-	-	-	m	<b>13.46</b>
section modulus 800 - 1200 cm <sup>3</sup> /m	-	-	-	-	m	<b>13.46</b>
section modulus 1200 - 2000 cm <sup>3</sup> /m	-	-	-	-	m	<b>13.46</b>
section modulus 2000 - 3000 cm <sup>3</sup> /m	-	-	-	-	m	<b>14.40</b>
section modulus 3000 - 4000 cm <sup>3</sup> /m	-	-	-	-	m	<b>17.28</b>

## CLASS Q: PILING ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>INTERLOCKING STEEL PILES - cont'd</b>						
<b>Arcelor Mittal Z section steel piles; EN 10248 grade S270GP steel - cont'd</b>						
Extract piling and stacking on site						
section modulus 500 - 800 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	33.57
section modulus 800 - 1200 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	33.57
section modulus 1200 - 2000 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	22.88
section modulus 3000 - 4000 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	23.02
section modulus 2000 - 3000 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	23.53
<b>Arcelor Mittal U section steel piles; EN 10248 grade S270GP steel</b>						
Steel bearing piles are commonly carried out by a Specialist Contractor and whose advice should be sought to arrive at accurate costing. However the following items can be used to assess a budget cost for such work. The item for number of pile extensions includes for welding the extension to the top of the steel bearing pile. The items for length of pile extension cover the material only, the driving cost being included in Class P.						
Number of pile extensions Cutting off surplus lengths						
section modulus 500 - 800 cm <sup>3</sup> /m	-	-	-	-	m	11.51
section modulus 800 - 1200 cm <sup>3</sup> /m	-	-	-	-	m	13.46
section modulus 800 - 1200 cm <sup>3</sup> /m	-	-	-	-	m	13.46
section modulus 2000 - 3000 cm <sup>3</sup> /m	-	-	-	-	m	16.32
section modulus 3000 - 4000 cm <sup>3</sup> /m	-	-	-	-	m	17.28
Extract piling and stack on site						
section modulus 500 - 800 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	32.63
section modulus 800 - 1200 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	29.28
section modulus 800 - 1200 cm <sup>3</sup> /m PU12	-	-	-	-	m <sup>2</sup>	23.19
section modulus 800 - 1200 cm <sup>3</sup> /m PU18	-	-	-	-	m <sup>2</sup>	23.02
section modulus 2000 - 3000 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	16.25
section modulus 3000 - 4000 cm <sup>3</sup> /m	-	-	-	-	m <sup>2</sup>	16.25
<b>OBSTRUCTIONS</b>						
<b>General</b>						
Obstructions	-	-	-	-	hr	108.30
<b>PILE TESTS</b>						
<b>Cast in place</b>						
Pile tests; 500 mm diameter working pile; maximum test load of 600kN using non-working tension piles as reaction tripod						
first pile	-	-	-	-	nr	4500.00
subsequent pile	-	-	-	-	nr	3500.00
Take and test undisturbed soil samples; tripod	-	-	-	-	nr	160.00
Make, cure and test concrete cubes; tripod	-	-	-	-	nr	12.00
Pile tests; working pile; maximum test load of 1½ times working load; first pile						
450 mm / 650kN	-	-	-	-	nr	3420.00
600 mm / 1400kN	-	-	-	-	nr	4200.00
750 mm / 2200kN	-	-	-	-	nr	5100.00

## CLASS Q: PILING ANCILLARIES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Pile tests; working pile; maximum test load of 1½ times working load; second and subsequent piles						
450 mm / 650kN	-	-	-	-	nr	1800.00
600 mm / 1400kN	-	-	-	-	nr	2700.00
750 mm / 2200kN	-	-	-	-	nr	3420.00
Pile tests; working pile; electronic integrity testing; each pile (minimum 40 piles per visit)	-	-	-	-	nr	17.10
Make, cure and test concrete cubes	-	-	-	-	nr	12.00
<b>Preformed</b>						
Pile tests; working pile; maximum test load of 1.5 times working load	-	-	-	-	nr	2631.81
Pile tests; working pile; dynamic testing with piling hammer	-	-	-	-	nr	657.95
<b>Steel bearing piles</b>						
Steel bearing piles are commonly carried out by a Specialist Contractor and whose advice should be sought to arrive at accurate costing. However the following items can be used to assess a budget cost for such work. The following unit costs are based upon driving 100 nr steel bearing piles 15-24m long on a clear site with reasonable access. Supply is based on delivery 75 miles from works, in loads over 20t. Establishment of pile testing equipment on site preliminary to any piling operation	-	-	-	-	sum	21620.00
Carry out pile test on bearing piles irrespective of section using pile testing equipment on site up to 108 t load	-	-	-	-	nr	7861.25
<b>Driven-temporary casing</b>						
Pile tests; 430 mm diameter working pile; maximum test load of 1125kN using non-working tension piles as reaction; first piles						
bottom driven	-	-	-	-	nr	4200.00
top driven	-	-	-	-	nr	3420.00
Pile tests; 430 mm diameter working pile; maximum test load of 1125kN using non-working tension piles as reaction; subsequent piles						
bottom driven	-	-	-	-	nr	1800.00
top driven	-	-	-	-	nr	1800.00
Pile tests; working pile; electronic integrity testing; each pile (minimum 40 piles per visit)	-	-	-	-	nr	17.04
Make cure and test concrete cubes	-	-	-	-	nr	12.00
<b>Driven - segmental casing</b>						
Pile tests; 500 mm diameter working pile; maximum test load of 600kN using non-working tension piles as reaction						
first pile	-	-	-	-	nr	6037.50
subsequent piles	-	-	-	-	nr	4600.00

**CLASS R: ROADS AND PAVINGS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL</b>						
<b>Notes - Labour and Plant</b>						
All outputs are based on clear runs without undue delay to two pavers with 75% utilisation. The outputs can be adjusted as follows to take account of space or time influences on the utilisation. Factors for varying utilisation of Labour and Plant:						
1 paver @ 75 % utilisation = x 2.00						
1 paver @ 100 % utilisation = x 1.50						
2 paver @ 100 % utilisation = x 0.75						
<b>RESOURCES - LABOUR</b>						
<b>Sub-base laying gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 2)		18.05				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		£ 86.72				
<b>Flexible paving gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
2 skilled operatives (skill rate 4)		26.64				
4 unskilled operatives (general)		49.76				
4 plant operators (skill rate 3)		64.76				
Total Gang Rate / Hour		£ 155.44				
<b>Concrete paving gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
2 skilled operatives (skill rate 4)		26.64				
4 unskilled operatives (general)		49.76				
1 plant operator (skill rate 2)		18.05				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		£ 124.92				
<b>Road surface spraying gang</b>						
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		£ 16.19				
<b>Road chippings gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
3 plant operators (skill rate 3)		48.57				
Total Gang Rate / Hour		£ 93.91				
<b>Cutting slabs gang</b>						
1 unskilled operative (generally)		12.44				
Total Gang Rate / Hour		£ 12.44				
<b>Concrete filled joints gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operatives (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
Total Gang Rate / Hour		£ 45.34				

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Milling gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
2 skilled operatives (skill rate 4)		26.64				
4 unskilled operatives (general)		49.76				
1 plant operators (skill rate 3)		16.19				
1 plant operator (skill rate 2)		18.05				
Total Gang Rate / Hour		£ 124.92				
<b>Rake and compact planed material gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
1 skilled operatives (skill rate 4)		13.32				
3 unskilled operatives (general)		37.32				
1 plant operator (skill rate 3)		16.19				
1 plant operator (skill rate 4)		14.56				
Total Gang Rate / Hour		£ 95.67				
<b>Kerb laying gang</b>						
3 skilled operatives (skill rate 4)		39.96				
1 unskilled operative (general)		12.44				
1 plant operator (skill rate 3) - 25% of time		4.05				
Total Gang Rate / Hour		£ 56.45				
<b>Path sub-base, bitmac and gravel laying gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		£ 55.35				
<b>Paviors and flagging gang</b>						
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		£ 25.76				
<b>Traffic signs gang</b>						
1 ganger/chargehand (skill rate 3)		15.84				
1 skilled operative (skill rate 3)		14.88				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 3) - 25% of time		4.05				
Total Gang Rate / Hour		£ 59.64				
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Sub-base laying</b>						
93 KW motor grader			55.62			
0.80 m <sup>3</sup> tractor loader			31.86			
6t towed roller			19.42			
Total Rate / Hour		£	106.90			

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT - cont'd</b>						
<b>Flexible paving</b>						
2 asphalt pavers, 35 kW, 4.0 m			62.88			
2 deadweight rollers, 3 point, 10 t			59.83			
tractor with front bucket and integral 2 tool compressor			33.61			
compressor tools: scabblers			1.66			
tar sprayer, 100 litre			4.77			
self propelled chip spreader			28.98			
channel (heat) iron			1.65			
Total Rate / Hour		£	<b>193.39</b>			
<b>Concrete paving</b>						
wheeled loader, 2.60 m <sup>2</sup>			53.32			
concrete paver, 6.0 m			82.55			
compaction slipform finisher			19.57			
Total Rate / Hour		£	<b>155.44</b>			
<b>Road surface spraying</b>						
tar sprayer, 100 litre			4.77			
Total Rate / Hour		£	<b>4.77</b>			
<b>Road chippings</b>						
deadweight rollers, 3 point, 10 t			29.91			
tar sprayer, 100 litre			4.77			
self propelled chip spreader			28.98			
channel (heat) iron			1.65			
Total Rate / Hour		£	<b>64.92</b>			
<b>Cutting slabs</b>						
compressor, 65 cfm			11.06			
12" disc cutter			1.41			
Total Rate / Hour		£	<b>12.47</b>			
<b>Milling</b>						
cold planer, 2.10 m			185.40			
wheeled loader, 2.60m <sup>2</sup>			53.32			
Total Rate/ Hour		£	<b>238.72</b>			
<b>Heat planing</b>						
heat planer, 4.5 m			83.56			
wheeled loader, 2.60 m <sup>2</sup>			53.32			
Total Rate/ Hour		£	<b>136.87</b>			
<b>Rake and compact planed material</b>						
deadweight roller, 3 point, 10t			29.91			
tractor with front bucket and integral 2 tool compressor			33.61			
channel (heat) iron			1.25			
Total Rate/ Hour		£	<b>64.78</b>			
<b>Kerb laying</b>						
backhoe JCB 3CX (25% of time)JCB 3CX (25% of time)			7.04		hr	
12" stihl saw			2.13		hr	
road forms			0.74		hr	
TOTAL		£	<b>9.99</b>		hr	

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Path sub-base, bitmac and gravel laying</b>						
backhoe JCB 3CX			28.16		hr	
2 t dumper			8.72		hr	
pedestrian roller Bomag BW 90S			8.29		hr	
TOTAL		£	<b>45.17</b>		hr	
<b>Paviors and flagging</b>						
2 t dumper (33% of time)			2.91			
Total Rate / Hour		£	<b>2.91</b>			
<b>Traffic signs</b>						
JCB 3CX backhoe - 50% of time			14.08			
125 cfm compressor - 50% of time			6.56			
compressor tools: hand held hammer drill - 50% of time			0.31			
compressor tools: clay spade - 50% of time			0.97			
compressor tools: extra 15 m hose - 50% of time			0.03			
8 t lorry with hiab lift - 50% of time			10.93			
Total Rate / Hour		£	<b>32.89</b>			
<b>SUB-BASES, FLEXIBLE ROAD BASES AND SURFACING</b>						
<b>Granular material DfT specified type 1</b>						
Sub-base; spread and graded						
75 mm deep	0.04	3.04	3.74	25.70	m <sup>3</sup>	<b>32.47</b>
100 mm deep	0.04	3.47	4.28	25.70	m <sup>3</sup>	<b>33.44</b>
150 mm deep	0.05	3.90	4.81	25.70	m <sup>3</sup>	<b>34.41</b>
200 mm deep	0.05	4.34	5.35	25.70	m <sup>3</sup>	<b>35.38</b>
<b>Lean concrete DfT specified strength mix C20P/20 mm aggregate</b>						
Sub-base; spread and graded						
100 mm deep	0.05	3.90	4.81	74.66	m <sup>3</sup>	<b>83.38</b>
200 mm deep	0.05	4.34	5.35	74.66	m <sup>3</sup>	<b>84.34</b>
<b>Hardcore</b>						
Sub-base; spread and graded						
100 mm deep	0.04	3.47	4.28	18.04	m <sup>3</sup>	<b>25.78</b>
150 mm deep	0.05	3.90	4.81	18.04	m <sup>3</sup>	<b>26.75</b>
200 mm deep	0.05	4.34	5.35	18.04	m <sup>3</sup>	<b>27.72</b>
<b>Geotextiles refer to Class E</b>						
<b>Wet mix macadam; DfT clause 808</b>						
Sub-base; spread and graded						
75 mm deep	0.04	3.04	5.67	78.46	m <sup>3</sup>	<b>87.16</b>
100 mm deep	0.04	3.47	5.88	78.46	m <sup>3</sup>	<b>87.81</b>
200 mm deep	0.05	4.34	6.20	78.46	m <sup>3</sup>	<b>88.99</b>
<b>Dense Bitumen Macadam</b>						
Base to DfT clause 903						
100 mm deep	0.02	3.11	3.87	6.65	m <sup>2</sup>	<b>13.63</b>
150 mm deep	0.03	3.89	4.83	9.98	m <sup>2</sup>	<b>18.70</b>
200 mm deep	0.03	4.66	5.80	13.31	m <sup>2</sup>	<b>23.77</b>
Binder Course to DfT clause 906						
50 mm deep	0.02	2.33	2.90	2.81	m <sup>2</sup>	<b>8.04</b>
100 mm deep	0.02	3.11	3.87	5.61	m <sup>2</sup>	<b>12.59</b>

**CLASS R: ROADS AND PAVINGS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SUB-BASES, FLEXIBLE ROAD BASES AND SURFACING - cont'd</b>						
<b>Dense Bitumen Macadam - cont'd</b>						
Surface Course to DfT clause 912						
30 mm deep	0.01	1.55	1.94	2.39	m <sup>2</sup>	<b>5.88</b>
50 mm deep	0.02	2.33	2.90	3.99	m <sup>2</sup>	<b>9.22</b>
<b>Bitumen Macadam</b>						
Binder Course to DfT clause 908						
35 mm deep	0.01	1.55	1.94	2.55	m <sup>2</sup>	<b>6.04</b>
70 mm deep	0.02	2.33	2.90	5.08	m <sup>2</sup>	<b>10.32</b>
<b>Dense Tarmacadam</b>						
Base to DfT clause 902						
50 mm deep	0.02	2.33	2.85	3.48	m <sup>2</sup>	<b>8.66</b>
100 mm deep	0.02	2.33	2.85	6.96	m <sup>2</sup>	<b>12.14</b>
Binder Course to DfT clause 907						
60 mm deep	0.02	2.33	2.90	4.53	m <sup>2</sup>	<b>9.76</b>
80 mm deep	0.02	2.33	2.90	6.04	m <sup>2</sup>	<b>11.27</b>
<b>Dense Tar Surfacing</b>						
Surface Course to DfT clause 913						
30 mm deep	0.01	1.55	1.94	2.97	m <sup>2</sup>	<b>6.46</b>
50 mm deep	0.02	2.33	2.87	4.95	m <sup>2</sup>	<b>10.15</b>
<b>Cold Asphalt</b>						
Surface Course to DfT clause 914						
15 mm deep	0.01	1.55	1.94	1.49	m <sup>2</sup>	<b>4.98</b>
30 mm deep	0.01	1.55	1.94	3.00	m <sup>2</sup>	<b>6.49</b>
<b>Rolled Asphalt</b>						
Binder Course to DfT clause 905						
60 mm deep	0.02	2.33	2.90	5.94	m <sup>2</sup>	<b>11.17</b>
80 mm deep	0.02	2.33	2.90	7.92	m <sup>2</sup>	<b>13.15</b>
Surface Course to DfT clause 911						
40 mm deep	0.02	2.33	2.90	3.96	m <sup>2</sup>	<b>9.19</b>
60 mm deep	0.02	2.33	2.90	5.94	m <sup>2</sup>	<b>11.17</b>
<b>Slurry sealing; BS 434 class K3</b>						
Sealing to DfT clause 918						
3 mm deep	0.02	0.24	0.07	1.20	m <sup>2</sup>	<b>1.51</b>
4 mm deep	0.02	0.24	0.07	1.65	m <sup>2</sup>	<b>1.97</b>
<b>Coated chippings, 9 - 11 kg/m<sup>2</sup></b>						
Surface dressing to DfT clause 915						
6 mm nominal size	0.01	0.94	0.65	0.78	m <sup>2</sup>	<b>2.37</b>
8 mm nominal size	0.01	0.94	0.65	0.80	m <sup>2</sup>	<b>2.39</b>
10 mm nominal size	0.01	0.94	0.65	0.81	m <sup>2</sup>	<b>2.40</b>
12 mm nominal size	0.01	0.94	0.65	0.89	m <sup>2</sup>	<b>2.48</b>
<b>Bituminous spray; BS 434 K1 - 40</b>						
Tack coat to DfT clause 920						
large areas; over 20 m <sup>2</sup>	0.02	0.24	0.07	0.25	m <sup>2</sup>	<b>0.57</b>
small areas; under 20 m <sup>2</sup>	0.02	0.24	0.07	0.25	m <sup>2</sup>	<b>0.57</b>



## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Removal of flexible surface</b>						
Trimming edges only of existing slabs, floors or similar surfaces (wet or dry); 6 mm cutting width						
50 mm deep	0.02	0.25	0.25	2.66	m	<b>3.15</b>
100 mm deep	0.03	0.37	0.40	2.66	m	<b>3.43</b>
Cutting existing slabs, floors or similar surfaces (wet or dry); 8 mm cutting width						
50 mm deep	0.03	0.31	0.30	2.66	m	<b>3.27</b>
100 mm deep	0.06	0.75	0.75	2.66	m	<b>4.15</b>
150 mm deep	0.08	1.00	1.00	4.20	m	<b>6.19</b>
Milling pavement (assumes disposal on site or re-use as fill but excludes transport if required)						
75 mm deep	0.03	3.38	6.45	-	m <sup>2</sup>	<b>9.82</b>
100 mm deep	0.04	4.50	8.59	-	m <sup>2</sup>	<b>13.10</b>
50 mm deep; scarifying surface	0.02	2.75	5.25	-	m <sup>2</sup>	<b>8.00</b>
75 mm deep; scarifying surface	0.04	4.63	8.83	-	m <sup>2</sup>	<b>13.46</b>
25 mm deep; heat planing for re-use	0.03	4.00	4.38	-	m <sup>2</sup>	<b>8.38</b>
50 mm deep; heat planing for re-use	0.06	7.00	7.66	-	m <sup>2</sup>	<b>14.67</b>
Raking over scarified or heat planed material; compacting with 10 t roller						
ne 50 mm deep	0.01	0.96	0.65	-	m <sup>2</sup>	<b>1.61</b>
<b>CONCRETE PAVEMENTS</b>						
The following unit costs are for jointed reinforced concrete slabs, laid in reasonable areas (over 200m <sup>2</sup> ) by paver train/slipformer.						
<b>Designed mix; cement to BS EN 197-1; grade C30, 20 mm aggregate</b>						
Carriageway slabs of DfT Specified paving quality						
180 mm deep	0.02	1.88	2.33	15.54	m <sup>2</sup>	<b>19.74</b>
220 mm deep	0.02	2.25	2.80	18.99	m <sup>2</sup>	<b>24.04</b>
260 mm deep	0.02	2.75	3.42	22.44	m <sup>2</sup>	<b>28.61</b>
300 mm deep	0.03	3.13	3.89	25.89	m <sup>2</sup>	<b>32.91</b>
<b>Fabric</b>						
Steel fabric reinforcement to BS 4483						
Ref A142 nominal mass 2.22 kg	0.03	3.75	-	1.79	m <sup>2</sup>	<b>5.55</b>
Ref A252 nominal mass 3.95 kg	0.04	5.00	-	3.19	m <sup>2</sup>	<b>8.19</b>
Ref B385 nominal mass 4.53 kg	0.04	5.00	-	3.67	m <sup>2</sup>	<b>8.67</b>
Ref C636 nominal mass 5.55 kg	0.05	6.25	-	4.52	m <sup>2</sup>	<b>10.77</b>
Ref B503 nominal mass 5.93 kg	0.05	6.25	-	4.82	m <sup>2</sup>	<b>11.07</b>
<b>Mild Steel bar reinforcement BS 4449</b>						
Bars; supplied in bent and cut lengths						
6 mm nominal size	8.00	1000.56	-	535.30	t	<b>1535.86</b>
8 mm nominal size	6.74	842.97	-	535.30	t	<b>1378.27</b>
10 mm nominal size	6.74	842.97	-	530.25	t	<b>1373.22</b>
12 mm nominal size	6.74	842.97	-	520.15	t	<b>1363.12</b>
16 mm nominal size	6.15	769.18	-	515.10	t	<b>1284.28</b>
<b>High yield steel bar reinforcement BS 4449 or 4461</b>						
Bars; supplied in bent and cut lengths						
6 mm nominal size	8.00	1000.56	-	555.50	t	<b>1556.06</b>
8 mm nominal size	6.74	842.97	-	550.45	t	<b>1393.42</b>
10 mm nominal size	6.74	842.97	-	550.45	t	<b>1393.42</b>
12 mm nominal size	6.74	842.97	-	540.35	t	<b>1383.32</b>
16 mm nominal size	6.15	769.18	-	535.30	t	<b>1304.48</b>

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CONCRETE PAVEMENTS - cont'd</b>						
<b>Sheeting to prevent moisture loss</b>						
Polyethylene sheeting; lapped joints; horizontal below concrete pavements						
250 micron	0.01	1.25	-	0.48	m <sup>2</sup>	<b>1.73</b>
500 micron	0.01	1.25	-	0.73	m <sup>2</sup>	<b>1.98</b>
<b>JOINTS IN CONCRETE PAVEMENTS</b>						
<b>General</b>						
Longitudinal joints						
180 mm deep	0.01	1.50	1.87	22.03	m	<b>25.39</b>
220 mm deep	0.01	1.50	1.87	23.22	m	<b>26.59</b>
260 mm deep	0.01	1.50	1.87	27.72	m	<b>31.09</b>
300 mm deep	0.01	1.50	1.87	29.34	m	<b>32.71</b>
Expansion joints						
180 mm deep	0.01	1.50	1.87	33.82	m	<b>37.18</b>
220 mm deep	0.01	1.50	1.87	39.94	m	<b>43.30</b>
260 mm deep	0.01	1.50	1.87	46.05	m	<b>49.41</b>
300 mm deep	0.01	1.50	1.87	47.26	m	<b>50.63</b>
Contraction joints						
180 mm deep	0.01	1.50	1.87	18.32	m	<b>21.68</b>
220 mm deep	0.01	1.50	1.87	19.56	m	<b>22.93</b>
260 mm deep	0.01	1.50	1.87	22.98	m	<b>26.35</b>
300 mm deep	0.01	1.50	1.87	25.67	m	<b>29.04</b>
Construction joints						
180 mm deep	0.01	1.50	1.87	10.94	m	<b>14.30</b>
220 mm deep	0.01	1.50	1.87	12.23	m	<b>15.59</b>
260 mm deep	0.01	1.50	1.87	13.46	m	<b>16.82</b>
300 mm deep	0.01	1.50	1.87	14.66	m	<b>18.02</b>
Open joints with filler						
ne 0.5 m; 10 mm flexcell joint filler	0.11	4.99	-	3.78	m	<b>8.77</b>
0.5 - 1.00 m; 10 mm flexcell joint filler	0.11	4.99	-	5.43	m	<b>10.43</b>
Joint sealants						
10 x 20 mm cold polysulphide sealant	0.14	6.35	-	3.40	m	<b>9.75</b>
20 x 20 mm cold polysulphide sealant	0.18	8.17	-	6.76	m	<b>14.93</b>
<b>KERBS, CHANNELS AND EDGINGS</b>						
<b>Foundations to kerbs etc.</b>						
Measurement Note: the following are shown separate from their associated kerb etc. to simplify the presentation of cost alternatives. Mass concrete						
200 x 100 mm	0.01	0.56	0.10	1.93	m	<b>2.59</b>
300 x 150 mm	0.02	0.85	0.14	4.42	m	<b>5.40</b>
450 x 150 mm	0.02	1.13	0.20	6.53	m	<b>7.86</b>
100 x 100 mm haunching, one side	0.01	0.28	0.05	0.47	m	<b>0.80</b>
<b>Precast concrete kerbs; BS 7263:bedded, jointed and pointed in cement mortar</b>						
Kerbs; bullnosed; splayed or half battered; straight or curved over 12 m radius						
125 x 150 mm	0.06	3.39	0.60	4.66	m	<b>8.64</b>
125 x 255 mm	0.07	3.95	0.70	7.13	m	<b>11.79</b>
150 x 305 mm	0.07	3.95	0.70	10.87	m	<b>15.53</b>

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Kerbs; bullnosed; splayed or half battered; curved ne 12 m radius						
125 x 150 mm	0.07	3.67	0.65	4.66	m	<b>8.98</b>
125 x 255 mm	0.08	4.24	0.75	7.13	m	<b>12.11</b>
150 x 305 mm	0.08	4.24	0.75	10.87	m	<b>15.86</b>
Quadrants						
305 x 305 x 150 mm	0.08	4.52	0.80	10.50	nr	<b>15.82</b>
455 x 455 x 255 mm	0.10	5.65	1.00	13.25	nr	<b>19.90</b>
Drop kerbs						
125 x 255 mm	0.07	3.95	0.70	10.45	m	<b>15.10</b>
150 x 305 mm	0.07	3.95	0.70	19.91	m	<b>24.57</b>
Channel; straight or curved over 12 m radius						
255 x 125 mm	0.07	3.95	0.70	8.43	m	<b>13.09</b>
Channel; curved radius ne 12 m						
255 x 125 mm	0.07	3.95	0.70	8.43	m	<b>13.09</b>
Edging; straight or curved over 12 m radius						
50 x 150 mm	0.04	2.26	0.40	3.88	m	<b>6.54</b>
Edging; curved ne 12 m radius						
50 x 150 mm	0.05	2.54	0.45	3.88	m	<b>6.87</b>
<b>Precast concrete drainage channels; Charcon Safeticurb; channels jointed with plastic rings and bedded; jointed and pointed in cement mortar</b>						
Channel unit; straight; Type DBA/3						
250 x 254 mm; medium duty	0.08	4.24	0.75	40.06	m	<b>45.04</b>
305 x 305 mm; heavy duty	0.10	5.37	0.95	85.19	m	<b>91.51</b>
<b>Precast concrete Ellis Trief safety kerb; bedded jointed and pointed in cement mortar</b>						
Kerb; straight or curved over 12 m radius						
415 x 380 mm	0.23	12.71	2.15	69.71	m	<b>84.57</b>
Kerb; curved ne 12 m radius						
415 x 380 mm	0.25	14.12	2.40	69.71	m	<b>86.23</b>
<b>Precast concrete combined kerb and drainage block Beany block system; bedded jointed and pointed in cement mortar</b>						
Kerb; top block, shallow base unit, standard cover plate and frame						
straight or curved over 12 m radius	0.15	8.47	1.45	108.45	m	<b>118.37</b>
curved ne 12 m radius	0.20	11.30	1.91	151.49	m	<b>164.70</b>
Kerb; top block, standard base unit, standard cover plate and frame						
straight or curved over 12 m radius	0.15	8.47	1.46	114.36	m	<b>124.29</b>
curved ne 12 m radius	0.20	11.30	1.91	159.77	m	<b>172.98</b>
Kerb; top block, deep base unit, standard cover plate and frame						
straight or curved over 12 m radius	0.15	8.47	1.43	142.74	m	<b>152.65</b>
curved ne 12 m radius	0.20	11.30	1.88	199.50	m	<b>212.68</b>
base block depth tapers	0.10	5.86	0.97	59.97	m	<b>66.80</b>

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>KERBS, CHANNELS AND EDGINGS - cont'd</b>						
<b>Extruded asphalt kerbs to BS 5931; extruded and slip formed</b>						
Kerb; straight or curved over 12 m radius						
75 mm kerb height					m	8.05
100 mm kerb height					m	11.98
125 mm kerb height					m	25.26
Channel; straight or curved over 12 m radius						
300 mm channel width					m	17.93
250 mm channel width					m	17.93
Kerb; curved to radius ne 12 m						
75 mm kerb height					m	15.18
100 mm kerb height					m	11.98
125 mm kerb height					m	14.57
Channel; curved to radius ne 12 m						
300 mm channel width					m	22.91
250 mm channel width					m	17.86
<b>Extruded concrete; slip formed</b>						
Kerb; straight or curved over 12 m radius						
100 mm kerb height					m	13.73
125 mm kerb height					m	16.25
Kerb; curved to radius ne 12 m						
100 mm kerb height					m	13.73
125 mm kerb height					m	14.35
<b>LIGHT DUTY PAVEMENTS</b>						
<b>Sub-bases</b>						
Measurement Note: the following are shown separate from their associated paving to simplify the presentation of cost alternatives. To paved area;						
sloping not exceeding 10° to the horizontal						
100 mm thick sand	0.01	0.50	0.41	3.82	m <sup>2</sup>	4.72
150 mm thick sand	0.01	0.67	0.54	5.73	m <sup>2</sup>	6.93
100 mm thick gravel	0.01	0.50	0.41	2.06	m <sup>2</sup>	2.96
150 mm thick gravel	0.01	0.67	0.54	3.09	m <sup>2</sup>	4.29
100 mm thick hardcore	0.01	0.50	0.41	2.67	m <sup>2</sup>	3.58
150 mm thick hardcore	0.01	0.67	0.54	4.01	m <sup>2</sup>	5.21
100 mm thick concrete grade 20/20	0.02	1.16	0.95	9.60	m <sup>2</sup>	11.71
150 mm thick concrete grade 20/20	0.03	1.77	1.45	14.40	m <sup>2</sup>	17.62
<b>Bitumen macadam surfacing; BS 4987; base course of 20 mm open graded aggregate to clause 2.6.1 tables 5-7; wearing course of 6 mm medium graded aggregate to clause 2.7.6 tables 32-33</b>						
Paved area comprising base course 40 mm thick wearing course 20 mm thick						
sloping not exceeding 10° to the horizontal	0.09	4.71	3.84	6.47	m <sup>2</sup>	15.02
sloping not exceeding 10° to the horizontal; red additives	0.09	4.71	3.84	8.49	m <sup>2</sup>	17.04
sloping not exceeding 10° to the horizontal; green additives	0.09	4.71	3.84	9.88	m <sup>2</sup>	18.43
sloping exceeding 10° to the horizontal	0.10	5.27	4.30	6.47	m <sup>2</sup>	16.03
sloping exceeding 10° to the horizontal; red additives	0.10	5.27	4.30	8.49	m <sup>2</sup>	18.06
sloping exceeding 10° to the horizontal; green additives	0.10	5.27	4.30	9.88	m <sup>2</sup>	19.44

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Granular base surfacing; Central Reserve</b> <b>Treatments Limestone, graded 10 mm down; laid and compacted</b> Paved area 100 mm thick; surface sprayed twice with two coats of cold bituminous emulsion; blinded with 6 mm quartzite fine gravel sloping not exceeding 10° to the horizontal	0.02	1.11	0.90	6.05	m <sup>2</sup>	<b>8.06</b>
<b>Ennstone Johnston Golden gravel; graded 13 mm to fines; rolled wet</b> Paved area 50 mm thick; single layer sloping not exceeding 10° to the horizontal	0.03	1.66	1.36	7.47	m <sup>2</sup>	<b>10.49</b>
<b>Precast concrete flags; BS 7263; grey; bedding in cement mortar</b> Paved area; sloping not exceeding 10° to the horizontal						
900 x 600 x 63 mm	0.21	5.41	0.61	8.77	m <sup>2</sup>	<b>14.79</b>
900 x 600 x 50 mm	0.20	5.16	0.58	7.74	m <sup>2</sup>	<b>13.48</b>
600 x 600 x 63 mm	0.25	6.44	0.73	10.71	m <sup>2</sup>	<b>17.88</b>
600 x 600 x 50 mm	0.24	6.19	0.70	8.99	m <sup>2</sup>	<b>15.87</b>
600 x 450 x 50 mm	0.28	7.22	0.81	11.15	m <sup>2</sup>	<b>19.18</b>
Extra for coloured, 50 mm thick	-	-	-	4.42	m <sup>2</sup>	<b>4.42</b>
<b>Precast concrete rectangular paving blocks; BS 6717; grey; bedding on 50 mm thick dry sharp sand; filling joints; excluding sub-base</b> Paved area; sloping not exceeding 10° to the horizontal						
200 x 100 x 80 mm thick	0.30	7.73	0.87	13.54	m <sup>2</sup>	<b>22.14</b>
200 x 100 x 80 mm thick; coloured blocks	0.30	7.73	0.87	14.36	m <sup>2</sup>	<b>22.96</b>
<b>Brick paviors; bedding on 20 mm thick mortar; excluding sub-base</b> Paved area; sloping not exceeding 10° to the horizontal						
215 x 103 x 65 mm	0.30	7.73	0.87	27.44	m <sup>2</sup>	<b>36.05</b>
<b>Granite setts; bedding on 25 mm cement mortar; excluding sub-base</b> Paved area; sloping not exceeding 10° to the horizontal						
to random pattern	0.90	23.20	2.62	60.04	m <sup>2</sup>	<b>85.86</b>
to specific pattern	1.20	30.93	3.49	60.04	m <sup>2</sup>	<b>94.46</b>
<b>Cobble paving; 50 - 75 mm; bedding on 25 mm cement mortar; filling joints; excluding sub-base</b> Paved area; sloping not exceeding 10° to the horizontal						
50 - 75 mm diameter cobbles	1.00	25.78	2.88	34.29	m <sup>2</sup>	<b>62.95</b>

**CLASS R: ROADS AND PAVINGS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ANCILLARIES</b>						
<b>Traffic signs</b>						
In this section prices will vary depending upon the diagram configurations. The following are average costs of signs and bollards. Diagram numbers refer to the Traffic Signs Regulations and General Directions 2002 and the figure numbers refer to the Traffic Sign Manual. Examples of Prime Costs for Class 1 (High Intensity) traffic and road signs (ex works).						
600 x 450 mm					nr	<b>25.53</b>
600 mm diameter					nr	<b>30.94</b>
600 mm triangular					nr	<b>27.01</b>
500 x 500 mm					nr	<b>39.64</b>
450 x 450 mm					nr	<b>39.14</b>
450 x 300 mm					nr	<b>12.61</b>
1200 x 400 mm (CHEVRONS)					nr	<b>42.63</b>
Examples of Prime Costs for Class 21 (Engineering Grade) traffic and road signs (ex works).						
600 x 450 mm					nr	<b>22.37</b>
600 mm diameter					nr	<b>26.88</b>
600 mm triangular					nr	<b>24.31</b>
500 x 500 mm					nr	<b>35.06</b>
450 x 450 mm					nr	<b>34.40</b>
450 x 300 mm					nr	<b>10.90</b>
1200 x 400 mm (CHEVRONS)					nr	<b>37.69</b>
<b>Standard reflectorised traffic signs</b>						
Note: Unit costs do not include concrete foundations						
Standard one post signs; 600 x 450 mm type C1 signs fixed back to back to another sign (measured separately) with aluminium clips to existing post (measured separately)						
	0.04	2.39	1.32	26.81		<b>30.52</b>
Extra for fixing singly with aluminium clips	0.01	0.60	0.34	1.68		<b>2.62</b>
Extra for fixing singly with stainless steel clips fixed back to back to another sign (measured separately) with stainless steel clips to one new	0.01	0.60	1.07	11.75		<b>13.42</b>
76 mm diameter plastic coated steel posts 1.75 m long	0.27	16.14	8.89	61.66	nr	<b>86.68</b>
Extra for fixing singly to one face only	0.01	0.60	0.34		nr	<b>0.94</b>
Extra for 76 mm diameter 1.75 m long aluminium post	0.02	1.20	0.74	11.62	nr	<b>13.55</b>
Extra for 76 mm diameter 3.5 m long plastic coated steel post	0.02	1.20	0.74	40.66	nr	<b>42.59</b>
Extra for 76 mm diameter 3.5 m long aluminium post	0.02	1.20	0.74	40.66	nr	<b>42.59</b>
Extra for excavation for post, in hard material	1.10	65.74	39.19		nr	<b>104.93</b>
Extra for single external illumination unit with fitted photo cell (excluding trenching and cabling ); unit cost per face illuminated	0.33	19.72	11.74	67.56	nr	<b>99.02</b>

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Standard two post signs; 1200 x 400 mm; fixed back to back to another sign (measured separately) with stainless steel clips to two new 76 mm diameter plastic coated steel posts	0.51	30.48	16.79	124.07	nr	<b>171.34</b>
Extra for fixing singly to one face only	0.02	1.20	0.74			<b>1.93</b>
Extra for two 76 mm diameter 1.75 m long aluminium posts	0.04	2.39	1.42	23.23		<b>27.05</b>
Extra for two 76 mm diameter 1.75 m long plastic coated steel posts	0.04	2.39	1.42	81.32		<b>85.13</b>
Extra for two 76 mm diameter 3.5 m long aluminium posts	0.04	2.39	1.42	81.32		<b>85.13</b>
Extra for excavation for post, in hard material	1.10	65.74	39.19			<b>104.93</b>
Extra for single external illumination unit with fitted photo cell (including trenching and cabling); unite per face illuminated	0.58	34.66	20.68	94.63		<b>149.97</b>
<b>Standard internally illuminated traffic signs</b>						
Bollard with integral mould-in translucent graphics (excluding trenching and cabling) fixing to concrete base	0.48	28.69	15.79	161.08	nr	<b>205.55</b>
<b>Special traffic signs</b>						
Note: Unit costs do not include concrete foundations or trenching and cabling Externally illuminated relectorised traffic signs manufactured to order						
special signs, surface area 1.50 m <sup>2</sup> on two 100 mm diameter steel posts	-	-	-	-	nr	<b>635.88</b>
special signs, surface area 4.00 m <sup>2</sup> on three 100 mm diameter steel posts	-	-	-	-	nr	<b>1088.71</b>
Internally illuminated traffic signs manufactured to order						
special signs, surface area 0.25 m <sup>2</sup> on one new 76 mm diameter post	-	-	-	-	nr	<b>228.88</b>
special signs, surface area 0.75 m <sup>2</sup> on one new 100 mm diameter steel posts	-	-	-	-	nr	<b>320.73</b>
special signs, surface area 4.00 m <sup>2</sup> on four new 120 mm diameter steel posts	-	-	-	-	nr	<b>816.38</b>
<b>Signs on gantries</b>						
Externally illuminated reflectorised signs						
1.50 m <sup>2</sup>	1.78	106.68	105.90	190.30	nr	<b>402.88</b>
2.50 m <sup>2</sup>	2.15	128.49	127.56	317.17	nr	<b>573.22</b>
3.00 m <sup>2</sup>	3.07	183.47	182.14	379.52	nr	<b>745.14</b>
Internally illuminated sign with translucent optical reflective sheeting and remote light source						
0.75 m <sup>2</sup>	1.56	93.23	92.55	1437.50	nr	<b>1623.28</b>
1.00 m <sup>2</sup>	1.70	101.60	100.86	2012.50	nr	<b>2214.96</b>
1.50 m <sup>2</sup>	2.41	144.03	142.99	2875.00	nr	<b>3162.01</b>
<b>Existing signs</b>						
Take from store and re-erect						
3.0 m high road sign	0.28	16.73	16.61	29.38	nr	<b>62.73</b>
road sign on two posts	0.50	29.88	29.66	58.76	nr	<b>118.31</b>

## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ANCILLARIES - cont'd</b>						
<b>Surface markings; reflectorised white</b>						
Letters and shapes						
triangles; 1.6 m high	-	-	-	-	nr	9.01
triangles; 2.0 m high	-	-	-	-	nr	12.24
triangles; 3.75 m high	-	-	-	-	nr	16.10
circles with enclosing arrows; 1.6 m diameter	-	-	-	-	nr	64.38
arrows; 4.0 m long; straight	-	-	-	-	nr	25.75
arrows; 4.0 m long; turning	-	-	-	-	nr	25.75
arrows; 6.0 m long; straight	-	-	-	-	nr	32.19
arrows; 6.0 m long; turning	-	-	-	-	nr	32.19
arrows; 6.0 m long; curved	-	-	-	-	nr	32.19
arrows; 6.0 m long; double headed	-	-	-	-	nr	45.06
arrows; 8.0 m long; double headed	-	-	-	-	nr	64.38
arrows; 16.0 m long; double headed	-	-	-	-	nr	96.56
arrows; 32.0 m long; double headed	-	-	-	-	nr	128.75
letters or numerals; 1.6 m high	-	-	-	-	nr	8.38
letters or numerals; 2.0 m high	-	-	-	-	nr	12.24
letters or numerals; 3.75 m high	-	-	-	-	nr	21.25
Continuous lines						
150 mm wide	-	-	-	-	m	0.96
200 mm wide	-	-	-	-	m	1.29
Intermittent lines						
60 mm wide; 0.60 m line and 0.60 m gap	-	-	-	-	m	0.78
100 mm wide; 1.0 m line and 5.0 m gap	-	-	-	-	m	0.78
100 mm wide; 2.0 m line and 7.0 m gap	-	-	-	-	m	0.78
100 mm wide; 4.0 m line and 2.0 m gap	-	-	-	-	m	0.78
100 mm wide; 6.0 m line and 3.0 m gap	-	-	-	-	m	0.78
150 mm wide; 1.0 m line and 5.0 m gap	-	-	-	-	m	1.16
150 mm wide; 6.0 m line and 3.0 m gap	-	-	-	-	m	1.16
150 mm wide; 0.60 m line and 0.30 m gap	-	-	-	-	m	1.16
200 mm wide; 0.60 m line and 0.30 m gap	-	-	-	-	m	1.55
200 mm wide; 1.0 m line and 1.0 m gap	-	-	-	-	m	1.55
<b>Surface markings; reflectorised yellow</b>						
Continuous lines						
100 mm wide	-	-	-	-	m	0.65
150 mm wide	-	-	-	-	m	0.96
Intermittent lines						
kerb marking; 0.25 m long	-	-	-	-	nr	0.65
<b>ROAD MARKINGS</b>						
<b>Surface markings; thermoplastic screed or spray</b>						
<b>Note: Unit costs based upon new road with clean surface closed to traffic.</b>						
Continuous line in reflectorised white						
150 mm wide	-	-	-	-	m	0.96
200 mm wide	-	-	-	-	m	1.29
Continuous line in reflectorised yellow						
100 mm wide	-	-	-	-	m	0.65
150 mm wide	-	-	-	-	m	0.96



## CLASS R: ROADS AND PAVINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Intermittent line in reflectorised white						
60 mm wide with 0.60 m line and 0.60 m gap	-	-	-	-	m	0.78
100 mm wide with 1.0 m line and 5.0 m gap	-	-	-	-	m	0.78
100 mm wide with 2.0 m line and 7.0 m gap	-	-	-	-	m	0.78
100 mm wide with 4.0 m line and 2.0 m gap	-	-	-	-	m	0.78
100 mm wide with 6.0 m line and 3.0 m gap	-	-	-	-	m	0.78
150 mm wide with 1.0 m line and 5.0 m gap	-	-	-	-	m	1.16
150 mm wide with 6.0 m line and 3.0 m gap	-	-	-	-	m	1.16
150 mm wide with 0.6 m line and 0.3 m gap	-	-	-	-	m	1.16
200 mm wide with 0.6 m line and 0.3 m gap	-	-	-	-	m	1.55
200 mm wide with 1.0 m line and 1.0 m gap	-	-	-	-	m	1.55
Ancillary line in reflectorised white						
150 mm wide in hatched areas	-	-	-	-	m	0.96
200 mm wide in hatched areas	-	-	-	-	m	1.55
Ancillary line in reflectorised yellow						
150 mm wide in hatched areas	-	-	-	-	m	0.96
Triangles in reflectorised white						
1.6 m high	-	-	-	-	nr	9.01
2.0 m high	-	-	-	-	nr	12.24
3.75 m high	-	-	-	-	nr	16.10
Circles with enclosing arrows in reflectorised white						
1.6 m diameter	-	-	-	-	nr	64.38
Arrows in reflectorised white						
4.0 m long straight or turning	-	-	-	-	nr	25.75
6.0 m long straight or turning	-	-	-	-	nr	32.19
6.0 m long curved	-	-	-	-	nr	32.19
6.0 m long double headed	-	-	-	-	nr	45.06
8.0 m long double headed	-	-	-	-	nr	64.38
16.0 m long double headed	-	-	-	-	nr	96.56
32.0 m long double headed	-	-	-	-	nr	128.75
Kerb markings in yellow						
250 mm long	-	-	-	-	nr	0.65
Letters or numerals in reflectorised white						
1.6 m high	-	-	-	-	nr	8.38
2.0 m high	-	-	-	-	nr	12.24
3.75 m high	-	-	-	-	nr	21.25
<b>Surface markings; Vervynyl strip markings</b>						
<b>Note: Unit costs based upon new road with clean surface closed to traffic.</b>						
Vervynyl' strip markings (pedestrian crossings and similar locations)						
200 mm wide line	-	-	-	-	m	8.44
600 x 300 mm single stud tile	-	-	-	-	nr	14.41
<b>Removal of thermoplastic screed or spray markings</b>						
Removal of existing reflectorised thermoplastic markings						
100 mm wide line	-	-	-	-	m	1.20
150 mm wide line	-	-	-	-	m	1.80
200 mm wide line	-	-	-	-	m	2.40
arrow or letter ne 6.0 m long	-	-	-	-	nr	18.60
arrow or letter 6.0 - 16.00 m long	-	-	-	-	nr	78.00

**CLASS R: ROADS AND PAVINGS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>REFLECTING ROAD STUDS</b>						
100 x 100 mm square bi-directional reflecting road studs with amber corner cube reflectors	-	-	-	-	nr	<b>6.25</b>
140 x 254 mm rectangular one way reflecting road studs with red catseye reflectors	-	-	-	-	nr	<b>14.95</b>
140 x 254 mm rectangular one way reflecting road studs with green catseye reflectors	-	-	-	-	nr	<b>14.95</b>
140 x 254 mm rectangular bi-directional reflecting road studs with white catseye reflectors	-	-	-	-	nr	<b>14.38</b>
140 x 254 mm rectangular bi-directional reflecting road studs with amber catseye reflectors	-	-	-	-	nr	<b>14.38</b>
140 x 254 mm rectangular bi-directional reflecting road stud without catseye reflectors	-	-	-	-	nr	<b>9.38</b>
<b>REMOVAL OF ROAD STUDS</b>						
Removal of road studs						
100 x 100 mm corner cube type	-	-	-	-	nr	<b>1.25</b>
140 x 254 mm catseye type	-	-	-	-	nr	<b>4.00</b>
<b>REMOVAL FROM STORE AND RE-FIX ROAD STUDS</b>						
<b>General</b>						
Remove from store and re-install 100 x 100 mm square bi-directional reflecting road stud with corner cube reflectors	-	-	-	-	nr	<b>3.13</b>
Remove from store and re-install 140 x 254 mm rectangular one way reflecting road stud with catseye reflectors	-	-	-	-	nr	<b>7.50</b>
<b>TRAFFIC SIGNAL INSTALLATIONS</b>						
<b>Traffic signal installation is carried out exclusively by specialist contractors, although certain items are dealt with by the main contractor or a subcontractor.</b>						
<b>The following of signal pedestals, loop detector unit pedestals, controller unit boxes and cable connection pillars</b>						
Installation of signal pedestals, loop detector unit pedestals, controller unit boxes and cable connection pillars						
signal pedestal	-	-	-	-	nr	<b>30.32</b>
loop detector unit pedestral	-	-	-	-	nr	<b>18.77</b>
Excavate trench for traffic signal cable, depth ne 1.50 m; supports, backfilling						
450 mm wide	-	-	-	-	m	<b>5.78</b>
Extra for excavating in hard material	-	-	-	-	m <sup>3</sup>	<b>31.76</b>
Saw cutting grooves in pavement for detector loops and feeder cables; seal with hot bitumen sealant after installation						
25 mm deep	-	-	-	-	m	<b>5.05</b>

**CLASS S: RAIL TRACK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<p><b>NOTES</b></p> <p><b>Generally</b> The following unit costs are for guidance only. For more reliable estimates it is advisable to seek the advice of a Specialist Contractor. These rates are for the supply and laying of track other than in connection with the Permanent Way.</p> <p><b>Permanent Way</b> The following rates would not reflect work carried out on the existing public track infrastructure (Permanent Way), which tends to be more costly not merely due to differences in technology and the level of specification and control standards, but also due to a number of logistical factors, such as:</p> <ul style="list-style-type: none"> <li>* access to the works for personnel, plant and machinery would be via approved access points to the rail followed by travel along the rail to the work area; this calls for the use of additional and expensive transport plant as well as reducing the effective shift time of the works gang</li> <li>* effect of track possession periods will dictate when the work can be carried out and could well force night-time or weekend working and perhaps severely reducing the effective shift hours where coupled to long travel to work distances and the need to clear away before the resumption of traffic.</li> <li>* the labour gang will be composed of more highly paid personnel, reflecting the additional training received; in addition there may well be additional gang members acting as look-outs; this could add 30% to the gang rates shown below</li> <li>* plant will tend to cost more, especially if the circumstances of the work call for rail/road plant; this could add 20 % to the gang rates shown</li> </ul> <p><b>Possession costs</b> Where the contractor's work is on, over or poses a risk to the safety of the railway, then the contractor normally applies for possession of the track. During the period for which the contractor is given possession, rail traffic stops . Possessions of the Operational Safety Zone may well be fragmented rather than a single continuous period, dependant upon windows in the pattern of rail traffic Costs for working alongside an operational rail system are high, the need for safety demanding a high degree of supervision, look-outs, the induction of labour gangs and may involve temporary works such as safety barriers.</p>						

## CLASS S: RAIL TRACK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>TRACK FOUNDATIONS</b>						
<b>Imported crushed granite</b>						
Bottom ballast	-	-	-	-	m <sup>3</sup>	51.96
Top ballast	-	-	-	-	m <sup>3</sup>	65.99
<b>Imported granular material</b>						
Blankets; 150 mm thick	-	-	-	-	m <sup>2</sup>	6.67
<b>Imported sand</b>						
Blinding; 100 mm thick	-	-	-	-	m <sup>2</sup>	3.77
<b>Polythene sheeting</b>						
Waterproof membrane; 1200 gauge	-	-	-	-	m <sup>2</sup>	2.14
<b>LIFTING, PACKING AND SLEWING</b>						
<b>Maximum distance of slew 300 mm; maximum lift 100 mm; no extra ballast allowed</b>						
Bullhead rail track; fishplated; timber sleepers	-	-	-	-	m	18.38
Bullhead rail track; fishplated; concrete sleepers	-	-	-	-	m	20.19
Bullhead rail track with turnout; timber sleepers	-	-	-	-	nr	578.76
Flat bottom rail track; welded; timber sleepers	-	-	-	-	m	18.38
Flat bottom rail track; welded; concrete sleepers	-	-	-	-	m	16.71
Flat bottom rail track with turnout; concrete sleepers	-	-	-	-	nr	578.76
Buffer stops	-	-	-	-	nr	203.79
<b>TAKING UP</b>						
<b>Taking up; dismantling into individual components; sorting; storing on site where directed</b>						
Bullhead or flat bottom rails						
plain track; fishplated; timber sleepers	-	-	-	-	m	7.59
plain track; fishplated; concrete sleepers	-	-	-	-	m	9.89
plain track; welded; timber sleepers	-	-	-	-	m	9.35
plain track; welded; concrete sleepers	-	-	-	-	m	12.30
turnouts; fishplated; concrete sleepers	-	-	-	-	nr	489.39
diamond crossings; fishplated; timber sleepers	-	-	-	-	nr	436.55
Dock and crane rails						
plain track; welded; base plates	-	-	-	-	m	10.30
turnouts; welded; base plates	-	-	-	-	nr	283.34
diamonds; welded; base plates	-	-	-	-	nr	252.98
Check and guard rails						
plain track; fishplated	-	-	-	-	m	3.65
Conductor rails						
plain track; fishplated	-	-	-	-	m	3.81
Sundries						
buffer stops	-	-	-	-	nr	104.81
retarders	-	-	-	-	nr	32.54
wheel stops	-	-	-	-	nr	21.69
lubricators	-	-	-	-	nr	39.75
switch heaters	-	-	-	-	nr	25.31
switch levers	-	-	-	-	nr	10.85

## CLASS S: RAIL TRACK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SUPPLYING (STANDARD GAUGE TRACK)</b>						
<b>Supplying</b>						
Bullhead rails; BS 11; delivered in standard 18.288 m lengths						
BS95R section, 47 kg/m; for jointed track	-	-	-	-	t	<b>1037.30</b>
BS95R section, 47 kg/m; for welded track	-	-	-	-	t	<b>1037.30</b>
Flat bottom rails; BS 11; delivered in standard 18.288 m lengths						
BS113'A' section, 56 kg/m; for jointed track	-	-	-	-	t	<b>1007.70</b>
BS113'A' section, 56 kg/m; for welded track	-	-	-	-	t	<b>1007.70</b>
Extra for curved rails to form super elevation; radius over 600 m	-	-	-	-	%	<b>15.00</b>
Check and guard rails; BS 11; delivered in standard 18.288 m lengths; flange planed to allow 50 mm free wheel clearance						
BS113'A' section, 56 kg/m; for bolting	-	-	-	-	t	<b>1249.36</b>
Conductor rails; BS 11; delivered in standard 18.288 m lengths						
BS113'A' section, 56 kg/m; for bolting	-	-	-	-	t	<b>1249.36</b>
Twist rails; BS 11; delivered in standard 18.288 m lengths						
BS113'A' section, 56 kg/m; for bolting	-	-	-	-	t	<b>1249.36</b>
Sleepers; bitumen saturated French Maritime pine 2600 x 250 x 130 mm	-	-	-	-	nr	<b>34.32</b>
Sleepers; bitumen saturated Douglas fir 2600 x 250 x 130 mm	-	-	-	-	nr	<b>53.07</b>
Sleepers; prestressed concrete 2525 x 264 x 204 mm; BR type F27, Pandrol inserts	-	-	-	-	nr	<b>35.10</b>
<b>Fittings</b>						
Cast iron chairs complete with chair screws, plastic ferrules, spring steels and keys; BR type S1	-	-	-	-	nr	<b>31.94</b>
Cast iron chairs complete with chair screws, plastic ferrules, spring steels and keys; BR type CC	-	-	-	-	nr	<b>59.09</b>
Cast iron chairs complete with resilient pad, chair screws, ferrules, rail clips and nylon insulators; BR type PAN 6	-	-	-	-	nr	<b>43.48</b>
Cast iron chairs complete with resilient pad, chair screws, ferrules, rail clips and nylon insulators; BR type VN	-	-	-	-	nr	<b>44.30</b>
Cast iron chairs complete with resilient pad, chair screws, ferrules, rail clips and nylon insulators; BR type C	-	-	-	-	nr	<b>56.38</b>
Pandrol rail clips and nylon insulator	-	-	-	-	nr	<b>3.23</b>
plain fishplates; for BS95R section rail, skirted pattern; sets of two; complete with fishbolts, nuts and washers	-	-	-	-	nr	<b>50.84</b>
plain fishplates; for BS95R section rail, joggled pattern; sets of two; complete with fishbolts, nuts and washers	-	-	-	-	nr	<b>119.94</b>
plain fishplates; for BS 113 'A' section rail, shallow section; sets of two; complete with fishbolts, nuts and washers	-	-	-	-	nr	<b>57.95</b>
insulated fishplates; for BS95R section rail, steel billet pattern; sets of two; complete with high tensile steel bolts, nuts and washers	-	-	-	-	nr	<b>160.55</b>
insulated fishplates; BS95R section rail, steel billet pattern; sets of two; complete with high tensile steel bolts, nuts and washers	-	-	-	-	nr	<b>146.69</b>

## CLASS S: RAIL TRACK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SUPPLYING (STANDARD GAUGE TRACK) - cont'd</b>						
<b>Supplying - cont'd</b>						
cast iron spacer block between running and guard rails; for BS95R section rail; M25 x 220 mm bolt, nut and washers	-	-	-	-	nr	14.88
cast iron spacer block between running and guard rails; for BS 113 'A' section rail; M25 x 220 mm bolt, nut and washers	-	-	-	-	nr	28.64
Turnouts; complete with closures, check rails, fittings, timber sleepers						
Type B8; BS 95R bullhead rail	-	-	-	-	nr	16341.39
Type C10; BS 95R bullhead rail	-	-	-	-	nr	18143.09
Type Bx8; BS 113 'A' section flat bottom rail	-	-	-	-	nr	27178.08
Type Cv9.25; BS 113 'A' section flat bottom rail	-	-	-	-	nr	29757.78
Diamond crossings; complete with closures, check rails, fittings, timber sleepers						
RT standard design, angle 1 in 4; BS95R bullhead rail	-	-	-	-	nr	103747.63
RT standard design, angle 1 in 4; BS 113 'A' section flat bottom rail	-	-	-	-	nr	112147.26
Sundries						
buffer stops; single raker, steel rail and timber; 2 tonnes approximate weight	-	-	-	-	nr	2569.77
buffer stops; double raker, steel rail and timber; 2.5 tonnes approximate weight	-	-	-	-	nr	2822.54
wheel stops; steel; 100 kg approximate weight	-	-	-	-	nr	142.75
lubricators; single rail	-	-	-	-	nr	1878.94
lubricators; double rail	-	-	-	-	nr	1999.67
switch levers; upright pattern	-	-	-	-	nr	379.74
switch levers; flush type	-	-	-	-	nr	722.03
<b>LAYING (STANDARD GAUGE TRACK)</b>						
<b>Laying</b>						
Bullhead rails; jointed with fishplates; softwood sleepers						
plain track	-	-	-	-	m	35.12
form curve in plain track, radius ne 300 m	-	-	-	-	m	9.96
form curve in plain track, radius over 300 m	-	-	-	-	m	13.21
turnouts; standard, type B8	-	-	-	-	nr	2479.95
turnouts; standard, type C10	-	-	-	-	nr	2997.45
diamond crossings; standard welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	2165.47
spot re-sleepering	-	-	-	-	nr	180.31
spot re-sleepering	-	-	-	-	nr	94.25
Bullhead rails; jointed with fishplates; concrete sleepers						
plain track	-	-	-	-	m	31.24
form curve in plain track, radius ne 300 m	-	-	-	-	m	9.29
form curve in plain track, radius over 300 m	-	-	-	-	m	12.13
turnouts; standard, type B8	-	-	-	-	nr	2479.95
turnouts; standard, type C10	-	-	-	-	nr	2997.45
diamond crossings; standard welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	2165.47
spot re-sleepering	-	-	-	-	nr	180.31
spot re-sleepering	-	-	-	-	nr	94.25

**CLASS S: RAIL TRACK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Bullhead rails; welded joints; softwood sleepers						
plain track	-	-	-	-	m	54.73
form curve in plain track, radius ne 300 m	-	-	-	-	m	10.35
form curve in plain track, radius over 300 m	-	-	-	-	m	9.75
turnouts; standard, type B8	-	-	-	-	nr	2479.95
turnouts; standard, type C10	-	-	-	-	nr	2997.45
diamond crossings; standard	-	-	-	-	nr	2165.47
spot re-sleepering	-	-	-	-	nr	94.25
Bullhead rails; welded joints; concrete sleepers						
plain track	-	-	-	-	m	43.98
form curve in plain track, radius ne 300 m	-	-	-	-	m	9.96
form curve in plain track, radius over 300 m	-	-	-	-	m	12.74
turnouts; standard, type B8	-	-	-	-	nr	2479.95
turnouts; standard, type C10	-	-	-	-	nr	2997.45
diamond crossings; standard	-	-	-	-	nr	2165.47
spot re-sleepering	-	-	-	-	nr	94.25
Flat bottom rails; jointed with fishplates; softwood sleepers						
plain track	-	-	-	-	m	49.55
form curve in plain track, radius not exceeding 300 m	-	-	-	-	m	11.54
form curve in plain track, radius exceeding 300 m	-	-	-	-	m	10.95
turnouts; standard, type Bv8	-	-	-	-	nr	3399.45
turnouts; standard, type Cv9.25	-	-	-	-	nr	3869.18
diamond crossings; standard	-	-	-	-	nr	2571.48
welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	191.65
spot re-sleepering	-	-	-	-	nr	94.25
Flat bottom rails; jointed with fishplates; concrete sleepers						
plain track	-	-	-	-	m	51.76
form curve in plain track, radius ne 300 m	-	-	-	-	m	11.54
form curve in plain track, radius over 300 m	-	-	-	-	m	10.95
turnouts; standard, type Bv8	-	-	-	-	nr	3399.45
turnouts; standard, type Cv9.25	-	-	-	-	nr	3869.18
diamond crossings; standard	-	-	-	-	nr	2571.48
welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	185.05
spot re-sleepering	-	-	-	-	nr	94.25
Flat bottom rails; welded joints; softwood sleepers						
plain track	-	-	-	-	m	69.65
form curve in plain track, radius ne 300 m	-	-	-	-	m	12.35
form curve in plain track, radius over 300 m	-	-	-	-	m	11.35
turnouts; standard, type Bv8	-	-	-	-	nr	3399.45
turnouts; standard, type Cv9.25	-	-	-	-	nr	3869.18
diamond crossings; standard	-	-	-	-	nr	2571.48
spot re-sleepering	-	-	-	-	nr	94.25
Flat bottom rails; welded joints; concrete sleepers						
plain track	-	-	-	-	m	64.82
form curve in plain track, radius ne 300 m	-	-	-	-	m	12.09
form curve in plain track, radius over 300 m	-	-	-	-	m	11.08
turnouts; standard, type Bv8	-	-	-	-	nr	3559.82
turnouts; standard, type Cv9.25	-	-	-	-	nr	4051.68
diamond crossings; standard	-	-	-	-	nr	2692.79
spot re-sleepering	-	-	-	-	nr	94.25

**CLASS S: RAIL TRACK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>LAYING (STANDARD GAUGE TRACK) - cont'd</b>						
<b>Laying - cont'd</b>						
Check rails, flat bottom; jointed with fishplates rail	-	-	-	-	m	9.17
welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	200.71
Guard rails, bullhead; jointed with fishplates rail	-	-	-	-	m	10.46
welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	200.71
Guard rails, flat bottom; jointed with fishplates rail	-	-	-	-	m	9.17
welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	200.71
Conductor rails, bullhead; jointed with fishplates rail	-	-	-	-	m	7.32
welded joints; alumino-thermic welding including refractory mould	-	-	-	-	nr	200.71
<b>Sundries</b>						
buffer stops; single raker, steel rail and timber; 2 tonnes approximate weight	-	-	-	-	nr	289.69
buffer stops; double raker, steel rail and timber; 2.5 tonnes approximate weight	-	-	-	-	nr	354.32
wheel stops; steel; 100 kg approximate weight	-	-	-	-	nr	108.37
lubricators; single rail	-	-	-	-	nr	250.10
lubricators; double rail	-	-	-	-	nr	333.48
switch levers; upright pattern	-	-	-	-	nr	104.20
switch levers; flush type	-	-	-	-	nr	104.20
conductor rail guard boards	-	-	-	-	m	14.60
<b>DECAUVILLE TRACK</b>						
<b>Supplying</b>						
Dock and crane rails; for welded track section 56 crane rail; 12.2 m lengths	-	-	-	-	nr	1477.82
section 101 crane rail; 9.144 m lengths	-	-	-	-	nr	1279.02
<b>Fittings</b>						
20 mm mild steel sole plate 400 mm wide; drilled with two bolt holes at 1200 mm centres	-	-	-	-	m	65.22
M20 x 250 mm holding down bolt, nut and washers	-	-	-	-	nr	2.77
rail clips, spring type, adjustable; complete with M20 x 60 mm stud welded to sole plate	-	-	-	-	nr	16.00
<b>Sundries</b>						
wheel stops; 200 kg each	-	-	-	-	nr	193.76
<b>Laying</b>						
Crane rails, section 56; continuous sole plate; welded plain track	-	-	-	-	m	54.79
form curve in plain track, radius ne 300 m	-	-	-	-	m	10.16
Crane rails, section 101; continuous sole plate; welded plain track	-	-	-	-	m	69.40
form curve in plain track, radius ne 300 m	-	-	-	-	m	10.16
<b>Sundries</b>						
wheel stops	-	-	-	-	nr	101.78



**CLASS T: TUNNELS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>Notes</b>						
There are so many factors, apart from design considerations, which influence the cost of tunnelling that it is only possible to give guide prices for a sample of the work involved. For more reliable estimates it is advisable to seek the advice of a Specialist Contractor. The main cost considerations are:						
* the nature of the ground						
* size of tunnel						
* length of drive						
* depth below surface						
* anticipated overbreak						
* support of face and roof of tunnel (rock bolting etc.)						
* necessity for pre-grouting						
* ventilation						
* presence of water						
* use of compressed air working						
The following rates for mass concrete work cast in primary and secondary linings to tunnels and access shafts are based on a 5.0 m depth of shaft and 15.0 m head of tunnel Apply the following factors for differing depths and lengths :						
HEAD LENGTH: 15 m    30 m    60 m    90 m						
Shaft depth 5m    +0%    +10%    +20%    +32½%						
Shaft depth 10m    +5%    +12½%    +27½%    +35%						
Shaft depth 15m    +10%    +17½%    +32½%    +40%						
Shaft depth 20m    +15%    +20%    +37½%    +42½%						
<b>EXCAVATION</b>						
Excavating tunnels in rock						
1.5 m diameter    -    -    -    -    m <sup>3</sup> <b>480.00</b>						
3.0 m diameter    -    -    -    -    m <sup>3</sup> <b>300.00</b>						
Excavating tunnels in soft material						
1.5 m diameter    -    -    -    -    m <sup>3</sup> <b>227.50</b>						
3.0 m diameter    -    -    -    -    m <sup>3</sup> <b>125.00</b>						
Excavating shafts in rock						
3.0 m diameter    -    -    -    -    m <sup>3</sup> <b>185.00</b>						
4.5 m diameter    -    -    -    -    m <sup>3</sup> <b>155.00</b>						
Excavating shafts in soft material						
3.0 m diameter    -    -    -    -    m <sup>3</sup> <b>107.50</b>						
4.5 m diameter    -    -    -    -    m <sup>3</sup> <b>92.50</b>						
Excavating other cavities in rock						
1.5 m diameter    -    -    -    -    m <sup>3</sup> <b>480.00</b>						
3.0 m diameter    -    -    -    -    m <sup>3</sup> <b>300.00</b>						
Excavating other cavities in soft material						
1.5 m diameter    -    -    -    -    m <sup>3</sup> <b>227.50</b>						
3.0 m diameter    -    -    -    -    m <sup>3</sup> <b>125.00</b>						
Excavated surfaces in rock						
-    -    -    -    -    m <sup>2</sup> <b>17.50</b>						
Excavated surfaces in soft material						
-    -    -    -    -    m <sup>2</sup> <b>17.50</b>						

## CLASS T: TUNNELS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>IN-SITU LINING TO TUNNELS</b>						
<b>Notes</b>						
The following rates for mass concrete work cast in primary and secondary linings to tunnels and access shafts are based on a 5.0 m depth of shaft and 15.0 m head of tunnel See above for additions for differing shaft depths and tunnel lengths.						
<b>Mass concrete; grade C30, 20 mm aggregate</b>						
Cast primary lining to tunnels						
1.5 m diameter	-	-	-	-	m <sup>3</sup>	290.00
3.0 m diameter	-	-	-	-	m <sup>3</sup>	250.00
Secondary lining to tunnels						
1.5 m diameter	-	-	-	-	m <sup>3</sup>	337.50
3.0 m diameter	-	-	-	-	m <sup>3</sup>	267.50
<b>Formwork; rough finish</b>						
Tunnel lining						
1.5 m diameter	-	-	-	-	m <sup>2</sup>	47.00
3.0 m diameter	-	-	-	-	m <sup>2</sup>	47.00
<b>IN-SITU LINING TO ACCESS SHAFTS</b>						
<b>Notes</b>						
The following rates for mass concrete work cast in primary and secondary linings to tunnels and access shafts are based on a 5.0 m depth of shaft and 15.0 m head of tunnel See above for additions for differing shaft depths and tunnel lengths.						
<b>Mass concrete; grade C30, 20 mm aggregate</b>						
Secondary linings to shafts						
3.0 m int diameter	-	-	-	-	m <sup>3</sup>	267.50
4.5 m int diameter	-	-	-	-	m <sup>3</sup>	260.00
Cast primary lining to shafts						
3.0 m int diameter	-	-	-	-	m <sup>3</sup>	285.00
4.5 m int diameter	-	-	-	-	m <sup>3</sup>	272.50
<b>Formwork; rough finish</b>						
Shaft lining						
3.0 m int diameter	-	-	-	-	m <sup>2</sup>	71.00
4.5 m int diameter	-	-	-	-	m <sup>2</sup>	48.00
<b>IN-SITU LINING TO OTHER CAVITIES</b>						
<b>Notes</b>						
The following rates for mass concrete work cast in primary and secondary linings to tunnels and access shafts are based on a 5.0 m depth of shaft and 15.0 m head of tunnel See above for additions for differing shaft depths and tunnel lengths.						
<b>Mass concrete; grade C30, 20 mm aggregate</b>						
Cast primary lining to other cavities						
1.5 m int diameter	-	-	-	-	m <sup>3</sup>	292.50
3.0 m int diameter	-	-	-	-	m <sup>3</sup>	250.00

## CLASS T: TUNNELS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Secondary linings to other cavities						
1.5 m int diameter	-	-	-	-	m <sup>3</sup>	337.50
3.0 m int diameter	-	-	-	-	m <sup>3</sup>	267.50
<b>Formwork; rough finish</b>						
Other cavities lining						
1.5 m int diameter	-	-	-	-	m <sup>2</sup>	47.00
3.0 m int diameter	-	-	-	-	m <sup>2</sup>	47.00
<b>PREFORMED SEGMENTAL LININGS TO TUNNELS</b>						
<b>Precast concrete bolted rings; flanged; including packing; guide price/ring based upon standard bolted concrete segmental rings; ring width 610mm</b>						
<b>Under current market conditions the reader is currently advised to contact specialist contractors directly for costs associated with these works</b>						
<b>PREFORMED SEGMENTAL LININGS TO SHAFTS</b>						
<b>Precast concrete bolted rings; flanged; including packing; guide price/ring based upon standard bolted concrete segmental rings; ring width 610mm</b>						
<b>Under current market conditions the reader is currently advised to contact specialist contractors directly for costs associated with these works</b>						
<b>SUPPORT AND STABILIZATION</b>						
Rock bolts						
mechanical	-	-	-	-	m	28.00
mechanical grouted	-	-	-	-	m	43.73
pre-grouted impacted	-	-	-	-	m	42.07
chemical end anchor	-	-	-	-	m	42.07
chemical grouted	-	-	-	-	m	29.92
chemically filled	-	-	-	-	m	47.07
Internal support						
steel arches; supply	-	-	-	-	t	1284.26
steel arches; erection	-	-	-	-	t	464.48
timber supports; supply	-	-	-	-	m <sup>3</sup>	358.41
timber supports; erection	-	-	-	-	m <sup>3</sup>	295.59
lagging	-	-	-	-	m <sup>2</sup>	25.34
sprayed concrete	-	-	-	-	m <sup>2</sup>	29.66
mesh or link	-	-	-	-	m <sup>2</sup>	9.79
Pressure grouting						
sets of drilling and grouting plant	-	-	-	-	nr	1270.80
face packers	-	-	-	-	nr	56.29
deep packers	-	-	-	-	nr	96.51
drilling and flushing to 40 mm diameter	-	-	-	-	m	21.32
re-drilling and flushing	-	-	-	-	m	16.91
injection of grout materials; chemical grout	-	-	-	-	t	706.33
Forward probing	-	-	-	-	m	21.97

## CLASS U: BRICKWORK, BLOCKWORK AND MASONRY

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>Misc</b>						
Apply the following multipliers to both labour and plant for rubble walls:-						
height 2 to 5 m 1.21						
height 5 to 10 m 1.37						
wall to radius small 1.75						
wall to radius large 1.50						
wall to rake or batter 1.15						
wall in piers or stanchion 1.50						
wall in buttresses 1.15						
<b>RESOURCES - LABOUR</b>						
<b>Misc</b>						
<b>Brickwork, blockwork and masonry gang</b>						
1 foreman bricklayer (craftsman) 22.32						
4 bricklayers (craftsman) 76.60						
1 unskilled operative (general) 12.44						
Total Gang Rate / Hour <b>£ 111.36</b>						
<b>RESOURCES - PLANT</b>						
<b>Misc</b>						
<b>Brickwork, blockwork and masonry</b>						
2t dumper (50% of time) 4.36						
mixer (50% of time) 1.08						
small power tools 1.88						
scaffold, etc. 1.62						
Total Rate / Hour <b>£ 8.93</b>						
<b>COMMON BRICKWORK</b>						
<b>Common bricks in cement mortar designation (ii)</b>						
Thickness 103 mm						
vertical straight walls 0.23 25.39 2.04 15.61 m <sup>2</sup> <b>43.04</b>						
vertical curved walls 0.30 32.96 2.62 15.61 m <sup>2</sup> <b>51.20</b>						
battered straight walls 0.33 36.64 2.94 15.61 m <sup>2</sup> <b>55.19</b>						
battered curved walls 0.37 41.20 3.30 15.61 m <sup>2</sup> <b>60.12</b>						
vertical facing to concrete 0.25 27.51 2.21 16.37 m <sup>2</sup> <b>46.08</b>						
battered facing to concrete 0.37 41.20 3.30 16.38 m <sup>2</sup> <b>60.89</b>						
casing to metal sections 0.32 35.08 2.81 16.38 m <sup>2</sup> <b>54.27</b>						
Thickness 215 mm						
vertical straight walls 0.44 49.22 3.95 31.78 m <sup>2</sup> <b>84.95</b>						
vertical curved walls 0.57 63.48 5.09 31.78 m <sup>2</sup> <b>100.35</b>						
battered straight walls 0.63 69.54 5.63 31.78 m <sup>2</sup> <b>106.95</b>						
battered curved walls 0.71 78.38 6.30 31.78 m <sup>2</sup> <b>116.45</b>						
vertical facing to concrete 0.48 52.99 4.27 32.54 m <sup>2</sup> <b>89.80</b>						
battered facing to concrete 0.71 78.38 6.30 32.54 m <sup>2</sup> <b>117.21</b>						
casing to metal sections 0.61 67.34 5.40 32.54 m <sup>2</sup> <b>105.28</b>						

**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Thickness 328 mm						
vertical straight walls	0.64	70.65	5.75	48.36	m <sup>2</sup>	<b>124.76</b>
vertical curved walls	0.82	90.52	7.35	48.36	m <sup>2</sup>	<b>146.23</b>
battered straight walls	0.91	100.45	8.10	48.36	m <sup>2</sup>	<b>156.91</b>
battered curved walls	1.01	111.49	9.02	48.36	m <sup>2</sup>	<b>168.87</b>
vertical facing to concrete	0.69	76.17	6.20	49.12	m <sup>2</sup>	<b>131.48</b>
battered facing to concrete	1.01	111.49	9.02	49.12	m <sup>2</sup>	<b>169.63</b>
casing to metal sections	0.87	96.04	7.77	49.12	m <sup>2</sup>	<b>152.93</b>
Thickness 440 mm						
vertical straight walls	0.84	92.73	7.45	64.77	m <sup>2</sup>	<b>164.95</b>
vertical curved walls	1.06	117.01	9.45	64.77	m <sup>2</sup>	<b>191.23</b>
battered straight walls	1.16	128.05	10.38	64.77	m <sup>2</sup>	<b>203.20</b>
battered curved walls	1.29	142.40	11.50	64.77	m <sup>2</sup>	<b>218.68</b>
vertical facing to concrete	0.90	99.35	8.02	65.52	m <sup>2</sup>	<b>172.89</b>
battered facing to concrete	1.29	142.40	11.50	65.53	m <sup>2</sup>	<b>219.43</b>
casing to metal sections	1.12	123.64	9.99	65.53	m <sup>2</sup>	<b>199.15</b>
Thickness 890 mm						
vertical straight walls	1.50	165.58	13.40	130.51	m <sup>2</sup>	<b>309.49</b>
vertical curved walls	1.85	204.22	16.54	130.51	m <sup>2</sup>	<b>351.27</b>
battered straight walls	2.00	220.78	17.94	130.51	m <sup>2</sup>	<b>369.23</b>
battered curved walls	2.20	242.85	19.60	130.51	m <sup>2</sup>	<b>392.96</b>
vertical facing to concrete	1.60	176.62	14.31	131.26	m <sup>2</sup>	<b>322.19</b>
battered facing to concrete	2.20	242.85	19.60	131.26	m <sup>2</sup>	<b>393.72</b>
casing to metal sections	1.94	214.15	17.35	131.26	m <sup>2</sup>	<b>362.77</b>
Thickness exceeding 1 m						
vertical straight walls	1.64	181.04	14.61	146.25	m <sup>2</sup>	<b>341.90</b>
vertical curved walls	2.00	220.78	17.93	146.25	m <sup>2</sup>	<b>384.96</b>
battered straight walls	2.17	239.54	19.40	146.25	m <sup>2</sup>	<b>405.19</b>
battered curved walls	2.37	261.62	21.13	146.25	m <sup>2</sup>	<b>429.00</b>
vertical facing to concrete	1.74	192.08	15.57	147.01	m <sup>2</sup>	<b>354.65</b>
battered facing to concrete	2.37	261.62	21.13	147.01	m <sup>2</sup>	<b>429.76</b>
casing to metal sections	2.10	231.82	18.78	147.01	m <sup>2</sup>	<b>397.61</b>
Columns and piers						
215 x 215 mm	0.13	14.35	1.16	6.92	m	<b>22.43</b>
440 x 215 mm	0.24	26.49	2.14	14.07	m	<b>42.71</b>
665 x 328 mm	0.44	48.57	3.93	31.96	m	<b>84.46</b>
890 x 890 mm	1.10	121.43	9.83	115.02	m	<b>246.28</b>
Surface features						
copings;standard header-on-edge; 215 mm wide x 103 mm high	0.10	11.04	0.94	3.50	m	<b>15.48</b>
sills;standard header-on-edge; 215 mm wide x 103 mm high	0.13	14.35	1.12	3.34	m	<b>18.81</b>
rebates	0.30	33.12	2.68	-	m	<b>35.80</b>
chases	0.35	38.64	3.13	-	m	<b>41.76</b>
band courses;flush; 215 mm wide	0.05	5.52	0.40	-	m	<b>5.92</b>
band courses;projection 103mm; 215 mm wide	0.05	5.52	0.45	-	m	<b>5.97</b>
corbels;maximum projection 103mm; 215 mm wide	0.15	16.56	1.34	3.26	m	<b>21.16</b>
pilasters; 328 mm wide x 103 mm projection	-	-	0.63	6.92	m	<b>7.55</b>
pilasters; 440 mm wide x 215 mm projection	0.12	13.25	1.07	15.62	m	<b>29.94</b>
plinths; projection 103 mm x 900 mm wide	0.19	20.97	1.70	14.47	m	<b>37.14</b>
fair facing	0.06	6.62	0.51	-	m <sup>2</sup>	<b>7.13</b>

**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>COMMON BRICKWORK - cont'd</b>						
<b>Common bricks in cement mortar designation (ii) - cont'd</b>						
<b>Ancillaries</b>						
bonds to existing work; to brickwork built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork 103 mm thick	1.50	165.58	13.40	16.57	m <sup>2</sup>	<b>195.55</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork 103 mm thick	0.06	6.62	0.54	0.65	nr	<b>7.81</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork 215 mm thick	0.12	13.25	1.03	1.00	nr	<b>15.27</b>
built-in pipes and ducts, cross-sectional area 0.05 - 0.25 m <sup>2</sup> ; excluding supply; brickwork 103 mm thick	0.15	16.56	1.34	1.13	nr	<b>19.03</b>
built-in pipes and ducts, cross-sectional area 0.05 - 0.25 m <sup>2</sup> ; excluding supply; brickwork 215 mm thick	0.29	32.01	2.59	1.71	nr	<b>36.32</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; brickwork 103 mm thick	0.18	19.87	1.56	1.37	nr	<b>22.80</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; brickwork 215 mm thick	0.34	37.53	3.04	2.03	nr	<b>42.60</b>
<b>FACING BRICKWORK</b>						
<b>Facing bricks; in plasticised cement mortar designation (iii)</b>						
<b>Thickness 103 mm</b>						
vertical straight walls	0.34	37.53	3.04	43.96	m <sup>2</sup>	<b>84.53</b>
vertical curved walls	0.45	49.67	4.02	43.96	m <sup>2</sup>	<b>97.65</b>
battered straight walls	0.45	49.67	4.02	43.96	m <sup>2</sup>	<b>97.65</b>
battered curved walls	0.56	61.82	5.03	43.96	m <sup>2</sup>	<b>110.80</b>
vertical facing to concrete	0.37	40.84	3.19	44.71	m <sup>2</sup>	<b>88.75</b>
battered facing to concrete	0.56	61.82	5.03	44.71	m <sup>2</sup>	<b>111.56</b>
casing to metal sections	0.49	54.09	4.38	44.71	m <sup>2</sup>	<b>103.18</b>
<b>Thickness 215 mm</b>						
vertical straight walls	0.57	62.92	6.63	88.46	m <sup>2</sup>	<b>158.01</b>
vertical curved walls	0.84	92.73	7.50	88.46	m <sup>2</sup>	<b>188.69</b>
battered straight walls	0.84	92.73	7.50	88.46	m <sup>2</sup>	<b>188.69</b>
battered curved walls	1.02	112.60	9.14	88.46	m <sup>2</sup>	<b>210.20</b>
vertical facing to concrete	0.66	72.86	5.90	89.22	m <sup>2</sup>	<b>167.97</b>
battered facing to concrete	1.02	112.60	9.14	89.22	m <sup>2</sup>	<b>210.95</b>
casing to metal sections	0.82	90.52	7.33	89.22	m <sup>2</sup>	<b>187.06</b>
<b>Thickness 328 mm</b>						
vertical straight walls	0.83	91.62	7.39	133.38	m <sup>2</sup>	<b>232.39</b>
vertical curved walls	1.12	123.64	9.96	133.38	m <sup>2</sup>	<b>266.98</b>
battered straight walls	1.12	123.64	9.96	133.38	m <sup>2</sup>	<b>266.98</b>
battered curved walls	1.36	150.13	12.15	133.38	m <sup>2</sup>	<b>295.66</b>
vertical facing to concrete	0.88	97.14	7.83	134.14	m <sup>2</sup>	<b>239.11</b>
battered facing to concrete	1.36	150.13	12.15	134.14	m <sup>2</sup>	<b>296.41</b>
casing to metal sections	1.18	130.26	10.54	134.14	m <sup>2</sup>	<b>274.94</b>
<b>Thickness 440 mm</b>						
vertical straight walls	1.08	119.22	9.65	178.13	m <sup>2</sup>	<b>307.00</b>
vertical curved walls	1.39	153.44	12.42	178.13	m <sup>2</sup>	<b>343.99</b>
battered straight walls	1.39	153.44	12.42	178.13	m <sup>2</sup>	<b>343.99</b>
vertical facing to concrete	1.09	120.32	9.76	178.89	m <sup>2</sup>	<b>308.97</b>
battered facing to concrete	1.39	153.44	12.42	178.89	m <sup>2</sup>	<b>344.75</b>
casing to metal sections	1.39	153.44	12.42	178.89	m <sup>2</sup>	<b>344.75</b>

**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Columns and piers						
215 x 215 mm	0.17	18.77	1.49	19.69	m	<b>39.95</b>
440 x 215 mm	0.29	32.01	2.59	39.58	m	<b>74.18</b>
665 x 328 mm	0.58	64.03	5.15	89.35	m	<b>158.53</b>
Surface features						
copings;standard header-on-edge; standard bricks; 215 mm wide x 103 mm high	0.13	14.35	1.20	9.23	m	<b>24.77</b>
flat arches;standard stretcher-on-end; 215 mm wide x 103 mm high	0.21	23.18	1.87	8.98	m	<b>34.04</b>
flat arches;standard stretcher-on-end; bullnosed special bricks; 103 mm x 215 mm high	0.22	24.29	1.97	53.21	m	<b>79.46</b>
segmental arches;single ring;standard bricks; 103 mm wide x 215 mm high	0.37	40.84	3.30	8.98	m	<b>53.13</b>
segmental arches;two ring;standard bricks; 103 mm wide x 440 mm high	0.49	54.09	4.38	18.13	m	<b>76.60</b>
segmental arches;cut voussoirs; 103 mm wide x 215 mm high	0.39	43.05	3.48	21.88	m	<b>68.42</b>
rebates	0.33	36.43	2.95	-	m	<b>39.37</b>
chases	0.37	40.84	3.30	-	m	<b>44.15</b>
cornices; maximum projection 103mm; 215 mm wide	0.37	40.84	3.30	8.92	m	<b>53.06</b>
band courses; projection 113mm; 215 mm wide	0.06	6.62	0.49	-	m	<b>7.12</b>
corbels; maximum projection 113mm; 215 mm wide	0.37	40.84	3.30	8.92	m	<b>53.06</b>
pilasters; 328 mm wide x 113 mm projection	0.05	5.52	0.45	19.67	m	<b>25.64</b>
pilasters; 440 mm wide x 215 mm projection	0.06	6.62	0.49	44.31	m	<b>51.43</b>
plinths; projection 113 mm x 900 mm wide	0.24	26.49	2.14	39.97	m	<b>68.61</b>
fair facing; pointing as work proceeds	0.06	6.62	0.54	-	m <sup>2</sup>	<b>7.16</b>
Ancillaries						
bonds to existing work; to brickwork	1.50	165.58	13.40	12.63	m	<b>191.61</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.10	11.04	0.85	0.96	nr	<b>12.85</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.15	16.56	0.81	1.69	nr	<b>19.06</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.19	20.97	1.70	1.53	nr	<b>24.20</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.33	36.43	2.95	2.49	nr	<b>41.86</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.23	25.39	2.06	1.76	nr	<b>29.21</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.40	44.16	3.53	2.88	nr	<b>50.56</b>
<b>ENGINEERING BRICKWORK</b>						
<b>Class A engineering bricks, solid; in cement mortar designation (ii)</b>						
Thickness 103 mm						
vertical straight walls	0.27	29.80	2.40	30.55	m <sup>2</sup>	<b>62.76</b>
vertical curved walls	0.37	40.84	3.30	30.55	m <sup>2</sup>	<b>74.70</b>
battered straight walls	0.37	40.84	3.30	30.55	m <sup>2</sup>	<b>74.70</b>
battered curved walls	0.41	45.26	3.68	30.55	m <sup>2</sup>	<b>79.49</b>
vertical facing to concrete	0.32	35.32	2.81	31.30	m <sup>2</sup>	<b>69.44</b>
battered facing to concrete	0.46	50.78	4.14	31.30	m <sup>2</sup>	<b>86.22</b>
casing to metal sections	0.41	45.26	3.68	31.30	m <sup>2</sup>	<b>80.24</b>

## CLASS U: BRICKWORK, BLOCKWORK AND MASONRY

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ENGINEERING BRICKWORK - cont'd</b>						
<b>Class A engineering bricks, solid; in cement mortar designation (ii) - cont'd</b>						
Thickness 215 mm						
vertical straight walls	0.52	57.40	4.64	61.65	m <sup>2</sup>	<b>123.70</b>
vertical curved walls	0.71	78.38	6.30	61.65	m <sup>2</sup>	<b>146.32</b>
battered straight walls	0.71	78.38	6.30	61.65	m <sup>2</sup>	<b>146.32</b>
battered curved walls	0.78	86.10	6.97	61.65	m <sup>2</sup>	<b>154.72</b>
vertical facing to concrete	0.61	67.34	5.40	62.41	m <sup>2</sup>	<b>135.15</b>
battered facing to concrete	0.87	96.04	7.78	62.41	m <sup>2</sup>	<b>166.22</b>
casing to metal sections	0.78	86.10	6.97	62.41	m <sup>2</sup>	<b>155.48</b>
Thickness 328 mm						
vertical straight walls	0.75	82.79	6.73	93.16	m <sup>2</sup>	<b>182.68</b>
vertical curved walls	1.01	111.49	9.02	93.16	m <sup>2</sup>	<b>213.67</b>
battered straight walls	1.01	111.49	9.02	93.16	m <sup>2</sup>	<b>213.67</b>
battered curved walls	1.11	122.53	9.92	93.16	m <sup>2</sup>	<b>225.62</b>
vertical facing to concrete	0.87	96.04	7.78	93.92	m <sup>2</sup>	<b>197.73</b>
battered facing to concrete	1.24	136.88	11.03	93.92	m <sup>2</sup>	<b>241.83</b>
casing to metal sections	1.11	122.53	9.92	93.92	m <sup>2</sup>	<b>226.37</b>
Thickness 440 mm						
vertical straight walls	0.97	107.08	8.67	124.50	m <sup>2</sup>	<b>240.25</b>
vertical curved walls	1.29	142.40	11.50	124.50	m <sup>2</sup>	<b>278.41</b>
battered straight walls	1.29	142.40	11.50	124.50	m <sup>2</sup>	<b>278.41</b>
battered curved walls	1.41	155.65	12.60	124.50	m <sup>2</sup>	<b>292.75</b>
vertical facing to concrete	1.12	123.64	9.99	125.26	m <sup>2</sup>	<b>258.88</b>
battered facing to concrete	1.56	172.21	13.92	125.26	m <sup>2</sup>	<b>311.39</b>
casing to metal sections	1.41	155.65	12.60	125.26	m <sup>2</sup>	<b>293.51</b>
Thickness 890 mm						
vertical straight walls	1.72	189.87	15.35	249.88	m <sup>2</sup>	<b>455.09</b>
vertical curved walls	2.20	242.85	19.60	249.88	m <sup>2</sup>	<b>512.33</b>
battered straight walls	2.20	242.85	19.60	249.88	m <sup>2</sup>	<b>512.33</b>
battered curved walls	2.37	261.62	21.17	249.88	m <sup>2</sup>	<b>532.66</b>
vertical facing to concrete	1.94	214.15	17.35	250.63	m <sup>2</sup>	<b>482.14</b>
battered facing to concrete	2.58	284.80	23.02	250.63	m <sup>2</sup>	<b>558.45</b>
casing to metal sections	2.37	261.62	21.17	250.63	m <sup>2</sup>	<b>533.42</b>
Thickness exceeding 1 m						
vertical straight walls	1.87	206.43	16.67	280.04	m <sup>3</sup>	<b>503.13</b>
vertical curved walls	2.37	261.62	21.13	280.04	m <sup>3</sup>	<b>562.80</b>
battered straight walls	2.37	261.62	21.13	280.04	m <sup>3</sup>	<b>562.80</b>
battered curved walls	2.55	281.49	22.76	280.04	m <sup>3</sup>	<b>584.29</b>
vertical facing to concrete	2.10	231.82	18.78	280.72	m <sup>3</sup>	<b>531.32</b>
battered facing to concrete	2.76	304.67	24.65	280.72	m <sup>3</sup>	<b>610.04</b>
casing to metal sections	2.55	281.49	22.76	280.72	m <sup>3</sup>	<b>584.97</b>
Columns and piers						
215 x 215 mm	0.16	17.66	1.42	13.64	m	<b>32.72</b>
440 x 215 mm	0.28	30.91	2.48	27.51	m	<b>60.90</b>
665 x 328 mm	0.56	61.82	4.97	62.20	m	<b>128.98</b>
890 x 890 mm	1.78	196.49	15.88	222.54	m	<b>434.91</b>



**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Surface features</b>						
copings; standard header-on-edge; 215 mm wide x 103 mm high	0.11	12.14	0.94	6.86	m	<b>19.94</b>
sills; standard header-on-edge; 215 mm wide x 103 mm high	0.13	14.35	1.12	6.70	m	<b>22.17</b>
rebates	0.33	36.43	2.95	-	m	<b>39.37</b>
chases	0.37	40.84	3.30	-	m	<b>44.15</b>
band courses; flush; 215 mm wide	0.05	5.52	0.40	-	m	<b>5.92</b>
band courses; projection 103mm; 215 mm wide	0.05	5.52	0.45	-	m	<b>5.97</b>
corbels; maximum projection 103mm; 215 mm wide	0.15	16.56	1.34	6.62	m	<b>24.52</b>
pilasters; 328 mm wide x 103 mm projection	0.07	7.73	0.63	13.64	m	<b>21.99</b>
pilasters; 440 mm wide x 215 mm projection	0.12	13.25	1.07	30.74	m	<b>45.06</b>
plinths; projection 103 mm x 900 mm wide	0.19	20.97	1.70	27.91	m	<b>50.58</b>
fair facing	0.06	6.62	0.54	-	m <sup>2</sup>	<b>7.16</b>
<b>Ancillaries</b>						
bonds to existing brickwork; to brickwork	0.29	32.01	2.59	17.29	m <sup>2</sup>	<b>51.89</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.10	11.04	0.85	0.91	nr	<b>12.79</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.15	16.56	1.34	1.26	nr	<b>19.16</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.19	20.97	1.70	1.44	nr	<b>24.12</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.33	36.43	2.95	2.17	nr	<b>41.54</b>
built-in pipes and ducts, cross-sectional area 0.025-0.5 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.23	25.39	2.06	1.70	nr	<b>29.15</b>
built-in pipes and ducts, cross-sectional area 0.025-0.5 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.40	44.16	3.53	2.56	nr	<b>50.24</b>
<b>Class B engineering bricks, perforated; in cement mortar designation (ii)</b>						
<b>Thickness 103 mm</b>						
vertical straight walls	0.27	29.80	2.40	23.08	m <sup>2</sup>	<b>55.29</b>
vertical curved walls	0.37	40.84	3.30	23.08	m <sup>2</sup>	<b>67.23</b>
battered straight walls	0.37	40.84	3.30	23.08	m <sup>2</sup>	<b>67.23</b>
vertical facing to concrete	0.32	35.32	2.81	23.84	m <sup>2</sup>	<b>61.97</b>
casings to metal sections	0.41	45.26	3.68	23.84	m <sup>2</sup>	<b>72.78</b>
<b>Thickness 215 mm</b>						
vertical straight walls	0.52	57.40	4.64	46.72	m <sup>2</sup>	<b>108.76</b>
vertical curved walls	0.71	78.38	6.30	46.72	m <sup>2</sup>	<b>131.39</b>
battered straight walls	0.71	78.38	6.30	46.72	m <sup>2</sup>	<b>131.39</b>
vertical facing to concrete	0.61	67.34	5.40	47.47	m <sup>2</sup>	<b>120.21</b>
casings to metal sections	0.78	86.10	6.97	47.47	m <sup>2</sup>	<b>140.54</b>
<b>Thickness 328 mm</b>						
vertical straight walls	0.76	83.90	6.75	70.76	m <sup>2</sup>	<b>161.41</b>
vertical curved walls	1.01	111.49	9.02	70.76	m <sup>2</sup>	<b>191.27</b>
battered straight walls	1.01	111.49	9.02	70.76	m <sup>2</sup>	<b>191.27</b>
vertical facing to concrete	0.87	96.04	7.78	71.52	m <sup>2</sup>	<b>175.33</b>
casings to metal sections	1.11	122.53	9.92	71.52	m <sup>2</sup>	<b>203.97</b>

**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ENGINEERING BRICKWORK - cont'd</b>						
<b>Class B engineering bricks, perforated; in cement mortar designation (ii) - cont'd</b>						
Thickness 440 mm						
vertical straight walls	0.97	107.08	8.67	94.64	m <sup>2</sup>	<b>210.39</b>
vertical curved walls	1.29	142.40	11.50	94.64	m <sup>2</sup>	<b>248.54</b>
battered straight walls	1.29	142.40	11.50	94.64	m <sup>2</sup>	<b>248.54</b>
vertical facing to concrete casings to metal sections	1.12	123.64	9.99	95.39	m <sup>2</sup>	<b>229.01</b>
	1.41	155.65	12.60	95.39	m <sup>2</sup>	<b>263.64</b>
Thickness 890 mm						
vertical straight walls	1.72	189.87	15.35	190.14	m <sup>2</sup>	<b>395.36</b>
vertical curved walls	2.20	242.85	19.60	190.14	m <sup>2</sup>	<b>452.60</b>
battered straight walls	2.20	242.85	19.60	190.14	m <sup>2</sup>	<b>452.60</b>
battered curved walls	2.37	261.62	21.17	190.14	m <sup>2</sup>	<b>472.93</b>
vertical facing to concrete	1.94	214.15	17.35	190.90	m <sup>2</sup>	<b>422.41</b>
battered facing to concrete	2.58	284.80	23.02	190.90	m <sup>2</sup>	<b>498.72</b>
casing to metal sections	2.37	261.62	21.17	190.90	m <sup>2</sup>	<b>473.69</b>
Thickness exceeding 1 m						
vertical straight walls	1.87	206.43	16.67	213.26	m <sup>3</sup>	<b>436.35</b>
vertical curved walls	2.37	261.62	21.13	213.26	m <sup>3</sup>	<b>496.02</b>
battered straight walls	2.37	261.62	21.13	213.26	m <sup>3</sup>	<b>496.02</b>
battered curved walls	2.55	281.49	22.76	213.26	m <sup>3</sup>	<b>517.51</b>
vertical facing to concrete	2.10	231.82	18.78	213.94	m <sup>3</sup>	<b>464.54</b>
battered facing to concrete	2.76	304.67	24.65	213.94	m <sup>3</sup>	<b>543.26</b>
casing to metal sections	2.55	281.49	22.76	213.94	m <sup>3</sup>	<b>518.19</b>
Columns and piers						
215 x 215 mm	0.16	17.66	1.42	10.28	m	<b>29.36</b>
440 x 215 mm	0.28	30.91	2.48	20.79	m	<b>54.18</b>
665 x 328 mm	0.56	61.82	4.97	47.08	m	<b>113.86</b>
890 x 890 mm	1.78	196.49	15.88	168.78	m	<b>381.15</b>
Surface features						
copings; standard header-on-edge; 215 mm wide x 103 mm high	0.11	12.14	0.94	5.18	m	<b>18.26</b>
sills; standard header-on-edge; 215 mm wide x 103 mm high	0.13	14.35	1.12	5.02	m	<b>20.49</b>
rebates	0.33	36.43	2.95	-	m	<b>39.37</b>
chases	0.37	40.84	3.30	-	m	<b>44.15</b>
band courses; flush; 215 mm wide	0.05	5.52	0.40	-	m	<b>5.92</b>
band courses; projection 103mm; 215 mm wide	0.05	5.52	0.45	-	m	<b>5.97</b>
corbels; maximum projection 103mm; 215 mm wide	0.15	16.56	1.34	4.94	m	<b>22.84</b>
pilasters; 328 mm wide x 103 mm projection	0.07	7.73	0.63	10.28	m	<b>18.63</b>
pilasters; 440 mm wide x 215 mm projection	0.12	13.25	1.07	23.18	m	<b>37.50</b>
plinths; projection 103 mm x 900 mm wide	0.19	20.97	1.70	21.19	m	<b>43.86</b>
fair facing	0.06	6.62	0.54	-	m <sup>2</sup>	<b>7.16</b>
Ancillaries						
bonds to existing brickwork; to brickwork	0.29	32.01	2.59	17.16	m <sup>2</sup>	<b>51.76</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.10	11.04	0.85	0.91	nr	<b>12.79</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.15	16.56	1.34	1.26	nr	<b>19.16</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.19	20.97	1.70	1.44	nr	<b>24.12</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.33	36.43	2.95	2.17	nr	<b>41.54</b>

**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
built-in pipes and ducts, cross-sectional area 0.025-0.5 m <sup>2</sup> ; excluding supply; brickwork half brick thick	0.23	25.39	2.06	1.70	nr	<b>29.15</b>
built-in pipes and ducts, cross-sectional area 0.025-0.5 m <sup>2</sup> ; excluding supply; brickwork one brick thick	0.40	44.16	3.53	2.54	nr	<b>50.22</b>
<b>LIGHTWEIGHT BLOCKWORK</b>						
<b>Lightweight concrete blocks; 3.5 N/mm<sup>2</sup>; in cement-lime mortar designation (iii)</b>						
Thickness 100 mm;						
vertical straight walls	0.17	18.77	1.55	12.02	m <sup>2</sup>	<b>32.34</b>
vertical curved walls	0.23	25.39	2.06	12.02	m <sup>2</sup>	<b>39.46</b>
vertical facework to concrete	0.18	19.87	1.60	14.92	m <sup>2</sup>	<b>36.39</b>
casing to metal sections	0.21	23.18	1.87	14.92	m <sup>2</sup>	<b>39.98</b>
Thickness 140 mm;						
vertical straight walls	0.23	25.39	2.01	16.75	m <sup>2</sup>	<b>44.15</b>
vertical curved walls	0.30	33.12	2.67	16.75	m <sup>2</sup>	<b>52.53</b>
vertical facework to concrete	0.23	25.39	2.07	19.68	m <sup>2</sup>	<b>47.14</b>
casing to metal sections	0.27	29.80	2.41	19.68	m <sup>2</sup>	<b>51.89</b>
Thickness 215 mm;						
vertical straight walls	0.28	30.91	2.46	25.78	m <sup>2</sup>	<b>59.14</b>
vertical curved walls	0.37	40.84	3.27	25.78	m <sup>2</sup>	<b>69.89</b>
vertical facework to concrete	0.28	30.91	2.53	28.71	m <sup>2</sup>	<b>62.14</b>
casing to metal sections	0.31	34.22	2.77	28.71	m <sup>2</sup>	<b>65.70</b>
Columns and piers						
440 x 100 mm	0.08	8.83	0.71	5.30	m	<b>14.85</b>
890 x 140 mm	0.22	24.29	1.97	15.03	m	<b>41.29</b>
Surface features						
fair facing	0.06	6.62	0.54	-	m <sup>2</sup>	<b>7.16</b>
Ancillaries						
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; blockwork 100 mm thick	0.04	4.42	0.36	0.34	nr	<b>5.12</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; blockwork 140 mm thick	0.09	9.94	0.80	1.10	nr	<b>11.84</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; blockwork 215 mm thick	0.13	14.35	1.13	1.48	nr	<b>16.96</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; blockwork 100 mm thick	0.13	14.35	1.13	1.46	nr	<b>16.94</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; blockwork 140 mm thick	0.18	19.87	1.57	2.36	nr	<b>23.81</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; blockwork 215 mm thick	0.25	27.60	2.23	3.13	nr	<b>32.96</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; blockwork 100 mm thick	0.15	16.56	1.34	1.86	nr	<b>19.75</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; blockwork 140 mm thick	0.21	23.18	1.87	2.36	nr	<b>27.42</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; blockwork 215 mm thick	0.30	33.12	2.64	3.70	nr	<b>39.46</b>

**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DENSE CONCRETE BLOCKWORK</b>						
<b>Dense concrete blocks; 7 N/mm<sup>2</sup>; in cement mortar designation (iii)</b>						
Walls, built vertical and straight						
100 mm thick	0.19	20.97	1.71	11.00	m <sup>2</sup>	<b>33.68</b>
140 mm thick	0.25	27.60	2.21	15.35	m <sup>2</sup>	<b>45.16</b>
215 mm thick	0.34	37.53	3.04	23.69	m <sup>2</sup>	<b>64.26</b>
Walls, built vertical and curved						
100 mm thick	0.25	27.60	2.27	11.03	m <sup>2</sup>	<b>40.90</b>
140 mm thick	0.33	36.43	2.95	15.35	m <sup>2</sup>	<b>54.73</b>
215 mm thick	0.45	49.67	4.04	23.72	m <sup>2</sup>	<b>77.43</b>
Walls, built vertical in facework to concrete						
100 mm thick	0.20	22.08	1.76	13.69	m <sup>2</sup>	<b>37.53</b>
140 mm thick	0.26	28.70	2.28	18.07	m <sup>2</sup>	<b>49.05</b>
215 mm thick	0.35	38.64	3.13	26.37	m <sup>2</sup>	<b>68.13</b>
Walls, as casings to metal sections, built vertical and straight						
100 mm thick	0.23	25.39	2.06	13.69	m <sup>2</sup>	<b>41.14</b>
140 mm thick	0.30	33.12	2.64	18.07	m <sup>2</sup>	<b>53.82</b>
Columns and piers						
440 x 100 mm	0.08	8.83	0.71	4.17	m	<b>13.70</b>
890 x 140 mm thick	0.22	24.29	1.97	13.81	m	<b>40.06</b>
Ancillaries						
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; blockwork 100 mm thick						
	0.05	5.52	0.40	0.34	nr	<b>6.26</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; blockwork 140 mm thick						
	0.10	11.04	0.89	1.02	nr	<b>12.95</b>
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply; blockwork 215 mm thick						
	0.14	15.45	1.21	1.41	nr	<b>18.07</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; blockwork 100 mm thick						
	0.14	15.45	1.21	1.40	nr	<b>18.06</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; blockwork 140 mm thick						
	0.19	20.97	1.70	2.19	nr	<b>24.86</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply; blockwork 215 mm thick						
	0.27	29.80	2.41	2.93	nr	<b>35.15</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; blockwork 100 mm thick						
	0.16	17.66	1.45	1.73	nr	<b>20.85</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; blockwork 140 mm thick						
	0.23	25.39	2.06	2.23	nr	<b>29.67</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply; blockwork 215 mm thick						
	0.32	35.32	2.86	3.47	nr	<b>41.65</b>

## CLASS U: BRICKWORK, BLOCKWORK AND MASONRY

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ARTIFICIAL STONE BLOCKWORK</b>						
<b>Reconstituted stone masonry blocks; Bradstone 100 bed weathered Cotswold or North Cearney rough hewn rockfaced blocks; in coloured cement-lime mortar designation (iii)</b>						
Thickness 100 mm vertical facing						
vertical straight walls	0.30	33.12	2.68	34.96	m <sup>2</sup>	<b>70.75</b>
vertical curved walls	0.39	43.05	3.48	34.96	m <sup>2</sup>	<b>81.49</b>
vertical facework to concrete	0.31	34.22	2.79	34.99	m <sup>2</sup>	<b>72.00</b>
casing to metal sections	0.40	44.16	3.57	34.99	m <sup>2</sup>	<b>82.72</b>
Ancillaries						
built-in pipes and ducts, cross-sectional area not exceeding 0.05 m <sup>2</sup> ; excluding supply	0.07	7.73	0.63	0.47	nr	<b>8.82</b>
built-in pipes and ducts, cross-sectional area 0.05-0.25 m <sup>2</sup> ; excluding supply	0.22	24.29	1.97	3.76	nr	<b>30.01</b>
built-in pipes and ducts, cross-sectional area 0.25-0.5 m <sup>2</sup> ; excluding supply	0.26	28.70	2.32	4.73	nr	<b>35.75</b>
<b>Reconstituted stone masonry blocks; Bradstone Architectural dressing in weathered Cotswald or North Cerney shades; in coloured cement-lime mortar designation (iii)</b>						
Surface features; Pier Caps						
305 x 305 mm, weathered and throated	0.09	9.94	0.80	17.70	nr	<b>28.43</b>
381 x 381 mm, weathered and throated	0.11	12.14	0.98	25.01	nr	<b>38.14</b>
457 x 457 mm, weathered and throated	0.13	14.35	1.16	34.21	nr	<b>49.72</b>
533 x 533 mm, weathered and throated	0.15	16.56	1.34	47.65	nr	<b>65.55</b>
Surface features; Copings						
152 x 76 mm, twice weathered and throated	0.08	8.83	0.71	9.14	m	<b>18.69</b>
152 x 76 mm, curved on plan, twice weathered and throated	0.11	12.14	0.95	65.35	m	<b>78.44</b>
305 x 76 mm, twice weathered and throated	0.10	11.04	3.57	22.43	m	<b>37.04</b>
305 x 76 mm, curved on plan, twice weathered and throated	0.13	14.35	1.19	97.98	m	<b>113.52</b>
Surface features; Pilasters						
440 x 100 mm	0.14	15.45	1.25	15.40	m	<b>32.10</b>
Surface features; Corbels						
479 x 100 x 215 mm, splayed	0.49	54.09	4.38	58.14	nr	<b>116.61</b>
665 x 100 x 215 mm, splayed	0.55	60.71	4.91	57.99	nr	<b>123.61</b>
Surface features; Lintels						
100 x 140 mm	0.11	12.14	0.98	37.42	m	<b>50.55</b>
100 x 215 mm	0.16	17.66	1.43	48.93	m	<b>68.03</b>
<b>ASHLAR MASONRY</b>						
<b>Portland Whitbed limestone; in cement-lime mortar designation (iv); pointed one side cement-lime mortar designation (iii) incorporating stone dust</b>						
Thickness 50 mm						
vertical facing to concrete	0.85	93.83	7.59	98.27	m <sup>2</sup>	<b>199.69</b>
Thickness 75 mm						
vertical straight walls	0.95	104.87	8.49	173.82	m <sup>2</sup>	<b>287.17</b>
vertical curved walls	1.45	160.06	12.95	308.20	m <sup>2</sup>	<b>481.21</b>

## CLASS U: BRICKWORK, BLOCKWORK AND MASONRY

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ASHLAR MASONRY - cont'd</b>						
<b>Portland Whitbed limestone; in cement-lime mortar designation (iv); pointed one side cement-lime mortar designation (iii) incorporating stone dust - cont'd</b>						
Surface features						
copings; weathered and twice throated; 250 x 150 mm	0.45	49.67	4.02	131.58	m	<b>185.28</b>
copings; weathered and twice throated; 250 x 150 mm; curved on plan	0.45	49.67	4.02	177.89	m	<b>231.59</b>
copings; weathered and twice throated; 400 x 150 mm	0.49	54.09	4.38	184.63	m	<b>243.09</b>
copings; weathered and twice throated; 400 x 150 mm; curved on plan	0.49	54.09	4.38	362.14	m	<b>420.60</b>
string courses; shaped and dressed; 75 mm projection x 150 mm high	0.45	49.67	4.02	58.87	m	<b>112.56</b>
corbel; shaped and dressed; 500 x 450 x 300 mm	0.55	60.71	4.91	171.94	nr	<b>237.56</b>
keystone; shaped and dressed; 750 x 900 x 300 mm (extreme)	1.30	143.50	11.61	543.75	nr	<b>698.87</b>
<b>RUBBLE MASONRY</b>						
<b>Rubble masonry; random stones; in cement-lime mortar designation (ii)</b>						
Walls, built vertical and straight; not exceeding 2 m high						
300 mm thick	1.25	137.99	11.16	3.41	m <sup>2</sup>	<b>152.56</b>
450 mm thick	1.80	198.70	16.08	427.12	m <sup>2</sup>	<b>641.90</b>
600 mm thick	2.40	264.93	21.44	494.72	m <sup>2</sup>	<b>781.09</b>
Walls, built vertical, curved on plan; not exceeding 2 m high						
300 mm thick	1.40	154.54	5.66	3.41	m <sup>2</sup>	<b>163.61</b>
450 mm thick	2.00	220.78	17.86	371.08	m <sup>2</sup>	<b>609.72</b>
600 mm thick	2.65	292.53	23.67	494.72	m <sup>2</sup>	<b>810.91</b>
Walls, built with battered face; not exceeding 2 m high						
300 mm thick	1.40	154.54	12.50	3.41	m <sup>2</sup>	<b>170.45</b>
450 mm thick	2.00	220.78	17.86	371.08	m <sup>2</sup>	<b>609.72</b>
600 mm thick	2.65	292.53	23.67	494.72	m <sup>2</sup>	<b>810.91</b>
<b>Rubble masonry; squared stones; in cement-lime mortar designation (iii)</b>						
Walls, built vertical and straight; not exceeding 2 m high						
300 mm thick	1.25	137.99	11.16	446.31	m <sup>2</sup>	<b>595.46</b>
450 mm thick	1.80	198.70	16.08	669.45	m <sup>2</sup>	<b>884.23</b>
600 mm thick	2.40	264.93	21.44	892.62	m <sup>2</sup>	<b>1178.99</b>
Walls, built vertical, curved on plan; not exceeding 2 m high						
300 mm thick	1.40	154.54	12.50	446.31	m <sup>2</sup>	<b>613.36</b>
450 mm thick	2.00	220.78	17.86	669.45	m <sup>2</sup>	<b>908.09</b>
600 mm thick	2.40	264.93	21.44	939.74	m <sup>2</sup>	<b>1226.11</b>
Walls, built with battered face; not exceeding 2 m high						
300 mm thick	1.40	154.54	12.50	446.31	m <sup>2</sup>	<b>613.36</b>
450 mm thick	2.00	220.78	17.86	669.45	m <sup>2</sup>	<b>908.09</b>
600 mm thick	2.40	264.93	21.44	939.74	m <sup>2</sup>	<b>1226.11</b>

**CLASS U: BRICKWORK, BLOCKWORK AND MASONRY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Dry stone walling; random stones</b>						
Average thickness 300 mm battered straight walls	1.15	126.95	5.01	227.82	m <sup>2</sup>	<b>359.78</b>
Average thickness 450 mm battered straight walls	1.65	182.14	7.19	341.68	m <sup>2</sup>	<b>531.01</b>
Average thickness 600 mm battered straight walls	2.15	237.34	9.37	455.60	m <sup>2</sup>	<b>702.31</b>
<b>Surface features</b>						
copings; formed of rough stones 275 x 200 mm (average) high	0.45	49.67	4.02	58.75	m	<b>112.44</b>
copings; formed of rough stones 500 x 200 mm (average) high	0.55	60.71	4.91	106.82	m	<b>172.45</b>
<b>ANCILLARIES COMMON TO ALL DIVISIONS</b>						
<b>Expamet joint reinforcement</b>						
<b>Ancillaries</b>						
joint reinforcement; 65 mm wide	0.01	1.10	0.05	0.57	m	<b>1.73</b>
joint reinforcement; 115 mm wide	0.01	1.10	0.07	0.98	m	<b>2.16</b>
joint reinforcement; 175 mm wide	0.01	1.10	0.10	1.54	m	<b>2.74</b>
joint reinforcement; 225 mm wide	0.01	1.10	0.13	1.98	m	<b>3.21</b>
<b>Hyload pitch polymer damp proof course; lapped joints; in cement mortar</b>						
<b>Ancillaries</b>						
103 mm wide; horizontal	0.01	1.10	0.10	0.69	m	<b>1.89</b>
103 mm wide; vertical	0.02	2.21	0.15	0.69	m	<b>3.05</b>
215 mm wide; horizontal	0.03	3.31	0.23	1.55	m	<b>5.09</b>
215 mm wide; vertical	0.04	4.42	0.36	1.55	m	<b>6.32</b>
328 mm wide; horizontal	0.04	4.42	0.34	3.36	m	<b>8.11</b>
328 mm wide; vertical	0.06	6.62	0.51	3.36	m	<b>10.49</b>
<b>Pre-formed closed cell joint filler; pointing with polysulphide sealant</b>						
<b>Ancillaries</b>						
movement joints; 12 mm filler 90 wide; 12 x 12 sealant one side	0.06	6.62	0.49	0.69	m	<b>7.81</b>
movement joints; 12 mm filler 200 wide; 12 x 12 sealant one side	0.07	7.73	0.58	1.05	m	<b>9.35</b>
<b>Dritherm cavity insulation</b>						
<b>Infills</b>						
50 mm thick	0.04	4.42	0.36	2.98	m <sup>2</sup>	<b>7.75</b>
75 mm thick	0.05	5.52	0.40	3.96	m <sup>2</sup>	<b>9.88</b>
<b>Concrete</b>						
<b>Infills</b>						
50 mm thick	0.06	6.62	0.51	5.24	m <sup>2</sup>	<b>12.37</b>
<b>Galvanised steel wall ties</b>						
<b>Fixings and ties</b>						
vertical twist strip type; 900 mm horizontal and 450 mm vertical staggered spacings	0.02	2.21	0.13	0.19	m <sup>2</sup>	<b>2.53</b>
<b>Stainless steel wall ties</b>						
<b>Fixings and ties</b>						
vertical twist strip type; 900 mm horizontal and 450 mm vertical staggered spacings	0.02	2.21	0.13	0.41	m <sup>2</sup>	<b>2.75</b>

**CLASS V: PAINTING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Painting gang</b>						
1 ganger (skill rate 3)		15.84				
3 painters (skill rate 3)		44.64				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		<b>£ 72.92</b>				
<b>RESOURCES - PLANT</b>						
<b>Painting</b>						
1.5KVA diesel generator			4.12			
transformers/cables; junction box			0.63			
4.5" electric grinder			4.26			
transit van (50% of time)			10.51			
ladders			1.41			
Total Rate / Hour		<b>£</b>	<b>20.92</b>			
<b>LEAD BASED PRIMER PAINT</b>						
<b>One coat calcium plumbate primer</b>						
Metal						
upper surfaces inclined at an angle ne 30° to the horizontal	0.03	1.83	0.51	0.13	m <sup>2</sup>	<b>2.47</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.03	1.83	0.51	0.13	m <sup>2</sup>	<b>2.47</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.03	1.83	0.51	0.13	m <sup>2</sup>	<b>2.47</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.03	2.19	0.64	0.13	m <sup>2</sup>	<b>2.96</b>
surfaces of width ne 300 mm	0.01	0.73	0.23	0.04	m	<b>1.00</b>
surfaces of width 300 mm - 1 m	0.03	1.83	0.51	0.08	m	<b>2.42</b>
Metal sections	0.03	2.19	0.51	0.13	m <sup>2</sup>	<b>2.83</b>
Pipework	0.03	2.19	0.51	0.13	m <sup>2</sup>	<b>2.83</b>
<b>IRON BASED PRIMER PAINT</b>						
<b>One coat iron oxide primer</b>						
Metal						
upper surfaces inclined at an angle ne 30° to the horizontal	0.03	1.83	0.51	0.15	m <sup>2</sup>	<b>2.49</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.03	1.83	0.51	0.15	m <sup>2</sup>	<b>2.49</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.03	1.83	0.51	0.15	m <sup>2</sup>	<b>2.49</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.03	2.19	0.64	0.15	m <sup>2</sup>	<b>2.98</b>
surfaces of width ne 300 mm	0.01	0.73	0.23	0.04	m	<b>1.00</b>
surfaces of width 300 mm - 1 m	0.03	1.83	0.51	0.10	m	<b>2.44</b>
Metal sections	0.03	2.19	0.51	0.15	m <sup>2</sup>	<b>2.85</b>
Pipework	0.03	2.19	0.51	0.15	m <sup>2</sup>	<b>2.85</b>



**CLASS V: PAINTING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ACRYLIC PRIMER PAINT</b>						
<b>One coat acrylic wood primer</b>						
Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.02	1.46	0.42	0.08	m <sup>2</sup>	<b>1.96</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.02	1.46	0.42	0.08	m <sup>2</sup>	<b>1.96</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.02	1.46	0.41	0.08	m <sup>2</sup>	<b>1.95</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.03	1.83	0.51	0.08	m <sup>2</sup>	<b>2.43</b>
surfaces of width ne 300 mm	0.01	0.73	0.21	0.03	m	<b>0.97</b>
surfaces of width 300 mm - 1 m	0.03	1.83	0.51	0.06	m	<b>2.40</b>
<b>GLOSS PAINT</b>						
<b>One coat calcium plumbate primer; one undercoat and one finishing coat of gloss paint</b>						
Metal						
upper surfaces inclined at an angle ne 30° to the horizontal	0.07	5.12	1.48	0.25	m <sup>2</sup>	<b>6.84</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.08	5.48	1.58	0.25	m <sup>2</sup>	<b>7.30</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.08	5.85	1.67	0.25	m <sup>2</sup>	<b>7.77</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.09	6.21	1.77	0.25	m <sup>2</sup>	<b>8.23</b>
surfaces of width ne 300 mm	0.03	1.83	0.51	0.07	m	<b>2.42</b>
surfaces of width 300 mm - 1 m	0.05	3.65	1.06	0.16	m	<b>4.88</b>
Metal sections	0.09	6.58	1.51	0.25	m <sup>2</sup>	<b>8.33</b>
Pipework	0.09	6.58	1.51	0.25	m <sup>2</sup>	<b>8.33</b>
<b>One coat acrylic wood primer; one undercoat and one finishing coat of gloss paint</b>						
Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.07	4.75	1.32	0.20	m <sup>2</sup>	<b>6.28</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	5.12	1.48	0.20	m <sup>2</sup>	<b>6.80</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.08	5.48	1.58	0.21	m <sup>2</sup>	<b>7.26</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.85	1.67	0.20	m <sup>2</sup>	<b>7.72</b>
surfaces of width ne 300 mm	0.03	1.83	0.30	0.06	m	<b>2.19</b>
surfaces of width 300 mm - 1 m	0.05	3.65	1.06	0.13	m	<b>4.85</b>

## CLASS V: PAINTING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GLOSS PAINT - cont'd</b>						
<b>One coat calcium plumbate primer; two undercoats and one finishing coat of gloss paint</b>						
Metal						
upper surfaces inclined at an angle ne 30° to the horizontal	0.06	4.38	1.26	0.30	m <sup>2</sup>	<b>5.94</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	4.75	1.35	0.30	m <sup>2</sup>	<b>6.41</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.07	5.12	1.48	0.30	m <sup>2</sup>	<b>6.90</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.48	1.58	0.30	m <sup>2</sup>	<b>7.36</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.09	m	<b>2.93</b>
surfaces of width 300 mm - 1 m	0.06	4.38	1.26	0.20	m	<b>5.84</b>
<b>One coat acrylic wood primer; two undercoats and one finishing coat of gloss paint</b>						
Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.07	4.75	1.35	0.26	m <sup>2</sup>	<b>6.36</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	5.12	1.48	0.26	m <sup>2</sup>	<b>6.86</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.08	5.48	1.58	0.26	m <sup>2</sup>	<b>7.32</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.85	1.28	0.26	m <sup>2</sup>	<b>7.39</b>
surfaces of width ne 300 mm	0.03	2.19	1.48	0.08	m	<b>3.75</b>
surfaces of width 300 mm - 1 m	0.06	4.38	1.26	0.17	m	<b>5.81</b>
<b>One coat alkali resisting primer; two undercoats and one finishing coat of gloss paint</b>						
Smooth concrete						
upper surfaces inclined at an angle ne 30° to the horizontal	0.04	2.56	0.74	0.26	m <sup>2</sup>	<b>3.56</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.04	2.92	0.84	0.26	m <sup>2</sup>	<b>4.02</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.05	3.29	0.93	0.26	m <sup>2</sup>	<b>4.48</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.05	3.65	1.06	0.26	m <sup>2</sup>	<b>4.98</b>
surfaces of width ne 300 mm	0.02	1.10	0.32	0.08	m	<b>1.50</b>
surfaces of width 300 mm - 1 m	0.03	2.19	0.64	0.17	m	<b>3.01</b>
Brickwork and rough concrete						
upper surfaces inclined at an angle ne 30° to the horizontal	0.04	2.92	0.84	0.27	m <sup>2</sup>	<b>4.03</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.05	3.29	0.93	0.27	m <sup>2</sup>	<b>4.49</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.05	3.65	1.06	0.27	m <sup>2</sup>	<b>4.99</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.06	4.02	1.16	0.27	m <sup>2</sup>	<b>5.45</b>
surfaces of width ne 300 mm	0.02	1.46	0.42	0.08	m	<b>1.96</b>
surfaces of width 300 mm - 1 m	0.04	2.56	0.74	0.18	m	<b>3.48</b>

**CLASS V: PAINTING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Blockwork</b>						
upper surfaces inclined at an angle ne 30° to the horizontal	0.06	4.02	1.16	0.27	m <sup>2</sup>	<b>5.45</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.06	4.38	1.26	0.27	m <sup>2</sup>	<b>5.91</b>
surfaces of width ne 300 mm	0.03	1.83	0.51	0.08	m	<b>2.42</b>
surfaces of width 300 mm - 1 m	0.04	2.92	0.84	0.18	m	<b>3.94</b>
<b>Two coats anti-condensation paint</b>						
<b>Metal</b>						
upper surfaces inclined at an angle ne 30° to the horizontal	0.08	5.48	1.58	0.93	m <sup>2</sup>	<b>7.99</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.08	5.48	1.58	0.93	m <sup>2</sup>	<b>7.99</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.08	5.48	1.58	0.93	m <sup>2</sup>	<b>7.99</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.85	1.67	0.93	m <sup>2</sup>	<b>8.45</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.28	m	<b>3.12</b>
surfaces of width 300 mm - 1 m	0.05	3.65	1.06	0.61	m	<b>5.32</b>
Metal sections	0.09	6.58	1.90	0.93	m <sup>2</sup>	<b>9.41</b>
<b>EMULSION PAINT</b>						
<b>One thinned coat, two coats vinyl emulsion paint</b>						
<b>Smooth concrete</b>						
upper surfaces inclined at an angle ne 30° to the horizontal	0.07	4.75	1.35	0.18	m <sup>2</sup>	<b>6.28</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	5.12	1.48	0.18	m <sup>2</sup>	<b>6.78</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.08	5.48	1.58	0.18	m <sup>2</sup>	<b>7.24</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.85	1.67	0.18	m <sup>2</sup>	<b>7.70</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.05	m	<b>2.89</b>
surfaces of width 300 mm - 1 m	0.07	5.12	1.48	0.12	m	<b>6.71</b>
<b>Brickwork and rough concrete</b>						
upper surfaces inclined at an angle ne 30° to the horizontal	0.08	5.48	1.58	0.19	m <sup>2</sup>	<b>7.24</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.08	5.85	1.67	0.19	m <sup>2</sup>	<b>7.71</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.09	6.21	1.77	0.19	m <sup>2</sup>	<b>8.17</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.09	6.58	1.90	0.19	m <sup>2</sup>	<b>8.66</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.06	m	<b>2.89</b>
surfaces of width 300 mm - 1 m	0.08	5.85	1.67	0.13	m	<b>7.65</b>
<b>Blockwork</b>						
surfaces inclined at an angle exceeding 60° to the horizontal	0.09	6.58	1.90	0.19	m <sup>2</sup>	<b>8.67</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.10	7.31	2.09	0.19	m <sup>2</sup>	<b>9.59</b>
surfaces of width ne 300 mm	0.04	2.92	0.84	0.06	m	<b>3.82</b>
surfaces of width 300 mm - 1 m	0.08	5.85	1.67	0.12	m	<b>7.64</b>

## CLASS V: PAINTING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CEMENT PAINT</b>						
<b>Two coats masonry paint</b>						
Smooth concrete						
upper surfaces inclined at an angle ne 30° to the horizontal	0.07	4.75	1.35	0.16	m <sup>2</sup>	<b>6.26</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	5.12	1.48	0.16	m <sup>2</sup>	<b>6.75</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.08	5.48	1.58	0.16	m <sup>2</sup>	<b>7.22</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.85	1.67	0.16	m <sup>2</sup>	<b>7.68</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.05	m	<b>2.88</b>
surfaces of width 300 mm - 1 m	0.07	5.12	1.48	0.10	m	<b>6.70</b>
Brickwork and rough concrete						
upper surfaces inclined at an angle ne 30° to the horizontal	0.08	5.48	1.58	0.18	m <sup>2</sup>	<b>7.24</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.08	5.85	1.67	0.18	m <sup>2</sup>	<b>7.70</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.09	6.21	1.77	0.18	m <sup>2</sup>	<b>8.16</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.09	6.58	1.90	0.18	m <sup>2</sup>	<b>8.66</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.05	m	<b>2.89</b>
surfaces of width 300 mm - 1 m	0.08	5.85	1.67	0.12	m	<b>7.64</b>
Blockwork						
surfaces inclined at an angle exceeding 60° to the horizontal	0.09	6.58	1.90	0.23	m <sup>2</sup>	<b>8.71</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.10	7.31	2.09	0.23	m <sup>2</sup>	<b>9.63</b>
surfaces of width ne 300 mm	0.04	2.92	0.84	0.07	m	<b>3.83</b>
surfaces of width 300 mm - 1 m	0.08	5.85	1.67	0.15	m	<b>7.67</b>
<b>One thinned coat, two coats concrete floor paint</b>						
Smooth concrete						
upper surfaces inclined at an angle ne 30° to the horizontal	0.07	4.75	1.35	0.80	m <sup>2</sup>	<b>6.90</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	5.12	1.48	0.80	m <sup>2</sup>	<b>7.40</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.08	5.48	1.58	0.80	m <sup>2</sup>	<b>7.86</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.85	1.67	0.48	m <sup>2</sup>	<b>8.00</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.25	m	<b>3.08</b>
surfaces of width 300 mm - 1 m	0.07	5.12	1.48	0.52	m	<b>7.12</b>
Additional coats						
width exceeding 1 m	0.03	2.19	0.64	0.32	m <sup>2</sup>	<b>3.16</b>
surfaces of width ne 300 mm	0.01	0.73	0.23	0.10	m	<b>1.05</b>
surfaces of width 300 mm - 1 m	0.02	1.10	0.51	0.21	m	<b>1.82</b>
<b>EPOXY OR POLYURETHANE PAINT</b>						
<b>Blast clean to BS 7079; one coat zinc chromate etch primer, two coats zinc phosphate CR/alkyd undercoat off site; one coat MIO CR undercoat and one coat CR finish on site</b>						
Metal sections	-	-	-	-	m <sup>2</sup>	<b>30.98</b>

## CLASS V: PAINTING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Blast clean to BS 7079; one coat zinc rich 2 pack primer, one coat MIO high build epoxy 2 pack paint off site; one coat polyurethane 2 pack undercoat and one coat polyurethane 2 pack finish on site</b> Metal sections	-	-	-	-	m <sup>2</sup>	<b>33.96</b>
<b>Two coats clear polyurethane varnish</b> Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.04	2.92	0.84	1.47	m <sup>2</sup>	<b>5.23</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.05	3.29	0.93	1.47	m <sup>2</sup>	<b>5.69</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.05	3.65	1.06	1.47	m <sup>2</sup>	<b>6.19</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.06	4.38	1.26	1.47	m <sup>2</sup>	<b>7.11</b>
surfaces of width ne 300 mm	0.03	1.83	0.51	0.44	m	<b>2.78</b>
surfaces of width 300 mm - 1 m	0.05	3.65	1.06	0.96	m	<b>5.67</b>
<b>Two coats colour stained polyurethane varnish</b> Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.04	2.92	0.84	1.12	m <sup>2</sup>	<b>4.88</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.05	3.29	0.93	1.12	m <sup>2</sup>	<b>5.34</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.05	3.65	1.06	1.12	m <sup>2</sup>	<b>5.84</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.06	4.38	1.26	1.12	m <sup>2</sup>	<b>6.76</b>
surfaces of width ne 300 mm	0.03	1.83	0.51	0.34	m	<b>2.68</b>
surfaces of width 300 mm - 1 m	0.05	3.65	1.06	0.73	m	<b>5.45</b>
<b>Three coats colour stained polyurethane varnish</b> Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.06	4.02	1.16	1.68	m <sup>2</sup>	<b>6.86</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	4.75	1.35	1.68	m <sup>2</sup>	<b>7.78</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.07	5.12	1.48	1.68	m <sup>2</sup>	<b>8.28</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.09	6.21	1.77	1.68	m <sup>2</sup>	<b>9.66</b>
surfaces of width ne 300 mm	0.04	2.56	0.74	0.50	m	<b>3.80</b>
surfaces of width 300 mm - 1 m	0.07	5.12	1.48	1.09	m	<b>7.69</b>
<b>One coat hardwood stain basecoat and two coats hardwood woodstain</b> Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.06	4.38	1.26	1.50	m <sup>2</sup>	<b>7.14</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.07	4.75	1.35	1.50	m <sup>2</sup>	<b>7.60</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.07	5.12	1.48	1.50	m <sup>2</sup>	<b>8.10</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.08	5.85	1.67	1.61	m <sup>2</sup>	<b>9.13</b>
surfaces of width ne 300 mm	0.04	2.56	0.74	0.45	m	<b>3.75</b>
surfaces of width 300 mm - 1 m	0.07	5.12	1.48	0.98	m	<b>7.57</b>

**CLASS V: PAINTING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>BITUMINOUS OR PRESERVATIVE PAINT</b>						
<b>Two coats golden brown wood preservative</b>						
Timber						
upper surfaces inclined at an angle ne 30° to the horizontal	0.05	3.29	0.93	0.57	m <sup>2</sup>	<b>4.79</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.05	3.65	1.06	0.57	m <sup>2</sup>	<b>5.28</b>
surfaces inclined at an angle exceeding 60° to the horizontal	0.06	4.02	1.16	0.57	m <sup>2</sup>	<b>5.75</b>
soffit surfaces and lower surfaces inclined at an angle ne 60° to the horizontal	0.07	4.75	1.35	0.57	m <sup>2</sup>	<b>6.67</b>
surfaces of width ne 300 mm	0.03	2.19	0.64	0.17	m	<b>3.01</b>
surfaces of width 300 mm - 1 m	0.06	4.02	1.16	0.37	m	<b>5.55</b>
<b>Two coats bituminous paint</b>						
Metal sections	0.08	5.85	1.67	1.43	m <sup>2</sup>	<b>8.95</b>
Pipework	0.09	6.58	2.00	1.43	m <sup>2</sup>	<b>10.00</b>

**CLASS W: WATERPROOFING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Roofing - cladding gang</b>						
1 ganger/chargehand (skill rate 3) - 50% of time		7.92				
2 skilled operative (skill rate 3)		29.76				
1 unskilled operative (general) - 50% of time		6.22				
Total Gang Rate / Hour		<b>£ 43.90</b>				
<b>Damp proofing gang</b>						
1 ganger (skill rate 4)		14.28				
1 skilled operative (skill rate 4)		13.32				
1 unskilled labour (general)		12.44				
Total Gang Rate / Hour		<b>£ 40.04</b>				
<b>Roofing - asphalt gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		<b>£ 32.90</b>				
<b>Tanking - asphalt gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		<b>£ 32.90</b>				
<b>Tanking - waterproof sheeting gang</b>						
1 skilled operative (skill rate 4)		13.32				
Total Gang Rate / Hour		<b>£ 13.32</b>				
<b>Tanking - rendering gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (generally)		12.44				
Total Gang Rate / Hour		<b>£ 40.04</b>				
<b>Protective layers - flexible sheeting, sand and pea gravel coverings gang</b>						
1 unskilled operative (generally)		12.44				
Total Gang Rate / Hour		<b>£ 12.44</b>				
<b>Protective layers - screed gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
1 skilled operative (skill rate 4)		13.32				
1 unskilled operative (general)		12.44				
Total Gang Rate / Hour		<b>£ 40.04</b>				
<b>Sprayed or brushed waterproofing gang</b>						
1 ganger/chargehand (skill rate 4) - 30% of time		4.28				
1 skilled operative (skill rate 4)		13.32				
Total Gang Rate / Hour		<b>£ 17.60</b>				

## CLASS W: WATERPROOFING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT</b>						
<b>Damp proofing</b>						
2t dumper (50% of time)			4.36			
Total Rate / Hour		£	<b>4.36</b>			
<b>Tanking - asphalt</b>						
tar boiler (50% of time)			12.75			
2t dumper (50% of time)			4.36			
Total Rate / Hour		£	<b>17.10</b>			
<b>Tanking - waterproof sheeting</b>						
2t dumper (50% of time)			4.36			
Total Rate / Hour		£	<b>4.36</b>			
<b>Tanking - rendering</b>						
mixer			0.93			
2t dumper (50% time)			4.36			
Total Rate / Hour		£	<b>5.29</b>			
<b>Protective layers - flexible sheeting, sand and pea gravel coverings</b>						
2t dumper (50% of time)			4.36			
Total Rate / Hour		£	<b>4.36</b>			
<b>Protective layers - screed</b>						
mixer			0.93			
2t dumper (50% time)			4.36			
Total Rate / Hour		£	<b>5.29</b>			
<b>Sprayed or brushed waterproofing</b>						
2t dumper (50% of time)			4.36			
Total Rate / Hour		£	<b>4.36</b>			
<b>C DAMP PROOFING</b>						
<b>Waterproof sheeting</b>						
0.3 mm polythene sheet						
ne 300 mm wide	0.01	0.12	0.04	0.65	m	<b>0.81</b>
300 mm - 1 m wide	0.01	0.13	0.04	1.31	m	<b>1.48</b>
on horizontal or included surfaces	0.01	0.16	0.05	1.99	m <sup>2</sup>	<b>2.21</b>
on vertical surfaces	0.01	0.13	0.04	1.99	m <sup>2</sup>	<b>2.17</b>
<b>TANKING</b>						
<b>Notes</b>						
<b>Asphalt roofing</b>						
Work has been presented in more detail than CESMM3 to allow the user greater freedom to access an appropriate rate to suit the complexity of their work						
<b>Asphalt</b>						
13 mm Mastic asphalt to BS 6925, Type T 1097; two coats; on concrete surface						
upper surfaces inclined at an angle ne 30° to the horizontal						
	0.45	14.82	8.39	5.96	m <sup>2</sup>	<b>29.17</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal						
	0.60	19.75	11.19	5.96	m <sup>2</sup>	<b>36.90</b>



**CLASS W: WATERPROOFING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
upper surfaces inclined at an angle exceeding 60° to the horizontal	1.00	32.92	18.65	5.96	m <sup>2</sup>	<b>57.54</b>
curved surfaces	1.20	39.51	22.38	5.96	m <sup>2</sup>	<b>67.85</b>
domed surfaces	1.50	49.39	27.98	5.96	m <sup>2</sup>	<b>83.32</b>
ne 300 mm wide	0.20	6.58	3.73	1.80	m	<b>12.11</b>
300 mm - 1 m wide	0.45	14.82	8.39	5.96	m	<b>29.17</b>
<b>20 mm Mastic asphalt to BS 6925, Type T 1097; two coats; on concrete surface</b>						
upper surfaces inclined at an angle ne 30° to the horizontal	0.50	16.46	9.33	9.16	m <sup>2</sup>	<b>34.94</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.70	23.05	13.06	9.16	m <sup>2</sup>	<b>45.26</b>
upper surfaces inclined at an angle exceeding 60° to the horizontal	1.20	39.51	22.38	9.16	m <sup>2</sup>	<b>71.05</b>
curved surfaces	1.40	46.09	26.12	9.16	m <sup>2</sup>	<b>81.36</b>
domed surfaces	1.75	57.62	32.64	9.16	m <sup>2</sup>	<b>99.42</b>
ne 300 mm wide	0.23	7.57	4.29	2.74	m	<b>14.61</b>
300 mm - 1 m wide	0.50	16.46	9.33	9.16	m	<b>34.94</b>
<b>13 mm Mastic asphalt to BS 6925, Type T 1097; two coats; on brickwork surface; raking joints to form key</b>						
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.90	29.63	11.23	9.19	m <sup>2</sup>	<b>50.06</b>
upper surfaces inclined at an angle exceeding 60° to the horizontal	1.30	42.80	24.25	9.19	m <sup>2</sup>	<b>76.24</b>
curved surfaces	1.50	49.39	27.98	9.19	m <sup>2</sup>	<b>86.56</b>
domed surfaces	1.80	59.26	33.58	9.19	m <sup>2</sup>	<b>102.03</b>
ne 300 mm wide	0.30	9.88	3.73	2.76	m	<b>16.37</b>
300 mm - 1 m wide	0.75	24.69	14.12	9.19	m	<b>48.00</b>
<b>Waterproof sheeting</b>						
<b>Bituthene 3000; lapped joints</b>						
upper surfaces inclined at an angle ne 30° to the horizontal	0.05	2.00	0.22	8.46	m <sup>2</sup>	<b>10.68</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.05	2.00	0.22	8.46	m <sup>2</sup>	<b>10.68</b>
ne 300 mm wide	0.03	1.00	0.11	2.23	m	<b>3.34</b>
300 mm - 1 m wide	0.04	1.60	0.17	4.76	m	<b>6.53</b>
<b>Bituthene 3000; lapped joints; primer coat</b>						
upper surfaces inclined at an angle exceeding 60° to the horizontal	0.06	2.40	0.26	8.99	m <sup>2</sup>	<b>11.66</b>
<b>Rendering in waterproof cement mortar</b>						
<b>19 mm render in waterproof cement mortar (1:3); two coat work</b>						
upper surfaces inclined at an angle exceeding 60° to the horizontal	0.11	4.41	0.58	9.86	m <sup>2</sup>	<b>14.85</b>
ne 300 mm wide	0.07	2.80	0.37	3.66	m	<b>6.83</b>
300 mm - 1 m wide	0.11	4.41	0.58	6.78	m	<b>11.77</b>
<b>32 mm render in waterproof cement mortar (1:3); one coat work</b>						
upper surfaces inclined at an angle ne 30° to the horizontal	0.11	4.41	0.58	12.44	m <sup>2</sup>	<b>17.43</b>
ne 300 mm wide	0.07	2.80	0.37	3.62	m	<b>6.80</b>
300 mm - 1 m wide	0.11	4.41	0.58	6.31	m	<b>11.30</b>

**CLASS W: WATERPROOFING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ROOFING</b>						
<b>Asphalt</b>						
13 mm Mastic asphalt to BS 6925 Type R 988; two coats; on concrete surface ne 300 mm wide	0.20	6.58	3.73	2.17	m	<b>12.48</b>
20 mm Mastic asphalt to BS 6925 Type R 988; two coats; on concrete surface						
upper surfaces inclined at an angle ne 30° to the horizontal	0.50	16.46	9.33	11.56	m <sup>2</sup>	<b>37.35</b>
upper surfaces inclined at an angle 30 - 60° to the horizontal	0.70	23.05	13.06	11.56	m <sup>2</sup>	<b>47.66</b>
surfaces inclined at an angle exceeding 60° to the horizontal	1.20	39.51	22.38	11.56	m <sup>2</sup>	<b>73.45</b>
curved surfaces	1.50	49.39	27.98	11.56	m <sup>2</sup>	<b>88.93</b>
domed surfaces	1.75	57.62	32.64	11.56	m <sup>2</sup>	<b>101.82</b>
ne 300 mm wide	0.23	7.57	4.29	3.47	m	<b>15.33</b>
300 mm - 1 m wide	0.50	16.46	9.33	11.56	m	<b>37.35</b>
Extra for :						
10 mm thick limestone chippings bedded in hot bitumen	0.05	1.65	0.52	1.29	m <sup>2</sup>	<b>3.45</b>
dressing with solar reflective paint	0.05	1.65	0.52	2.98	m <sup>2</sup>	<b>5.14</b>
300 x 300 x 8 mm GRP tiles bedded in hot bitumen	0.30	9.88	3.09	26.73	m <sup>2</sup>	<b>39.70</b>
<b>PROTECTIVE LAYERS</b>						
<b>Flexible sheeting</b>						
3 mm Servi-pak protection board to Bituthene						
upper surfaces inclined at an angle ne 30° to the horizontal	0.20	2.49	0.87	18.02	m <sup>2</sup>	<b>21.39</b>
ne 300 mm wide	0.10	1.25	0.44	7.69	m	<b>9.37</b>
300 mm - 1 m wide	0.20	2.49	0.87	18.02	m	<b>21.39</b>
3 mm Servi-pak protection board to Bituthene; fixing with adhesive dabs						
upper surfaces inclined at an angle exceeding 60° to the horizontal	0.25	3.11	1.09	19.09	m <sup>2</sup>	<b>23.29</b>
ne 300 mm wide	0.12	1.49	0.52	8.10	m	<b>10.12</b>
300 mm - 1 m wide	0.25	3.11	1.09	19.09	m	<b>23.29</b>
6 mm Servi-pak protection board to Bituthene						
upper surfaces inclined at an angle ne 30° to the horizontal	0.20	2.49	0.87	29.34	m <sup>2</sup>	<b>32.70</b>
ne 300 mm wide	0.10	1.25	0.44	12.08	m	<b>13.76</b>
300 mm 1 m wide	0.20	2.49	0.87	29.34	m	<b>32.70</b>
6 mm Servi-pak protection board to Bituthene; fixing with adhesive dabs						
upper surfaces inclined at an angle exceeding 60° to the horizontal	0.25	3.11	1.09	30.77	m <sup>2</sup>	<b>34.98</b>
ne 300 mm wide	0.12	1.49	0.52	12.96	m	<b>14.98</b>
300 mm 1 m wide	0.25	3.11	1.09	30.77	m	<b>34.98</b>
<b>Sand covering</b>						
25 mm thick						
upper surfaces inclined at an angle ne 30° to the horizontal	0.02	0.25	0.04	0.67	m <sup>2</sup>	<b>0.96</b>
<b>Pea gravel covering</b>						
50 mm thick						
upper surfaces inclined at an angle ne 30° to the horizontal	0.02	0.25	0.04	2.05	m <sup>2</sup>	<b>2.35</b>

**CLASS W: WATERPROOFING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Sand and cement screed</b> 50 mm screed in cement mortar (1:4); one coat work upper surfaces inclined at an angle ne 30° to the horizontal	0.13	5.21	0.60	4.95	m <sup>2</sup>	<b>10.76</b>
<b>SPRAYED OR BRUSHED WATERPROOFING</b>						
Two coats RIW liquid asphaltic composition on horizontal or vertical surfaces	0.06	1.06	0.26	5.66	m <sup>2</sup>	<b>6.98</b>
Two coats Aquaseal on horizontal or vertical surfaces	0.06	1.06	0.26	3.21	m <sup>2</sup>	<b>4.52</b>
One coat Ventrot primer; one coat Ventrot hot applied damp proof membrane on horizontal or vertical surfaces	0.05	0.88	0.22	6.35	m <sup>2</sup>	<b>7.45</b>

## CLASS X: MISCELLANEOUS WORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Fencing / barrier gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4) - 50% of time		6.66				
1 unskilled operative (general)		12.44				
1 plant operator (skill rate 4)		14.56				
Total Gang Rate / Hour		£ 40.80				
<b>Safety fencing gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (general)		24.88				
1 plant operator (skill rate 4)		14.56				
Total Gang Rate / Hour		£ 67.04				
<b>Guttering gang</b>						
2 skilled operatives (skill rate 4)		26.64				
Total Gang Rate / Hour		£ 26.64				
<b>Rock filled gabions gang</b>						
1 ganger/chargehand (skill rate 4)		14.28				
4 unskilled operatives (general)		49.76				
1 plant operator (skill rate 3) - 50% of time		8.10				
Total Gang Rate / Hour		£ 72.13				
<b>RESOURCES - PLANT</b>						
<b>Fencing/barriers</b>						
agricultural type tractor; fencing auger			23.54			
gas oil for ditto			3.59			
drop sided trailer; two axles			0.35			
power tools (fencing)			3.55			
Total Rate / Hour		£	31.04			
<b>Guttering</b>						
ladders			2.11			
Total Rate / Hour		£	2.11			
<b>Rock filled gabions</b>						
16 tonne crawler backacter (50% of time)			19.99			
Total Rate / Hour		£	19.99			
<b>FENCES</b>						
<b>Timber fencing</b>						
Timber post and wire						
1.20 m high; DfT type 3; timber posts, driven; cleft chestnut paling	0.07	2.86	2.17	8.34	m	13.37
0.90 m high; DfT type 4; galvanised rectangular wire mesh	0.13	5.31	4.03	8.29	m	17.63
1.275 m high; DfT type 1; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	2.13	m	6.45
1.275 m high; DfT type 2; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	1.91	m	6.22

## CLASS X: MISCELLANEOUS WORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Concrete post and wire</b>						
1.20 m high; DfT type 3; timber posts, driven; cleft chestnut paling	0.07	2.86	2.17	8.34	m	<b>13.37</b>
0.90 m high; DfT type 4; galvanised rectangular wire mesh	0.13	5.31	4.03	8.29	m	<b>17.63</b>
1.275 m high; DfT type 1; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	2.13	m	<b>6.45</b>
1.275 m high; DfT type 2; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	1.91	m	<b>6.22</b>
<b>Metal post and wire</b>						
1.20 m high; DfT type 3; timber posts, driven; cleft chestnut paling	0.07	2.86	2.17	8.34	m	<b>13.37</b>
0.90 m high; DfT type 4; galvanised rectangular wire mesh	0.13	5.31	4.03	8.29	m	<b>17.63</b>
1.275 m high; DfT type 1; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	2.13	m	<b>6.45</b>
1.275 m high; DfT type 2; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	1.91	m	<b>6.22</b>
<b>Timber post and wire</b>						
1.20 m high; DfT type 3; timber posts, driven; cleft chestnut paling	0.07	2.86	2.17	8.34	m	<b>13.37</b>
0.90 m high; DfT type 4; galvanised rectangular wire mesh	0.13	5.31	4.03	8.29	m	<b>17.63</b>
1.275 m high; DfT type 1; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	2.13	m	<b>6.45</b>
1.275 m high; DfT type 2; galvanised wire, 2 barbed, 4 plain	0.06	2.45	1.86	1.91	m	<b>6.22</b>
<b>Timber close boarded; concrete posts</b>						
Timber close boarded 1.80 m high; 125 x 125 mm posts	0.30	12.25	9.31	29.41	m	<b>50.97</b>
<b>Wire rope safety fencing to BS 5750; based on 600 m lengths</b>						
<b>Metal crash barriers</b>						
600 mm high; 4 wire ropes; long line posts at 2.40 m general spacings, driven	0.16	10.73	4.97	66.39	m	<b>82.09</b>
600 mm high; 4 wire ropes; short line posts at 2.40 m general spacings, 400 x 400 x 600 mm concrete footing	0.27	18.11	8.38	68.94	m	<b>95.43</b>
600 mm high; 4 wire ropes; short line posts at 2.40 m general spacings, 400 x 400 x 600 mm concrete footing, socketed	0.32	21.47	9.93	68.94	m	<b>100.34</b>
600 mm high; 4 wire ropes; short line posts at 2.40 m general spacings, bolted to structure	0.20	13.42	6.21	65.59	m	<b>85.22</b>
<b>Pedestrian guard rails</b>						
<b>Metal guard rails</b>						
1000 mm high; tubular galvanised mild steel to BS 3049, mesh infill (105 swg, 50 x 50 mm mesh; steel posts with concrete footing	0.80	10.57	4.97	158.08	m	<b>173.61</b>
<b>Beam safety fencing; based on 600 m lengths</b>						
<b>Metal crash barriers</b>						
600 mm high; untensioned corrugated beam, single sided; long posts at 3.20 m general spacings, driven	0.10	6.71	3.10	32.42	m	<b>42.23</b>

## CLASS X: MISCELLANEOUS WORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FENCES - cont'd</b>						
<b>Beam safety fencing; based on 600 m lengths - cont'd</b>						
600 mm high; untensioned corrugated beam, double sided; long posts at 3.20 m general spacings, driven	0.26	17.44	8.07	51.05	m	<b>76.56</b>
600 mm high; untensioned open box beam, single sided; long posts at 3.20 m general spacings, driven	0.10	6.71	3.10	58.08	m	<b>67.89</b>
600 mm high; untensioned open box beam, double sided; long posts at 3.20 m general spacings, driven	0.26	17.44	8.07	102.76	m	<b>128.27</b>
600 mm high; untensioned open box beam, double height; long posts at 3.20 m general spacings, driven	0.30	20.13	9.31	127.95	m	<b>157.39</b>
600 mm high; tensioned corrugated beam, single sided; long posts at 3.20 m general spacings, driven	0.13	8.72	4.03	36.42	m	<b>49.18</b>
600 mm high; tensioned corrugated beam, double sided; long posts at 3.20 m general spacings, driven	0.37	24.82	11.48	59.05	m	<b>95.36</b>
<b>GATES AND STILES</b>						
<b>Notes</b>						
Refer to Part 5 Series 300.						
Timber field gates						
single; 3.00 m wide x 1.27 m high	1.84	75.13	56.46	106.88	nr	<b>238.47</b>
single; 3.60 m wide x 1.27 m high	1.90	77.58	58.30	113.49	nr	<b>249.37</b>
single; 4.10 m wide x 1.27 m high	2.00	81.66	61.37	129.26	nr	<b>272.29</b>
single; 4.71 m wide x 1.27 m high	2.00	81.66	61.37	148.49	nr	<b>291.52</b>
Timber wicket gates						
single; 1.20 m wide x 1.20 m high; DfT Type 1	1.20	49.00	36.82	99.17	nr	<b>184.99</b>
single; 1.20 m wide x 1.02 m high; DfT Type 2	1.20	49.00	36.82	90.90	nr	<b>176.72</b>
Metal field gates						
single; steel tubular; 3.60 m wide x 1.175 m high	0.30	12.25	9.21	95.56	nr	<b>117.02</b>
single; steel tubular; 4.50 m wide x 1.175 m high	0.30	12.25	9.21	123.71	nr	<b>145.16</b>
single; steel tubular; half mesh; 3.60 m wide x 1.175 m high	0.30	12.25	9.21	153.23	nr	<b>174.68</b>
single; steel tubular; half mesh; 4.50 m wide x 1.175 m high	0.30	12.25	9.21	198.36	nr	<b>219.81</b>
single; steel tubular; extra wide; 4.88 m wide x 1.175 m high	0.30	12.25	9.21	134.15	nr	<b>155.61</b>
double; steel tubular; 5.02 m wide x 1.175 m high	0.60	24.50	18.41	158.70	nr	<b>201.61</b>
Stiles						
1.00 m wide x 1.45 m high; DfT Type 1	1.50	61.25	46.03	115.00	nr	<b>222.28</b>
1.00 m wide x 1.45 m high; DfT Type 2	1.40	57.16	42.96	86.43	nr	<b>186.55</b>
<b>DRAINAGE TO STRUCTURES ABOVE GROUND</b>						
<b>Note</b>						
Outputs are based on heights up to 3 m above ground and exclude time spent on erecting access equipment, but include marking, cutting, drilling to wood, brick or concrete and all fixings. testing of finished work is not included. Output multipliers for labour and plant for heights over 3 m:						
3 - 6 m x 1.25						
6 - 9 m x 1.50						
9 - 12 m x 1.75						
12 - 15 m x 2.00						
<b>Cast iron gutters and fittings; BS 460 2002</b>						

**CLASS X: MISCELLANEOUS WORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
100 x 75 mm gutters; support brackets	0.25	6.66	0.53	31.53	m	<b>38.72</b>
stop end	0.03	0.72	0.06	34.30	nr	<b>35.08</b>
running outlet	0.04	0.93	0.07	34.30	nr	<b>35.31</b>
angle	0.04	0.93	0.07	53.77	nr	<b>54.77</b>
125 x 75 mm gutters; support brackets	0.30	7.99	0.63	40.42	m	<b>49.05</b>
stop end	0.03	0.85	0.07	38.53	nr	<b>39.45</b>
running outlet	0.04	1.07	0.08	39.29	nr	<b>40.44</b>
angle	0.04	1.07	0.08	64.67	nr	<b>65.82</b>
<b>Cast iron rainwater pipes and fittings; BS 460 2002</b>						
65 mm diameter; support brackets	0.26	6.93	0.55	13.62	m	<b>21.10</b>
bend	0.28	7.46	0.59	15.81	nr	<b>23.86</b>
offset, 75 mm projection	0.30	7.99	0.63	24.20	nr	<b>32.83</b>
offset, 225 mm projection	0.30	7.99	0.63	28.18	nr	<b>36.81</b>
offset, 455 mm projection	0.30	7.99	0.63	77.69	nr	<b>86.31</b>
shoe	0.18	4.80	0.38	22.37	nr	<b>27.55</b>
75 mm diameter; support brackets	0.28	7.46	0.59	13.51	m	<b>21.56</b>
bend	0.28	7.46	0.59	19.19	nr	<b>27.24</b>
offset, 75 mm projection	0.30	7.99	0.63	24.20	nr	<b>32.83</b>
offset, 225 mm projection	0.30	7.99	0.63	28.18	nr	<b>36.81</b>
offset, 455 mm projection	0.30	7.99	0.63	77.09	nr	<b>85.71</b>
shoe	0.18	4.80	0.38	22.39	nr	<b>27.57</b>
<b>PVC-U gutters and fittings; Marley</b>						
116 x 75 mm gutters; support brackets	0.18	4.80	0.38	10.56	m	<b>15.74</b>
stop end	0.05	1.33	0.11	4.54	nr	<b>5.98</b>
running outlet	0.05	1.33	0.11	16.25	nr	<b>17.69</b>
angle	0.14	3.73	0.30	19.83	nr	<b>23.86</b>
150 mm half round gutters; support brackets	0.18	4.80	0.38	14.00	m	<b>19.18</b>
stop end	0.05	1.33	0.11	6.18	nr	<b>7.62</b>
running outlet	0.05	1.33	0.11	17.14	nr	<b>18.57</b>
angle	0.14	3.73	0.30	15.65	nr	<b>19.68</b>
<b>PVC-U external rainwater pipes and fittings; Marley</b>						
68 mm diameter; support brackets	0.15	4.00	0.32	8.35	m	<b>12.66</b>
bend	0.16	4.26	0.34	9.19	nr	<b>13.79</b>
offset bend	0.18	4.80	0.38	5.08	nr	<b>10.26</b>
shoe	0.10	2.66	0.21	7.95	nr	<b>10.82</b>
110 mm diameter; support brackets	0.15	4.00	0.32	19.02	m	<b>23.33</b>
bend	0.16	4.26	0.34	22.54	nr	<b>27.15</b>
offset bend	0.18	4.80	0.38	21.80	nr	<b>26.98</b>
shoe	0.10	2.66	0.21	18.22	nr	<b>21.10</b>
<b>ROCK FILLED GABIONS</b>						
<b>Gabions</b>						
PVC coated galvanised wire mesh box gabions, wire laced; graded broken stone filling						
1.0 x 1.0 m module sizes	0.65	46.94	13.00	55.17	m <sup>3</sup>	<b>115.11</b>
1.0 x 0.5 m module sizes	0.80	57.77	16.00	66.08	m <sup>3</sup>	<b>139.85</b>
Heavily galvanised woven wire mesh box gabions, wire laced; graded broken stone filling						
1.0 x 1.0 m module sizes	0.65	46.94	13.00	51.25	m <sup>3</sup>	<b>111.19</b>
1.0 x 0.5 m module sizes	0.80	57.77	16.00	59.88	m <sup>3</sup>	<b>133.65</b>

**CLASS X: MISCELLANEOUS WORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ROCK FILLED GABIONS - cont'd</b>						
<b>Reno mattresses</b>						
PVC coated woven wire mesh mattresses, wire tied; graded broken stone filling 230 mm deep	0.15	10.83	3.00	20.22	m <sup>2</sup>	<b>34.06</b>
Heavily galvanised woven wire mesh, wire tied; graded broken stone filling 300 mm deep	0.15	10.83	3.00	23.16	m <sup>2</sup>	<b>37.00</b>



**CLASS Y: SEWER AND WATER MAIN RENOVATION AND ANCILLARY WORKS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Drain repair gang</b>						
1 chargehand pipelayer (skill rate 4) - 50% of time		7.14				
1 skilled operative (skill rate 4)		13.32				
2 unskilled operatives (generally)		24.88				
1 plant operator (skill rate 3)		16.19				
Total Gang Rate / Hour		<b>£ 61.53</b>				
<b>RESOURCES - PLANT</b>						
<b>Drainage</b>						
0.40 m <sup>3</sup> hydraulic excavator			35.24			
trench sheets, shores, props etc.			25.99			
2t dumper (30% of time)			2.62			
compaction / plate roller (30% of time)			0.82			
7.30 m <sup>3</sup> /min compressor			5.67			
small pump			1.30			
Total Rate / Hour		<b>£</b>	<b>71.63</b>			
<b>PREPARATION OF EXISTING SEWERS</b>						
<b>Cleaning</b>						
eggshape sewer 1300 mm high	-	-	-	-	m	<b>17.92</b>
<b>Removing intrusions</b>						
brickwork	-	-	-	-	m <sup>3</sup>	<b>91.07</b>
concrete	-	-	-	-	m <sup>3</sup>	<b>157.58</b>
reinforced concrete	-	-	-	-	m <sup>3</sup>	<b>200.28</b>
<b>Plugging laterals with concrete plug</b>						
bore not exceeding 300 mm	-	-	-	-	nr	<b>87.87</b>
bore 450 mm	-	-	-	-	nr	<b>135.63</b>
<b>Plugging laterals with brickwork plug</b>						
bore 750 mm	-	-	-	-	nr	<b>408.37</b>
<b>Local internal repairs to brickwork</b>						
area not exceeding 0.1 m <sup>2</sup>	-	-	-	-	nr	<b>18.10</b>
area 0.1 - 0.25 m <sup>2</sup>	-	-	-	-	nr	<b>47.23</b>
area 1m <sup>2</sup>	-	-	-	-	nr	<b>114.95</b>
area 10 m <sup>2</sup>	-	-	-	-	nr	<b>529.93</b>
<b>Grouting ends of redundant drains and sewers</b>						
100 mm diameter	0.03	1.85	2.13	5.73	nr	<b>9.71</b>
300 mm diameter	0.13	7.70	8.92	22.94	nr	<b>39.56</b>
450 mm diameter	0.26	16.02	18.67	50.06	nr	<b>84.74</b>
600 mm diameter	0.50	30.80	35.88	101.30	nr	<b>167.98</b>
1200 mm diameter	1.70	104.73	121.82	286.69	nr	<b>513.25</b>
<b>STABILIZATION OF EXISTING SEWERS</b>						
<b>Pointing, cement mortar (1:3)</b>						
faces of brickwork	-	-	-	-	m <sup>2</sup>	<b>38.62</b>
<b>RENOVATION OF EXISTING SEWERS</b>						
<b>Sliplining</b>						
GRP one piece unit; eggshape sewer 1300 mm high	-	-	-	-	m	<b>410.34</b>
<b>Renovation of existing sewers</b>						
sliplining	-	-	-	-	hr	<b>99.51</b>

**CLASS Y: SEWER AND WATER MAIN RENOVATION AND ANCILLARY WORKS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>LATERALS TO RENOVATED SEWERS</b>						
Jointing						
bore not exceeding 150 mm	-	-	-	-	nr	<b>63.59</b>
bore 150 - 300 mm	-	-	-	-	nr	<b>112.84</b>
bore 450 mm	-	-	-	-	nr	<b>157.98</b>
<b>EXISTING MANHOLES</b>						
Abandonment						
sealing redundant road gullies with grade C15 concrete	0.02	1.42	1.67	18.16	nr	<b>21.25</b>
sealing redundant chambers with grade C15 concrete						
ne 1.0 m deep to invert	0.09	5.54	6.47	73.11	nr	<b>85.13</b>
1.0 - 2.0 m deep to invert	0.21	12.94	15.06	118.03	nr	<b>146.03</b>
2.0 - 3.0 m deep to invert	0.55	33.88	39.38	196.39	nr	<b>269.65</b>
Alteration						
100 x 100 mm water stop tap boxes on 100 x 100 mm brick chambers						
raising the level by 150 mm or less	0.06	3.70	4.34	22.47	nr	<b>30.51</b>
lowering the level by 150 mm or less	0.04	2.46	2.87	12.92	nr	<b>18.25</b>
420 x 420 mm cover and frame on 420 x 420 mm in-situ concrete chamber						
raising the level by 150 mm or less	0.10	6.16	7.21	39.94	nr	<b>53.30</b>
lowering the level by 150 mm or less	0.06	3.70	4.34	26.01	nr	<b>34.04</b>
Raising the level of 700 x 700 mm cover and frame on 700 x 500 mm in-situ concrete chamber by 150 mm or less	0.17	10.47	12.20	57.86	nr	<b>80.54</b>
600 x 600 mm grade "A" heavy duty manhole cover and frame on 600 x 600 mm brick chamber						
raising the level by 150 mm or less	0.17	10.47	12.20	57.86	nr	<b>80.54</b>
raising the level by 150 - 300 mm	0.21	12.94	15.06	72.20	nr	<b>100.20</b>
lowering the level by 150 mm or less	0.10	6.16	7.21	36.36	nr	<b>49.73</b>
<b>INTERRUPTIONS</b>						
Preparation of existing sewers						
cleaning	-	-	-	-	hr	<b>421.34</b>
Stabilization of existing sewers						
pointing	-	-	-	-	hr	<b>85.41</b>

**CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>The user should refer to Part 6: Unit Costs - Ancillary Building Works for cost guidance on the matters listed in this section.</b>						
<b>RESOURCES - LABOUR</b>						
<b>Carpentry and joinery gang</b>						
1 foreman carpenter (craftsman)		22.32				
5 carpenters (craftsmen)		95.75				
1 unskilled operative (general)		12.44				
Total Gang Rate/Hour	£	<b>130.51</b>				
<b>Ironmongery gang</b>						
1 carpenter (craftsman)		19.15				
Total Gang Rate/Hour	£	<b>19.15</b>				
<b>Glazing gang</b>						
1 glazier (craftsman)		19.15				
Total Gang Rate/Hour	£	<b>19.15</b>				
<b>Finishings gang</b>						
2 plasterers / ceramic tilers (craftsmen)		38.30				
1 unskilled operative (general)		12.44				
Total Gang Rate/Hour	£	<b>50.74</b>				
<b>Vinyl tiling gang</b>						
1 tiler (craftsman)		19.15				
1 unskilled operative (general)		12.44				
Total Gang Rate/Hour	£	<b>31.59</b>				
<b>Plumbing gang</b>						
1 plumber (craftsman)		19.15				
1 unskilled operative (general)		12.44				
Total Gang Rate/Hour	£	<b>31.59</b>				
<b>CARPENTRY AND JOINERY</b>						
<b>Softwood; structural grade SC3; sawn; tanalised</b>						
Structural and carcassing timber; floors						
38 x 100	0.02	2.85	-	1.38	m	<b>4.23</b>
38 x 125	0.02	2.98	-	2.06	m	<b>5.04</b>
38 x 150	0.03	3.24	-	2.42	m	<b>5.65</b>
50 x 100	0.03	3.24	-	1.66	m	<b>4.90</b>
50 x 125	0.03	3.37	-	1.67	m	<b>5.04</b>
50 x 150	0.03	3.50	-	2.54	m	<b>6.04</b>
50 x 175	0.03	3.50	-	2.77	m	<b>6.27</b>
50 x 200	0.03	3.76	-	3.38	m	<b>7.14</b>
50 x 225	0.03	3.76	-	3.81	m	<b>7.56</b>
75 x 200	0.03	4.02	-	5.67	m	<b>9.69</b>
75 x 225	0.03	4.02	-	6.79	m	<b>10.80</b>
100 x 200	0.04	5.44	-	8.03	m	<b>13.47</b>
100 x 225	0.05	5.83	-	9.67	m	<b>15.50</b>
Structural and carcassing timber; walls and partitions						
38 x 100	0.03	3.50	-	1.38	m	<b>4.88</b>
38 x 125	0.03	3.89	-	2.06	m	<b>5.95</b>
38 x 150	0.03	4.15	-	2.42	m	<b>6.56</b>
50 x 100	0.03	4.28	-	1.66	m	<b>5.93</b>
50 x 125	0.04	4.54	-	1.67	m	<b>6.20</b>

## CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CARPENTRY AND JOINERY - cont'd</b>						
<b>Softwood; structural grade SC3; sawn; tanalised - cont'd</b>						
Structural and carcassing timber; flat roofs						
38 x 100	0.03	3.24	-	1.38	m	4.62
38 x 125	0.02	2.98	-	2.06	m	5.04
38 x 150	0.03	3.24	-	2.42	m	5.65
50 x 100	0.03	3.24	-	1.66	m	4.90
50 x 125	0.03	3.37	-	1.67	m	5.04
50 x 150	0.03	3.50	-	2.54	m	6.04
50 x 175	0.03	3.50	-	2.77	m	6.27
50 x 200	0.03	3.76	-	3.38	m	7.14
50 x 225	0.03	3.76	-	3.81	m	7.56
75 x 200	0.03	4.02	-	5.67	m	9.69
75 x 225	0.03	4.02	-	6.79	m	10.80
100 x 200	0.04	5.44	-	8.03	m	13.47
100 x 225	0.05	5.83	-	9.67	m	15.50
Structural and carcassing timber; pitched roofs						
38 x 100	0.03	3.50	-	1.38	m	4.88
38 x 125	0.02	2.98	-	2.06	m	5.04
38 x 150	0.03	3.50	-	2.42	m	5.91
50 x 100	0.03	4.28	-	1.66	m	5.93
50 x 125	0.03	3.37	-	1.67	m	5.04
50 x 150	0.04	4.92	-	2.54	m	7.47
50 x 175	0.04	4.92	-	2.77	m	7.70
50 x 200	0.04	4.92	-	3.38	m	8.31
50 x 225	0.04	4.92	-	3.81	m	8.73
75 x 125	0.05	5.83	-	3.77	m	9.60
75 x 150	0.05	5.83	-	4.14	m	9.97
Structural and carcassing timber; plates and bearers						
38 x 100	0.01	1.43	-	1.38	m	2.81
50 x 75	0.01	1.43	-	1.28	m	2.70
50 x 100	0.01	1.68	-	1.66	m	3.34
75 x 100	0.01	1.68	-	2.82	m	4.50
75 x 125	0.02	1.94	-	3.77	m	5.72
75 x 150	0.02	1.94	-	4.14	m	6.08
Structural and carcassing timber; struts						
38 x 100	0.06	7.13	-	1.38	m	8.51
50 x 75	0.06	7.13	-	1.28	m	8.40
50 x 100	0.06	7.13	-	1.66	m	8.78
Structural and carcassing timber; cleats						
225 mm x 100 mm x 75 mm	0.04	4.67	-	0.65	nr	5.31
Structural and carcassing timber; trussed rafters and roof trusses						
<b>Softwood; joinery quality; wrought; tanalised</b>						
Strip boarding; walls						
18 mm nominal thick	0.14	18.14	-	12.46	m <sup>2</sup>	30.60
18 mm nominal thick; not exceeding 100 mm wide	0.05	5.83	-	1.25	m <sup>2</sup>	7.08
18 mm nominal thick; 100 - 200 mm wide	0.05	6.48	-	2.49	m <sup>2</sup>	8.97
18 mm nominal thick; 200 - 300 mm wide	0.06	7.78	-	3.74	m <sup>2</sup>	11.51
<b>Softwood; joinery quality; wrought</b>						
Strip boarding; walls						
18 mm nominal thick	0.14	18.14	-	12.46	m <sup>2</sup>	30.60
18 mm nominal thick; not exceeding 100 mm wide	0.05	5.83	-	1.25	m <sup>2</sup>	7.08
18 mm nominal thick; 100 - 200 mm wide	0.05	6.48	-	2.49	m <sup>2</sup>	8.97
18 mm nominal thick; 200 - 300 mm wide	0.06	7.78	-	3.74	m <sup>2</sup>	11.51

**CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Miscellaneous joinery; skirtings						
19 x 100	0.02	2.59	-	2.56	m	<b>5.15</b>
25 x 150	0.03	3.24	-	3.94	m	<b>7.18</b>
Miscellaneous joinery; architraves						
12 x 50	0.02	3.11	-	1.84	m	<b>4.95</b>
19 x 63	0.02	3.11	-	2.10	m	<b>5.21</b>
Miscellaneous joinery; trims						
12 x 25	0.02	3.11	-	1.44	m	<b>4.55</b>
12 x 50	0.02	3.11	-	1.84	m	<b>4.95</b>
16 x 38	0.02	3.11	-	1.42	m	<b>4.53</b>
19 x 19	0.02	3.11	-	1.35	m	<b>4.46</b>
<b>Plywood; marine quality</b>						
Sheet boarding; walls						
18 mm nominal thick	0.14	18.14	-	15.67	m <sup>2</sup>	<b>33.82</b>
<b>Plywood; external quality</b>						
Sheet boarding; floors						
18 mm nominal thick	0.11	14.25	-	12.46	m <sup>2</sup>	<b>26.72</b>
18 mm nominal thick; not exceeding 100 mm wide	0.04	4.54	-	1.25	m <sup>2</sup>	<b>5.78</b>
18 mm nominal thick; 100 - 200 mm wide	0.04	4.92	-	2.49	m <sup>2</sup>	<b>7.42</b>
18 mm nominal thick; 200 - 300 mm wide	0.05	5.83	-	3.74	m <sup>2</sup>	<b>9.57</b>
Sheet boarding; walls						
18 mm nominal thick	0.14	18.14	-	12.46	m <sup>2</sup>	<b>30.60</b>
18 mm nominal thick; not exceeding 100 mm wide	0.05	5.83	-	1.25	m <sup>2</sup>	<b>7.08</b>
18 mm nominal thick; 100 - 200 mm wide	0.05	6.48	-	2.49	m <sup>2</sup>	<b>8.97</b>
18 mm nominal thick; 200 - 300 mm wide	0.06	7.78	-	3.74	m <sup>2</sup>	<b>11.51</b>
Sheet boarding; soffits						
18 mm nominal thick	0.16	20.09	-	12.46	m <sup>2</sup>	<b>32.55</b>
18 mm nominal thick; not exceeding 100 mm wide	0.05	6.48	-	1.25	m <sup>2</sup>	<b>7.73</b>
18 mm nominal thick; 100 - 200 mm wide	0.06	7.13	-	2.49	m <sup>2</sup>	<b>9.62</b>
18 mm nominal thick; 200 - 300 mm wide	0.07	8.55	-	3.74	m <sup>2</sup>	<b>12.29</b>
<b>INSULATION</b>						
<b>Vapour barrier; Sisalkraft 728 building paper (Class A1F); 150 mm laps; fixed to softwood</b>						
Sheets						
floors	0.01	1.68	-	1.76	m <sup>2</sup>	<b>3.44</b>
sloping upper surfaces	0.01	1.81	-	1.76	m <sup>2</sup>	<b>3.57</b>
walls	0.02	2.20	-	1.76	m <sup>2</sup>	<b>3.96</b>
soffits	0.02	2.59	-	1.76	m <sup>2</sup>	<b>4.35</b>
<b>Insulation quilt; Isover glass fibre; laid loose between members at 600 mm centres</b>						
Quilts; floors						
60 mm thick	0.03	3.63	-	2.80	m <sup>2</sup>	<b>6.43</b>
80 mm thick	0.03	3.63	-	3.66	m <sup>2</sup>	<b>7.29</b>
100 mm thick	0.03	3.63	-	4.26	m <sup>2</sup>	<b>7.89</b>
150 mm thick	0.03	3.63	-	6.66	m <sup>2</sup>	<b>10.29</b>
Quilts; sloping upper surfaces						
60 mm thick	0.03	4.02	-	2.80	m <sup>2</sup>	<b>6.82</b>
80 mm thick	0.03	4.41	-	3.66	m <sup>2</sup>	<b>8.07</b>
100 mm thick	0.04	4.67	-	4.26	m <sup>2</sup>	<b>8.93</b>
150 mm thick	0.04	5.18	-	6.66	m <sup>2</sup>	<b>11.85</b>

## CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>INSULATION - cont'd</b>						
<b>Insulation quilt; Isover glass fibre; laid between members at 600 mm centres; fixing with staples</b>						
Quilts; walls						
60 mm thick	0.04	4.54	-	2.98	m <sup>2</sup>	7.51
80 mm thick	0.04	4.92	-	3.84	m <sup>2</sup>	8.76
100 mm thick	0.04	5.44	-	4.44	m <sup>2</sup>	9.88
150 mm thick	0.05	6.48	-	6.84	m <sup>2</sup>	13.32
Quilts; soffits						
60 mm thick	0.04	5.44	-	2.98	m <sup>2</sup>	8.42
80 mm thick	0.05	6.09	-	3.84	m <sup>2</sup>	9.93
100 mm thick	0.05	6.48	-	4.44	m <sup>2</sup>	10.92
150 mm thick	0.05	7.00	-	6.84	m <sup>2</sup>	13.84
<b>Insulation board; Jablite or similar expanded polystyrene standard grade; fixing with adhesive</b>						
Boards; floors						
25 mm thick	0.06	7.26	-	2.89	m <sup>2</sup>	10.14
40 mm thick	0.06	7.26	-	3.56	m <sup>2</sup>	10.82
50 mm thick	0.06	7.26	-	4.07	m <sup>2</sup>	11.33
Boards; sloping upper surfaces						
25 mm thick	0.07	8.42	-	2.89	m <sup>2</sup>	11.31
40 mm thick	0.07	8.42	-	3.56	m <sup>2</sup>	11.98
50 mm thick	0.07	8.42	-	4.07	m <sup>2</sup>	12.50
Boards; walls						
25 mm thick	0.08	9.72	-	2.89	m <sup>2</sup>	12.61
40 mm thick	0.08	9.72	-	3.56	m <sup>2</sup>	13.28
50 mm thick	0.08	9.72	-	4.07	m <sup>2</sup>	13.79
Boards; soffits						
25 mm thick	0.08	10.76	-	2.89	m <sup>2</sup>	13.64
40 mm thick	0.08	10.76	-	3.56	m <sup>2</sup>	14.32
50 mm thick	0.08	10.76	-	4.07	m <sup>2</sup>	14.83
<b>WINDOWS, DOORS AND GLAZING</b>						
<b>Timber windows; treated planed softwood; Jeld-Wen; plugged and screwed to masonry</b>						
High performance top hung reversible windows; weather stripping; opening panes hung on rustproof hinges with aluminized lacquered espagnolette bolts; low E 24mm double glazing						
630 mm x 900 mm; ref LEC109AR	0.16	21.25	-	350.88	nr	372.13
630 mm x 1200 mm; ref LEC112AR	0.21	27.08	-	389.63	nr	416.71
1200 mm x 1050 mm; ref LEC210AR	0.25	31.75	-	488.08	nr	519.83
1770 mm x 1050 mm; ref LEC310AER	0.31	40.04	-	833.66	nr	873.71
<b>Metal windows; steel fixed light; factory finished polyester powder coating; Crittal Homelight range; fixing lugs plugged and screwed to masonry</b>						
One piece composites; glazing 4 mm OQ glass; easy-glaze beads and weather stripping						
628 mm x 923 mm; ref ZNC5	0.22	28.25	-	72.58	nr	100.83
1237 mm x 923 mm; ref ZNC13	0.32	41.21	-	113.35	nr	154.56
1237 mm x 1218 mm; ref ZND13	0.32	41.21	-	141.25	nr	182.46
1846 mm x 1513 mm; ref ZNDV14	0.32	41.21	-	218.02	nr	259.23

## CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Plastics windows; PVC-U, reinforced where appropriate with aluminium alloy; standard ironmongery; fixing lugs plugged and screwed to masonry</b>						
Casement / fixed light; glazing 4 mm OQ glass; e.p.d. m. glazing gaskets and weather seals						
600 mm x 1200 mm; single glazed	0.32	41.21	-	125.52	nr	<b>166.72</b>
600 mm x 1200 mm; double glazed	0.32	41.21	-	129.84	nr	<b>171.05</b>
1200 mm x 1200 mm; single glazed	0.36	47.17	-	190.44	nr	<b>237.61</b>
1200 mm x 1200 mm; double glazed	0.36	47.17	-	199.09	nr	<b>246.26</b>
1800 mm x 1200 mm; single glazed	0.41	53.39	-	281.33	nr	<b>334.72</b>
1800 mm x 1200 mm; double glazed	0.41	53.39	-	302.97	nr	<b>356.36</b>
<b>Timber doors; treated planed softwood</b>						
Matchboarded, ledged and braced doors; 25 mm thick ledges and braces; 19 mm thick tongued, grooved and v-jointed one side vertical boarding						
762 mm x 1981 mm	0.27	35.38	-	62.33	nr	<b>97.70</b>
838 mm x 1981 mm	0.27	35.38	-	62.33	nr	<b>97.70</b>
Panelled doors; one open panel for glass; including beads						
762 x 1981 x 44 mm	0.32	41.47	-	105.75	nr	<b>147.21</b>
Panelled doors; two open panels for glass; including beads						
762 x 1981 x 44 mm	0.32	41.47	-	137.41	nr	<b>178.88</b>
838 x 1981 x 44 mm	0.32	41.47	-	137.41	nr	<b>178.88</b>
<b>Timber doors; standard flush pattern</b>						
Flush door; internal quality; skeleton or cellular core; hardboard faced both sides; lipped on two long edges; primed						
626 x 2040 x 40 mm	0.22	28.90	-	22.72	nr	<b>51.62</b>
726 x 2040 x 40 mm	0.22	28.90	-	22.72	nr	<b>51.62</b>
826 x 2040 x 40 mm	0.22	28.90	-	22.29	nr	<b>51.19</b>
Flush door; internal quality; skeleton or cellular core; chipboard faced both sides; lipped all edges; primed						
626 x 2040 x 40 mm	0.22	28.90	-	29.45	nr	<b>58.35</b>
726 x 2040 x 40 mm	0.22	28.90	-	29.45	nr	<b>58.35</b>
826 x 2040 x 40 mm	0.22	28.90	-	29.45	nr	<b>58.35</b>
Flush door; internal quality; skeleton or cellular core; Sapele veneered both sides; lipped all edges; primed						
626 x 2040 x 40 mm	0.34	44.06	-	45.23	nr	<b>89.29</b>
726 x 2040 x 40 mm	0.34	44.06	-	45.23	nr	<b>89.29</b>
826 x 2040 x 40 mm	0.34	44.06	-	45.23	nr	<b>89.29</b>
Flush door; half-hour fire check (30/20); solid core; chipboard faced both sides; lipped all edges; primed						
626 x 2040 x 44 mm	0.32	41.47	-	54.45	nr	<b>95.92</b>
726 x 2040 x 44 mm	0.32	41.47	-	54.45	nr	<b>95.92</b>
826 x 2040 x 44 mm	0.32	41.47	-	54.45	nr	<b>95.92</b>
<b>Timber frames or lining sets; treated planed softwood</b>						
Internal door frame or lining; 30 x 107 mm lining with 12 x 38 mm door stop						
for 726 x 2040 mm door	0.14	18.79	-	39.54	nr	<b>58.33</b>
for 826 x 2040 mm door	0.14	18.79	-	39.54	nr	<b>58.33</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>WINDOWS, DOORS AND GLAZING - cont'd</b>						
<b>Timber frames or lining sets; treated planed softwood - cont'd</b>						
Internal door frame or lining; 30 x 133 mm lining with 12 x 38 mm door stop						
for 726 x 2040 mm door	0.14	18.79	-	44.26	nr	<b>63.05</b>
for 826 x 2040 mm door	0.14	18.79	-	44.26	nr	<b>63.05</b>
<b>Ironmongery</b>						
Hinges						
100 mm; light steel	0.17	3.36	-	0.87	nr	<b>4.23</b>
S/D rising butts; R/L hand; 102 x 67 mm; BRS	0.17	3.36	-	24.27	nr	<b>27.62</b>
Door closers						
light duty surface fixed door closer; L/R hand; SIL	1.30	24.96	-	99.66	nr	<b>124.61</b>
door selector; face fixing; SAA	0.80	15.36	-	85.29	nr	<b>100.65</b>
floor spring; single and double action; ZP	3.33	63.92	-	209.43	nr	<b>273.36</b>
Locks						
mortice dead lock; 63 x 108 mm; SSS	1.00	19.20	-	13.80	nr	<b>32.99</b>
rim lock; 140 x 73 mm; GYE	0.56	10.75	-	10.49	nr	<b>21.24</b>
upright mortice lock; 103 x 82 mm; 3 lever	1.11	21.31	-	14.23	nr	<b>35.54</b>
Bolts						
flush; 152 x 25 mm; SCP	0.80	15.36	-	18.71	nr	<b>34.07</b>
indicating; 76 x 41 mm; SAA	0.89	17.09	-	13.68	nr	<b>30.77</b>
panic; single; SVE	3.33	63.92	-	86.33	nr	<b>150.26</b>
panic; double; SVE	4.67	89.65	-	118.03	nr	<b>207.68</b>
necked tower; 203 mm; BJ	0.40	7.68	-	5.11	nr	<b>12.79</b>
Handles						
pull; 225 mm; back fixing; PAA	0.23	4.42	-	8.28	nr	<b>12.70</b>
pull; 225 mm; face fixing with cover rose; PAA	0.44	8.45	-	44.51	nr	<b>52.96</b>
lever; PAA	0.44	8.45	-	31.02	nr	<b>39.46</b>
Plates						
finger plate; 300 x 75 x 3 mm; SAA	0.23	4.42	-	5.42	nr	<b>9.83</b>
kicking plate; 1000 x 150 x 3 mm; PAA	0.44	8.45	-	15.75	nr	<b>24.20</b>
letter plate; 330 x 76 mm; aluminium finish	1.77	33.98	-	11.28	nr	<b>45.26</b>
Brackets						
head bracket; open; side fixing; bolting to masonry	0.50	9.60	-	9.33	nr	<b>18.93</b>
head bracket; open; soffit fixing; bolting to masonry	0.50	9.60	-	4.59	nr	<b>14.19</b>
Sundries						
rubber door stop; SAA	0.11	2.11	-	1.57	nr	<b>3.69</b>
<b>Glazing; standard plain glass to BS 952, clear float; glazing with putty or bradded beads</b>						
Glass						
3 mm thick	0.95	18.24	-	18.56	m <sup>2</sup>	<b>36.80</b>
4 mm thick	0.95	18.24	-	19.71	m <sup>2</sup>	<b>37.94</b>
5 mm thick	0.95	18.24	-	23.97	m <sup>2</sup>	<b>42.21</b>
6 mm thick	0.95	18.24	-	26.30	m <sup>2</sup>	<b>44.53</b>
Hermetically sealed units, factory made						
two panes 4 mm thick, 6 mm air space	0.95	18.24	-	95.56	m <sup>2</sup>	<b>113.80</b>
<b>Glazing; standard plain glass to BS 952, rough cast; glazing with putty or bradded beads</b>						
Glass						
6 mm thick	0.95	18.24	-	29.75	m <sup>2</sup>	<b>47.99</b>
<b>Glazing; standard plain glass to BS 952, Georgian wired cast; glazing with putty or bradded beads</b>						
Glass						
7 mm thick	0.95	18.24	-	37.92	m <sup>2</sup>	<b>56.15</b>



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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Glazing; standard plain glass to BS 952, Georgian wired polished; glazing with putty or bradded beads</b> Glass 6 mm thick	0.95	18.24	-	41.36	m <sup>2</sup>	<b>59.60</b>
<b>Glazing; special glass to BS 952, toughened clear float; glazing with putty or bradded beads</b> Glass 4 mm thick	0.95	18.24	-	22.29	m <sup>2</sup>	<b>40.53</b>
5 mm thick	0.95	18.24	-	29.57	m <sup>2</sup>	<b>47.80</b>
6 mm thick	0.95	18.24	-	32.54	m <sup>2</sup>	<b>50.78</b>
10 mm thick	1.05	20.16	-	54.03	m <sup>2</sup>	<b>74.19</b>
<b>Glazing; special glass to BS 952, clear laminated safety; glazing with putty or bradded beads</b> Glass 4.4 mm thick	0.95	18.24	-	34.14	m <sup>2</sup>	<b>52.37</b>
5.4 mm thick	0.95	18.24	-	40.76	m <sup>2</sup>	<b>59.00</b>
6.4 mm thick	0.95	18.24	-	47.41	m <sup>2</sup>	<b>65.64</b>
<b>Glazing; standard plain glass to BS 952, clear float; glazing with putty or bradded beads</b> Glass 4.4 mm thick	0.95	18.24	-	34.14	m <sup>2</sup>	<b>52.37</b>
5.4 mm thick	0.95	18.24	-	40.76	m <sup>2</sup>	<b>59.00</b>
6.4 mm thick	0.95	18.24	-	47.41	m <sup>2</sup>	<b>65.64</b>
<b>Patent glazing; aluminium alloy bars 2.55 m long at 622 mm centres; fixed to supports</b> Patent glazing roofs					m <sup>2</sup>	<b>340.00</b>
<b>SURFACE FINISHES, LININGS AND PARTITIONS</b>						
<b>In situ finishes; cement and sand (1:3); steel trowelled</b>						
Floors						
30 mm thick	0.12	6.10	-	2.41	m <sup>2</sup>	<b>8.51</b>
40 mm thick	0.12	6.10	-	3.21	m <sup>2</sup>	<b>9.31</b>
50 mm thick	0.14	7.12	-	4.02	m <sup>2</sup>	<b>11.14</b>
60 mm thick	0.15	7.63	-	4.82	m <sup>2</sup>	<b>12.45</b>
70 mm thick	0.16	8.14	-	5.62	m <sup>2</sup>	<b>13.76</b>
Sloping upper surfaces						
30 mm thick	0.16	8.14	-	2.41	m <sup>2</sup>	<b>10.55</b>
40 mm thick	0.16	8.14	-	3.21	m <sup>2</sup>	<b>11.35</b>
50 mm thick	0.18	9.15	-	4.02	m <sup>2</sup>	<b>13.17</b>
60 mm thick	0.19	9.66	-	4.82	m <sup>2</sup>	<b>14.48</b>
70 mm thick	0.20	10.17	-	5.62	m <sup>2</sup>	<b>15.79</b>
Walls						
12 mm thick	0.31	15.76	-	0.96	m <sup>2</sup>	<b>16.73</b>
15 mm thick	0.34	17.29	-	1.18	m <sup>2</sup>	<b>18.46</b>
20 mm thick	0.38	19.32	-	1.61	m <sup>2</sup>	<b>20.93</b>
Surfaces of width not exceeding 300 mm						
12 mm thick	0.15	7.63	-	0.96	m	<b>8.59</b>
15 mm thick	0.13	6.61	-	1.21	m	<b>7.82</b>
20 mm thick	0.12	6.10	-	1.61	m	<b>7.71</b>
30 mm thick	0.08	4.07	-	2.41	m	<b>6.48</b>
40 mm thick	0.08	4.07	-	3.21	m	<b>7.28</b>
50 mm thick	0.09	4.58	-	4.02	m	<b>8.60</b>
60 mm thick	0.09	4.58	-	4.82	m	<b>9.39</b>
70 mm thick	0.10	5.08	-	5.62	m	<b>10.71</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SURFACE FINISHES, LININGS AND PARTITIONS - cont'd</b>						
<b>In situ finishes; cement and sand (1:3); steel trowelled - cont'd</b>						
Surfaces of width 300 mm - 1 m						
12 mm thick	0.23	11.70	-	0.96	m	<b>12.66</b>
15 mm thick	0.26	13.22	-	1.21	m	<b>14.43</b>
20 mm thick	0.26	13.22	-	1.61	m	<b>14.83</b>
30 mm thick	0.12	6.10	-	2.41	m	<b>8.51</b>
40 mm thick	0.12	6.10	-	3.21	m	<b>9.31</b>
50 mm thick	0.13	6.61	-	4.02	m	<b>10.63</b>
60 mm thick	0.14	7.12	-	4.82	m	<b>11.94</b>
70 mm thick	0.15	7.63	-	5.62	m	<b>13.25</b>
<b>In situ finishes; lightweight plaster; Thistle; steel trowelled</b>						
Walls						
12 mm thick	0.22	11.19	-	1.09	m <sup>2</sup>	<b>12.27</b>
Surfaces of width not exceeding 300 mm						
12 mm thick	0.22	11.19	-	0.33	m	<b>11.51</b>
Surfaces of width 300 mm - 1 m						
12 mm thick	0.16	8.14	-	1.09	m	<b>9.22</b>
<b>Beds and backings; cement and sand (1:3)</b>						
Floors						
50 mm thick	0.14	7.12	-	4.02	m <sup>2</sup>	<b>11.14</b>
70 mm thick	0.16	8.14	-	5.62	m <sup>2</sup>	<b>13.76</b>
Sloping upper surfaces						
30 mm thick	0.16	8.14	-	2.41	m <sup>2</sup>	<b>10.55</b>
40 mm thick	0.16	8.14	-	3.21	m <sup>2</sup>	<b>11.35</b>
Walls						
12 mm thick	0.31	15.76	-	0.96	m <sup>2</sup>	<b>16.73</b>
20 mm thick	0.38	19.32	-	1.61	m <sup>2</sup>	<b>20.93</b>
Surfaces of width not exceeding 300 mm						
12 mm thick	0.15	7.63	-	0.96	m	<b>8.59</b>
20 mm thick	0.12	6.10	-	1.61	m	<b>7.71</b>
30 mm thick	0.08	4.07	-	2.41	m	<b>6.48</b>
50 mm thick	0.09	4.58	-	4.02	m	<b>8.60</b>
70 mm thick	0.10	5.08	-	5.62	m	<b>10.71</b>
Surfaces of width 300 mm - 1 m						
12 mm thick	0.23	11.70	-	0.96	m	<b>12.66</b>
20 mm thick	0.26	13.22	-	1.61	m	<b>14.83</b>
30 mm thick	0.12	6.10	-	2.41	m	<b>8.51</b>
50 mm thick	0.13	6.61	-	4.02	m	<b>10.63</b>
70 mm thick	0.15	7.63	-	5.62	m	<b>13.25</b>
<b>Tiles; red clay; bedding 10 mm thick and jointing in cement mortar (1:3); grouting with cement mortar (1:1)</b>						
Floors						
150 x 150 x 12.5 mm	0.32	16.27	-	23.89	m <sup>2</sup>	<b>40.16</b>
200 x 200 x 19 mm	0.32	16.27	-	33.22	m <sup>2</sup>	<b>49.49</b>
Surfaces of width not exceeding 300 mm						
150 x 150 x 12.5 mm	0.16	8.14	-	7.17	m	<b>15.30</b>
200 x 200 x 19 mm	0.13	6.61	-	9.97	m	<b>16.58</b>
Surfaces of width 300 mm - 1 m						
150 x 150 x 12.5 mm	0.24	12.20	-	23.89	m	<b>36.09</b>
200 x 200 x 19 mm	0.24	12.20	-	33.24	m	<b>45.44</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Tiles; brown clay; bedding 10 mm thick and jointing in cement mortar (1:3); grouting with cement mortar (1:1)</b>						
Floors						
150 x 150 x 12.5 mm	0.32	16.27	-	27.90	m <sup>2</sup>	<b>44.17</b>
200 x 200 x 19 mm	0.32	16.27	-	38.93	m <sup>2</sup>	<b>55.20</b>
Surfaces of width not exceeding 300 mm						
150 x 150 x 12.5 mm	0.16	8.14	-	8.37	m	<b>16.51</b>
200 x 200 x 19 mm	0.13	6.61	-	11.68	m	<b>18.29</b>
Surfaces of width 300 mm - 1 m						
150 x 150 x 12.5 mm	0.24	12.20	-	27.90	m	<b>40.10</b>
200 x 200 x 19 mm	0.24	12.20	-	38.95	m	<b>51.15</b>
<b>Tiles; glazed ceramic wall tiles; BS 6431; white; fixing with adhesive; pointing joints with grout</b>						
Sloping upper surfaces						
152 x 152 x 5.5 mm thick	0.28	14.24	-	21.72	m <sup>2</sup>	<b>35.96</b>
200 x 100 x 6.5 mm thick	0.28	14.24	-	21.72	m <sup>2</sup>	<b>35.96</b>
Walls						
152 x 152 x 5.5 mm thick	0.24	12.20	-	21.72	m <sup>2</sup>	<b>33.92</b>
200 x 100 x 6.5 mm thick	0.24	12.20	-	21.72	m <sup>2</sup>	<b>33.92</b>
Soffit						
152 x 152 x 5.5 mm thick	0.28	14.24	-	21.72	m <sup>2</sup>	<b>35.96</b>
200 x 100 x 6.5 mm thick	0.28	14.24	-	21.72	m <sup>2</sup>	<b>35.96</b>
Surfaces of width not exceeding 300 mm						
152 x 152 x 5.5 mm thick	0.12	6.10	-	6.52	m	<b>12.62</b>
200 x 100 x 6.5 mm thick	0.12	6.10	-	6.52	m	<b>12.62</b>
Surfaces of width 300 mm - 1 m						
152 x 152 x 5.5 mm thick	0.18	9.15	-	21.72	m	<b>30.87</b>
200 x 100 x 6.5 mm thick	0.18	9.15	-	21.72	m	<b>30.87</b>
<b>Tiles; slate; Riven Welsh; bedding 10 mm thick and jointing in cement mortar (1:3); grouting with cement mortar (1:1)</b>						
Floors						
250 x 250 x 12 - 15 mm	0.24	12.20	-	50.61	m <sup>2</sup>	<b>62.81</b>
Surfaces of width not exceeding 300 mm						
250 x 250 x 12 - 15 mm	0.12	6.10	-	15.18	m	<b>21.29</b>
Surfaces of width 300 mm - 1 m						
250 x 250 x 12 - 15 mm	0.18	9.15	-	50.61	m	<b>59.76</b>
<b>Tiles; vinyl; Accoflex; fixing with adhesive</b>						
Floors						
300 x 300 x 2 mm	0.17	5.29	-	8.06	m <sup>2</sup>	<b>13.35</b>
300 x 300 x 2.5 mm	0.17	5.29	-	7.81	m <sup>2</sup>	<b>13.10</b>
Surfaces of width not exceeding 300 mm						
300 x 300 x 2 mm	0.08	2.63	-	2.42	m	<b>5.05</b>
300 x 300 x 2.5 mm	0.08	2.63	-	2.35	m	<b>4.98</b>
Surfaces of width 300 mm - 1 m						
300 x 300 x 2 mm	0.13	3.96	-	8.06	m	<b>12.02</b>
300 x 300 x 2.5 mm	0.13	3.96	-	7.81	m	<b>11.77</b>
<b>Tiles; vinyl; Marley HD; fixing with adhesive</b>						
Floors						
300 x 300 x 2 mm	0.23	7.37	-	11.26	m <sup>2</sup>	<b>18.63</b>
Surfaces of width not exceeding 300 mm						
300 x 300 x 2 mm	0.12	3.70	-	3.38	m	<b>7.08</b>
Surfaces of width 300 mm - 1 m						
300 x 300 x 2 mm	0.17	5.54	-	11.26	m	<b>16.80</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SURFACE FINISHES, LININGS AND PARTITIONS - cont'd</b>						
<b>Tiles; rubber studded; Altro Mondopave; type MRB; black; fixing with adhesive</b>						
Floors						
500 x 500 x 2.5 mm	0.40	12.66	-	31.25	m <sup>2</sup>	<b>43.91</b>
500 x 500 x 4.0 mm	0.40	12.66	-	29.93	m <sup>2</sup>	<b>42.59</b>
Surfaces of width not exceeding 300 mm						
500 x 500 x 2.5 mm	0.20	6.33	-	9.36	m	<b>15.69</b>
500 x 500 x 4.0 mm	0.20	6.33	-	8.98	m	<b>15.31</b>
Surfaces of width 300 mm - 1 m						
500 x 500 x 2.5 mm	0.30	9.50	-	31.25	m	<b>40.75</b>
500 x 500 x 4.0 mm	0.30	9.50	-	29.93	m	<b>39.42</b>
<b>Tiles; rubber studded; Altro Mondopave; type MRB; colour; fixing with adhesive</b>						
Floors						
500 x 500 x 2.5 mm	0.40	12.66	-	33.71	m <sup>2</sup>	<b>46.37</b>
500 x 500 x 4.0 mm	0.40	12.66	-	33.39	m <sup>2</sup>	<b>46.06</b>
Surfaces of width not exceeding 300 mm						
500 x 500 x 2.5 mm	0.20	6.33	-	10.10	m	<b>16.43</b>
500 x 500 x 4.0 mm	0.20	6.33	-	10.02	m	<b>16.35</b>
Surfaces of width 300 mm - 1 m						
500 x 500 x 2.5 mm	0.30	9.50	-	33.71	m	<b>43.20</b>
500 x 500 x 4.0 mm	0.30	9.50	-	33.39	m	<b>42.89</b>
<b>Tiles; linoleum; Forbo Nairn; Marmoleum Dual; level; fixing with adhesive</b>						
Floors						
2.50 mm thick; marbled	0.27	8.45	-	15.93	m <sup>2</sup>	<b>24.38</b>
Surfaces of width not exceeding 300 mm						
2.50 mm thick; marbled	0.13	4.21	-	4.78	m	<b>8.99</b>
Surfaces of width 300 mm - 1 m						
2.50 mm thick; marbled	0.20	6.33	-	1.83	m	<b>8.16</b>
<b>Flexible sheer; linoleum; Forbo Nairn; Marmoleum Real; level; fixing with adhesive</b>						
Floors						
2.00 mm thick; marbled	0.33	10.55	-	11.91	m <sup>2</sup>	<b>22.46</b>
2.50 mm thick; marbled	0.33	10.55	-	13.11	m <sup>2</sup>	<b>23.66</b>
3.20 mm thick; marbled	0.33	10.55	-	15.29	m <sup>2</sup>	<b>25.84</b>
4.00 mm thick; marbled	0.33	10.55	-	19.02	m <sup>2</sup>	<b>29.56</b>
Surfaces of width not exceeding 300 mm						
2.00 mm thick; marbled	0.17	5.29	-	3.57	m	<b>8.86</b>
2.50 mm thick; marbled	0.17	5.29	-	3.93	m	<b>9.22</b>
3.20 mm thick; marbled	0.17	5.29	-	4.59	m	<b>9.87</b>
4.00 mm thick; marbled	0.17	5.29	-	5.57	m	<b>10.85</b>
Surfaces of width 300 mm - 1m						
2.00 mm thick; marbled	0.25	7.91	-	11.91	m	<b>19.82</b>
2.50 mm thick; marbled	0.25	7.91	-	13.11	m	<b>21.02</b>
3.20 mm thick; marbled	0.25	7.91	-	15.29	m	<b>23.21</b>
4.00 mm thick; marbled	0.25	7.91	-	19.02	m	<b>26.93</b>
<b>Flexible sheet; vinyl; slip resistant; Forbo Nairn; Surestep PUR; fixing with adhesive</b>						
Floors						
2.00 mm thick	0.33	10.54	-	18.76	m <sup>2</sup>	<b>29.30</b>
Surfaces of width not exceeding 300 mm						

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
2.00 mm thick Surfaces of width 300 mm - 1 m	0.17	5.29	-	5.63	m	<b>10.91</b>
2.00 mm thick	0.25	7.91	-	18.76	m	<b>26.68</b>
<b>Flexible sheet; vinyl; Marley HD; fixing with adhesive</b>						
Floors						
2.00 mm thick	0.30	9.50	-	12.93	m <sup>2</sup>	<b>22.43</b>
2.50 mm thick	0.33	10.55	-	12.59	m <sup>2</sup>	<b>23.14</b>
Surfaces of width not exceeding 300 mm						
2.00 mm thick	0.15	4.75	-	3.88	m	<b>8.63</b>
2.50 mm thick	0.17	5.29	-	3.78	m	<b>9.06</b>
Surfaces of width 300 mm - 1 m						
2.00 mm thick	0.23	7.12	-	12.93	m	<b>20.05</b>
2.50 mm thick	0.25	7.91	-	12.59	m	<b>20.50</b>
<b>Flexible sheet; vinyl; Armstrong Contract Interior; fixing with adhesive</b>						
Floors						
2.00 mm thick	0.33	10.55	-	14.29	m <sup>2</sup>	<b>24.84</b>
Surfaces of width not exceeding 300 mm						
2.00 mm thick	0.17	5.29	-	4.29	m	<b>9.58</b>
Surfaces of width 300 mm - 1 m						
2.00 mm thick	0.25	7.91	-	14.29	m	<b>22.20</b>
<b>Flexible sheet; carpet; Armstrong Strong; fixing with adhesive</b>						
Floors						
5.00 mm thick	0.17	5.29	-	44.51	m <sup>2</sup>	<b>49.79</b>
Surfaces of width not exceeding 300 mm						
5.00 mm thick	0.08	2.63	-	13.35	m	<b>15.98</b>
Surfaces of width 300 mm - 1 m						
5.00 mm thick	0.13	3.96	-	44.51	m	<b>48.46</b>
<b>Suspended ceilings; mineral fibre tiles in exposed grid; suspension system and wire hangers to structural soffit</b>						
Suspended ceiling						
150 - 500 mm depth of suspension	-	-	-	-	m <sup>2</sup>	<b>22.19</b>
<b>Suspended ceilings; mineral fibre tiles in concealed grid; suspension system and wire hangers to structural soffit</b>						
Suspended ceiling						
150 - 500 mm depth of suspension	-	-	-	-	m <sup>2</sup>	<b>36.44</b>
Bulkheads						
250 mm girth	-	-	-	-	m	<b>13.16</b>
500 mm girth	-	-	-	-	m	<b>26.32</b>
<b>PIPED BUILDING SERVICES</b>						
<b>Pipework; copper pipes EN 1057; capillary fittings; pipe clips screwed to background</b>						
Pipes						
15 mm	0.13	3.96	-	2.83	m	<b>6.79</b>
22 mm	0.13	4.11	-	4.37	m	<b>8.48</b>
28 mm	0.14	4.59	-	5.76	m	<b>10.35</b>
35 mm	0.17	5.22	-	11.91	m	<b>17.13</b>
42 mm	0.19	6.01	-	14.65	m	<b>20.66</b>

## CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PIPED BUILDING SERVICES - cont'd</b>						
<b>Pipework; copper pipes EN 1057; capillary fittings; pipe clips screwed to background - cont'd</b>						
Fittings						
15 mm made bend	0.08	2.37	-	7.83	nr	10.21
15 mm elbow	0.08	2.37	-	1.03	nr	3.40
15 mm equal tee	0.13	3.96	-	1.92	nr	5.88
15 mm straight coupling	0.09	2.69	-	0.78	nr	3.47
22 mm made bend	0.10	3.17	-	15.39	nr	18.56
22 mm elbow	0.11	3.48	-	2.30	nr	5.78
22 mm equal tee	0.17	5.22	-	5.22	nr	10.44
22 mm straight coupling	0.11	3.48	-	1.74	nr	5.22
28 mm made bend	0.13	3.96	-	19.66	nr	23.61
28 mm elbow	0.14	4.43	-	3.76	nr	8.19
28 mm equal tee	0.20	6.49	-	6.37	nr	12.86
28 mm straight coupling	0.14	4.43	-	2.87	nr	7.30
35 mm made bend	0.15	4.75	-	32.77	nr	37.52
35 mm elbow	0.17	5.22	-	9.58	nr	14.80
35 mm equal tee	0.23	7.28	-	23.55	nr	30.83
35 mm straight coupling	0.17	5.22	-	5.14	nr	10.37
42 mm made bend	0.20	6.33	-	35.41	nr	41.74
42 mm elbow	0.20	6.33	-	37.00	nr	43.33
42 mm equal tee	0.26	8.23	-	24.83	nr	33.06
42 mm straight coupling	0.20	6.33	-	8.06	nr	14.39
<b>Pipework; 19 mm thick rigid mineral glass fibre sectional pipe lagging; plain finish; fixing with aluminium bands</b>						
Insulation						
around 15 mm pipes	0.04	1.11	-	6.20	m	7.30
around 22 mm pipes	0.05	1.58	-	6.68	m	8.26
around 28 mm pipes	0.06	1.74	-	7.30	m	9.04
around 35 mm pipes	0.06	1.90	-	9.61	m	11.51
around 42 mm pipes	0.07	2.06	-	10.23	m	12.28
<b>Equipment; polyethylene cold water feed and expansion cistern to BS 4213, with cover; placing in position</b>						
Cisterns and tanks						
68 litres; ref SC15	0.63	19.78	-	56.04	nr	75.82
114 litres; ref SC25	0.72	22.95	-	65.92	nr	88.87
<b>Equipment; grp cold water storage cistern, with cover; placing in position</b>						
Cisterns and tanks						
68 litres	0.63	19.78	-	140.19	nr	159.97
114 litres	0.72	22.95	-	174.15	nr	197.10
<b>Equipment; copper single feed coil indirect cylinder to BS 1566 Part 2 grade 3; placing in position</b>						
Cisterns and tanks						
96 litres; ref 2	1.00	31.65	-	207.32	nr	238.97
114 litres; ref 3	1.13	35.61	-	260.05	nr	295.66

**CLASS Z: SIMPLE BUILDING WORKS INCIDENTAL TO CIVIL ENGINEERING WORKS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Equipment; combination copper coil direct hot water storage units to BS 3198; placing in position</b>						
Cisterns and tanks						
400 x 900 mm; 65/20 litres	1.40	44.31	-	209.07	nr	<b>253.38</b>
450 x 1075 mm; 115/25 litres	2.45	77.55	-	243.22	nr	<b>320.77</b>
<b>Sanitary appliances and fittings</b>						
Sink; white glazed fireclay to BS 1206 with pair of cast iron cantilever brackets						
610 x 455 x 205 mm	1.50	47.48	-	371.15	nr	<b>418.63</b>
610 x 455 x 205 mm	1.50	47.48	-	425.20	nr	<b>472.67</b>
Sink; stainless steel combined bowl and drainer; pair 19 mm chromium plated high neck pillar taps; chain and self colour plug to BS 3380; setting on base unit						
1050 x 500, single drainer, single bowl 420 x 350 x 175 mm	0.88	27.70	-	185.30	nr	<b>213.00</b>
1550 x 500, double drainer, single bowl 420 x 350 x 200 mm	0.88	27.70	-	211.78	nr	<b>239.48</b>
Lavatory basin; white vitreous china to BS 1188; pair 12 mm chromium plated pillar taps; chain and self colour plug to BS 3380; trap; painted cast iron brackets plugged and screwed to masonry						
560 x 405 mm	1.15	36.40	-	215.83	nr	<b>252.23</b>
635 x 455 mm	1.15	36.40	-	270.21	nr	<b>306.61</b>
Add for coloured	-	-	-	50.96	nr	<b>50.96</b>
Add for pedestal in lieu of brackets	0.10	3.17	-	63.70	nr	<b>66.87</b>
WC suite; low level; white glazed vitreous china pan; black plastic seat; 9 litre white glazed vitreous china cistern and brackets; low pressure ball valve; plastic flush pipe; building bracket into masonry; plugging and screwing pipe brackets and pan; bedding pan in mastic						
P trap outlet	1.50	47.48	-	222.37	nr	<b>269.85</b>
Add for coloured	-	-	-	42.57	nr	<b>42.57</b>
Bowl type wall urinal; white glazed vitreous china; white glazed vitreous china automatic flushing cistern and brackets; chromium plated flush pipe and spreaders; building brackets into masonry; plugging and screwing pipe brackets						
single; 455 x 380 x 330 mm	2.00	63.30	-	329.34	nr	<b>392.65</b>
range of two; 455 x 380 x 330 mm	5.50	174.08	-	749.65	nr	<b>923.73</b>
Add for each additional urinal	1.60	50.64	-	199.56	nr	<b>250.21</b>
Add for division between urinals	0.38	11.87	-	95.55	nr	<b>107.42</b>





# Unit Costs (Highway Works)

## INTRODUCTORY NOTES

*The Unit Costs in this part represent the net cost to the Contractor of executing the work on site; they are not the prices which would be entered in a tender Bill of Quantities.*

*It must be emphasised that the unit rates are averages calculated on unit outputs for typical site conditions. Costs can vary considerably from contract to contract depending on individual Contractors, site conditions, working methods and other factors. Reference should be made to Part 1 for a general discussion on Civil Engineering Estimating.*

*Guidance prices are included for work normally executed by specialists, with a brief description where necessary of the assumptions upon which the costs have been based. Should the actual circumstances differ, it would be prudent to obtain check prices from the specialists concerned, on the basis of actual / likely quantity of the work, nature of site conditions, geographical location, time constraints, etc.*

*The method of measurement adopted in this section is the **Method of Measurement for Highway Works**, subject to variances where this has been felt to be of advantage to produce more helpful price guidance.*

*We have structured this Unit Cost section to cover as many aspects of Civil and Highway works as possible.*

*The Gang hours column shows the output per measured unit in actual time, not the total labour hours; thus for an item involving a gang of 5 men each for 0.3 hours, the total labour hours would naturally be 1.5, whereas the Gang hours shown would be 0.3.*

*This section is structured in such a manner as to provide the User with adequate background information on how the rates have been calculated, so as to allow them to be readily adjusted to suit other conditions to the example presented:*

*Alternative gang structures as well as the effect of varying bonus levels, travelling costs etc.*

*Other types of plant or else different running costs from the medium usage presumed*

*Other types of materials or else different discount / waste allowances from the levels presumed*

*Reference to Part 3 giving basic costs of labour, materials and plant together with Parts 13 and 14 will assist the reader in making adjustments to the unit costs.*

## GUIDANCE NOTES

### Generally

Adjustments should be made to the rates shown for time, location, local conditions, site constraints and any other factors likely to affect the costs of a specific scheme.

### Materials cost

Materials costs within the rates have been calculated using the 'list prices' contained in Part 3: Resources (pages 59 to 135), with an index appearing on page 58), adjusted to allow for delivery charges (if any) and a 'reasonable' level of discount obtainable by the contractor, this will vary very much depending on the contractor's standing, the potential size of the order and the supplier's eagerness and will vary also between raw traded goods such as timber which will attract a low discount of perhaps 3%, if at all, and manufactured goods where the room for bargaining is much greater and can reach levels of 30% to 40%. High demand for a product at the time of pricing can dramatically reduce the potential discount, as can the world economy in the case of imported goods such as timber and copper. Allowance has also been made for wastage on site (generally 2½% to 5%) dependent upon the risk of damage, the actual level should take account of the nature of the material and its method of storage and distribution about the site.

### Labour cost

The composition of the labour and type of plant is generally stated at the beginning of each section, more detailed information on the calculation of the labour rates is given in Part 3: Resources, pages 33 to 37. In addition on pages 37 and 38 is a summary of labour grades and responsibilities extracted from the Working Rule Agreement. Within Parts 4 and 5, each section is prefaced by a detailed build-up of the labour gang assumed for each type of work. This should allow the user to see the cost impact of a different gang as well as different levels of bonus payments, allowances for skills and conditions, travelling allowances etc. The user should be aware that the output constants are based on the gangs shown and would also need to be changed.

### Plant cost

A rate buildup of suitable plant is generally stated at the beginning of each section, with more detailed information on alternative machines and their average fuel costs being given in Part 3: Resources, pages 140 to 158. Within Parts 4 and 5, each section is prefaced by a detailed build-up of plant assumed for each type of work This should allow the user to see the cost impact of using alternative plant as well as different levels of usage (see note on [pages 119 and 120](#)). The user should be aware that the output constants are based on the plant shown and would also need to be changed.

### Outputs

The user is directed to Part 13: Outputs (pages 581 to 589), which contains a selection of output constants and in particular a chart of haulage times for various capacities of Tippers on page 582.

### Method of Measurement

A keynote to bills of quantities for highway works is the brevity of descriptions due to a strong emphasis being placed on the estimator pricing the work described in the Specification and shown on the Drawings.

Although this part of the book is primarily based on MMHW, the specific rules have been varied from in cases where it has been felt that an alternative presentation would be of value to the book's main purpose of providing guidance on prices. This is especially so with a number of specialist contractors but also in the cases of work where a more detailed presentation will enable the user to allow for ancillary items.

LEVEL 1 DIVISION		LEVEL 2 CONSTRUCTION HEADING	LEVEL 3 MMHW SERIES HEADINGS
(i) Preliminaries		Preliminaries	Series 100
(ii) Roadworks		Roadworks General	Series 200 Series 300 Series 400 Series 600
		Main Carriageway	Series 500 Series 700 Series 1100
		Interchanges	Series 500 Series 700 Series 1100
		Side Roads	Series 500 Series 700 Series 1100
		Signs, Motorway Communications and Lighting	Series 1200 Series 1300 Series 1400 Series 1500
		Landscape and Ecology	Series 3000
(iii) Structures	Structure in form of Bridge or Viaduct; Name or Reference	Special Preliminaries	Series 2700
		Piling	Series 1600
		Substructure – End Supports	Series 500 Series 600 Series 1100 Series 1700 Series 1800 Series 1900 Series 2300 Series 2400
		Substructure – Intermediate Supports Substructure – Main Span Substructure – Approach Spans	As for End Supports
		Superstructure – Main Span Superstructure – Approach Spans Superstructure – Arch Ribs	Series 500 Series 1700 Series 1800 Series 1900 Series 2100 Series 2300 Series 2400
		Finishings	Series 400 Series 600 Series 700 Series 1100 Series 2000 Series 2400 Series 5000

LEVEL 1 DIVISION		LEVEL 2 CONSTRUCTION HEADING	LEVEL 3 MMHW SERIES HEADINGS
	Retaining wall, Culvert, Subway, Gantry, Large Headwall, Gabion Wall, Diaphragm wall, Pocket Type Reinforced Brickwork, Retaining Wall and the like; Name or Reference	Special Preliminaries Main Construction	Series 500 Series 600 Series 1100 Series 1600 Series 1700 Series 1800 Series 1900 Series 2300 Series 2400
		Finishings	Series 400 Series 600 Series 700 Series 1100 Series 2000 Series 2400 Series 5000
(iv) Structures where a choice of designs is offered	Structure Designed by the Overseeing Organisation;  Name or Reference	To comply with the principles set down above for Structures	
	Structure Designed by the Contractor;  Name or Reference		
(v) Structures Designed by the Contractor	Structure;  Name or Reference		
(vi) Service Areas		Roadworks Structures	To comply with the principles set down above for Roadworks and Structures
(vii) Maintenance Compounds		Roadworks Structures	
(viii) Accommodation Works		Interest; Name or Reference	
(ix) Works for Statutory or Other Bodies		Body; Name or Reference	To comply with the principles set down above for Roadworks and Structures
(x) Daywork		Daywork	
(xi) PC & Provisional Sum		PC & Provisional Sum	

**SERIES 100: PRELIMINARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>General</b>						
Refer also to the example calculation of Preliminaries in Part 2 and also to Part 8 Oncosts and profit.						
<b>TEMPORARY ACCOMMODATION</b>						
Erection of principal offices for the Overseeing Organisation						
prefabricated unit; connect to services	-	-	528.69	-	nr	<b>528.69</b>
Erection of offices and messes for the Contractor						
prefabricated unit; connect to services	-	-	528.69	-	nr	<b>528.69</b>
Erection of stores and workshops for the Contractor						
prefabricated unit; connect to services	-	-	528.69	-	nr	<b>528.69</b>
Servicing of principal offices for the Overseeing Organisation						
jack leg hutment; 3.7 m x 2.6 m	-	-	45.00	-	week	<b>45.00</b>
jack leg hutment; 7.35 m x 3.1 m	-	-	70.00	-	week	<b>70.00</b>
jack leg hutment; 14.7 m x 3.7 m	-	-	250.00	-	week	<b>250.00</b>
jack leg toilet unit; 4.9 m x 2.6 m	-	-	35.00	-	week	<b>35.00</b>
Servicing of portable offices for the Overseeing Organisation						
wheeled cabin; 3.7 m x 2.3 m	-	-	42.50	-	week	<b>42.50</b>
wheeled cabin; 6.7 m x 2.3 m	-	-	55.00	-	week	<b>55.00</b>
Servicing of offices and messes for the Overseeing Organisation						
jack leg hutment; 3.7 m x 2.6 m	-	-	45.00	-	week	<b>45.00</b>
jack leg hutment; 7.35 m x 3.1 m	-	-	70.00	-	week	<b>70.00</b>
jack leg hutment; 14.7 m x 3.7 m	-	-	250.00	-	week	<b>250.00</b>
wheeled cabin; 3.7 m x 2.3 m	-	-	42.50	-	week	<b>42.50</b>
wheeled cabin; 6.7 m x 2.3 m	-	-	55.00	-	week	<b>55.00</b>
jack leg toilet unit; 4.9 m x 2.6 m	-	-	35.00	-	week	<b>35.00</b>
canteen unit; 9.8 m x 2.6 m	-	-	150.00	-	week	<b>150.00</b>
Servicing of stores and workshops for the Contractor						
jack leg hutment; 3.7 m x 2.6 m	-	-	45.00	-	week	<b>45.00</b>
jack leg hutment; 7.35 m x 3.1 m	-	-	70.00	-	week	<b>70.00</b>
wheeled cabin; 3.7 m x 2.3 m	-	-	42.50	-	week	<b>42.50</b>
wheeled cabin; 6.7 m x 2.3 m	-	-	55.00	-	week	<b>55.00</b>
pollution decontamination unit; 6.7 m x 2.3 m	-	-	250.00	-	week	<b>250.00</b>
Dismantling of principal offices for the Overseeing Organisation						
prefabricated unit; disconnect from services; removing	-	-	528.69	-	nr	<b>528.69</b>
Dismantling of offices and messes for the Contractor						
prefabricated unit; disconnect from services; removing	-	-	528.69	-	nr	<b>528.69</b>
Dismantling of stores and workshops for the Contractor						
prefabricated unit; disconnect from services; removing	-	-	528.69	-	nr	<b>528.69</b>

**SERIES 100: PRELIMINARIES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>VEHICLES FOR THE OVERSEEING ORGANISATION</b>						
Vehicles for the Overseeing Organisation						
Land Rover or similar, short wheelbase	-	-	500.20	-	week	<b>500.20</b>
Land Rover or similar, long wheelbase	-	-	599.80	-	week	<b>599.80</b>
For other types of transport vehicles refer to Resources-Plant page *138.	-	-	-	-	-	-
<b>OPERATIVES FOR THE ENGINEER</b>						
<b>Operatives for the Overseeing Organisation</b>						
Chainman for the Overseeing Organisation	40.00	497.60	-	-	week	<b>497.60</b>
Driver for the Overseeing Organisation	40.00	497.60	-	-	week	<b>497.60</b>
Laboratory assistant for the Overseeing Organisation	40.00	348.00	-	-	week	<b>348.00</b>
<b>INFORMATION BOARD</b>						
Roadworks sign ref. 7002	-	-	-	-	nr	<b>78.55</b>
Roadworks sign ref. 7003	-	-	-	-	nr	<b>98.75</b>
Roadworks sign ref. 7004	-	-	-	-	nr	<b>86.65</b>

## SERIES 200: SITE CLEARANCE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>General</b>						
The prices in this section are to include for the removal of superficial obstructions down to existing ground level.						
<b>Demolition of individual or groups of buildings or structures</b>						
MMHW states that individual structures should be itemised. The following rates are given as £ per m <sup>3</sup> to simplify the pricing of different sized structures. (Refer also to Part 4 of this book Class D)						
<b>RESOURCES - LABOUR</b>						
<b>Clearance gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
Total Gang Rate / Hour	£	<b>68.67</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Clearance</b>						
0.8 m <sup>3</sup> tractor loader - 50% of time	-	-	11.53	-	-	-
8 t lorry with hiab - 25% of time	-	-	6.17	-	-	-
4 t dumper - 50% of time	-	-	5.19	-	-	-
20 t mobile crane - 25% of time	-	-	9.78	-	-	-
compressor, 11.3 m <sup>3</sup> /min (450 cfm), 4 tool	-	£	<b>8.44</b>	-	-	-
compressor tools: two brick hammers / picks - 50% of time	-	-	0.34	-	-	-
compressor tools: chipping hammer	-	-	0.46	-	-	-
compressor tools: medium rock drill 30	-	-	0.77	-	-	-
compressor tools: road breaker	-	-	0.41	-	-	-
compressor tools: two 15 m lengths hose	-	-	0.33	-	-	-
Total Gang Rate / Hour	-	£	<b>43.42</b>	-	-	-
<b>SITE CLEARANCE</b>						
<b>General site clearance</b>						
open field site	9.91	674.90	429.90	-	ha	<b>1104.80</b>
medium density wooded	20.61	1403.60	894.00	-	ha	<b>2297.60</b>
heavy density wooded	32.09	2185.43	1391.93	-	ha	<b>3577.35</b>
urban areas (town centre)	30.60	2083.95	1327.41	-	ha	<b>3411.36</b>
live dual carriageway	30.60	2083.95	1327.41	-	ha	<b>3411.36</b>
<b>Demolition of building or structure</b>						
building; brick construction with timber floor and roof	-	-	-	-	m <sup>3</sup>	<b>6.56</b>
building; brick construction with concrete floor and roof	-	-	-	-	m <sup>3</sup>	<b>10.93</b>
building; masonry construction with timber floor and roof	-	-	-	-	m <sup>3</sup>	<b>8.56</b>
building; reinforced concrete frame construction with brick infill	-	-	-	-	m <sup>3</sup>	<b>11.40</b>
building; steel frame construction with brick infill	-	-	-	-	m <sup>3</sup>	<b>6.20</b>
building; steel frame construction with cladding	-	-	-	-	m <sup>3</sup>	<b>5.91</b>
building; timber	-	-	-	-	m <sup>3</sup>	<b>5.31</b>

## SERIES 200: SITE CLEARANCE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SITE CLEARANCE - cont'd</b>						
reinforced concrete bridge deck or superstructure	-	-	-	-	m <sup>3</sup>	13.70
reinforced concrete bridge abutment or bank seat	-	-	-	-	m <sup>3</sup>	36.00
reinforced concrete retaining wall	-	-	-	-	m <sup>3</sup>	137.20
brick or masonry retaining wall	-	-	-	-	m <sup>3</sup>	75.50
brick or masonry boundary wall	-	-	-	-	m <sup>3</sup>	61.80
dry stone boundary wall	-	-	-	-	m <sup>3</sup>	74.40
<b>TAKE UP OR DOWN AND SET ASIDE FOR RE-USE OR REMOVE TO STORE OR TIP OFF SITE</b>						
Take up or down and set aside for re-use						
precast concrete kerbs and channels	0.02	1.16	2.30	-	m	3.46
precast concrete edgings	0.01	0.87	1.77	-	m	2.64
precast concrete drainage and kerb blocks	0.02	1.45	2.85	-	m	4.30
precast concrete drainage channel systems	0.02	1.45	2.85	-	m	4.30
tensioned single sided corrugated beam safety fence	0.14	9.53	6.11	-	m	15.64
timber post and 4 rail fence	0.08	5.45	3.47	-	m	8.92
bench seat	0.13	8.85	6.82	-	nr	15.67
cattle trough	0.16	10.62	8.16	-	nr	18.79
permanent bollard	0.13	8.85	6.82	-	nr	15.67
pedestrian crossing lights; pair	0.26	17.71	11.32	-	nr	29.02
lighting column including bracket arm and lantern; 5m high	0.58	39.50	25.21	-	nr	64.71
lighting column including bracket arm and lantern; 10 m high	0.61	41.54	26.48	-	nr	68.02
traffic sign	0.26	17.71	11.32	-	nr	29.02
timber gate	0.13	8.85	6.82	-	nr	15.67
stile	0.13	8.85	6.82	-	nr	15.67
road stud	0.03	1.77	1.34	-	nr	3.11
chamber cover and frame	0.03	1.77	1.34	-	nr	3.11
gully grating and frame	0.03	1.77	1.34	-	nr	3.11
feeder pillars	0.03	1.77	1.34	-	nr	3.11
<b>Take up or down and remove to store off site</b>						
precast concrete kerbs and channels	0.02	1.16	4.99	-	m	6.15
precast concrete edgings	0.01	0.87	3.78	-	m	4.65
precast concrete drainage and kerb blocks	0.02	1.45	6.21	-	m	7.66
precast concrete drainage channel systems	0.02	1.45	6.21	-	m	7.66
tensioned single sided corrugated beam safety fence	0.14	9.53	8.32	-	m	17.85
timber post and 4 rail fence	0.08	5.45	4.74	-	m	10.19
bench seat	0.13	8.85	15.04	-	nr	23.89
cattle trough	0.16	10.62	18.03	-	nr	28.65
permanent bollard	0.13	8.85	15.04	-	nr	23.89
pedestrian crossing lights; pair	0.26	17.71	15.43	-	nr	33.13
lighting column including bracket arm and lantern; 5m high	0.58	39.50	34.38	-	nr	73.88
lighting column including bracket arm and lantern; 10 m high	0.61	41.54	36.12	-	nr	77.66
traffic sign	0.26	17.71	15.42	-	nr	33.13
timber gate	0.13	8.85	15.04	-	nr	23.89
stile	0.13	8.85	15.04	-	nr	23.89
road stud	0.03	1.77	2.99	-	nr	4.76
chamber cover and frame	0.03	1.77	2.99	-	nr	4.76
gully grating and frame	0.03	1.77	2.99	-	nr	4.76
feeder pillars	0.03	1.77	2.99	-	nr	4.76



**SERIES 200: SITE CLEARANCE**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Take up or down and remove to tip off site</b>						
tensioned single sided corrugated beam safety fence	0.17	11.58	7.57	-	m	<b>19.14</b>
timber post and 4 rail fence	0.09	6.13	4.00	-	m	<b>10.13</b>
low pressure gas mains up to 150 mm diameter	0.04	2.72	1.78	-	m	<b>4.51</b>
low pressure water mains up to 75 mm diameter	0.03	2.04	1.35	-	m	<b>3.39</b>
power cable laid singly	0.03	2.04	1.35	-	m	<b>3.39</b>
lighting column including bracket arm and lantern; 5m high	0.82	55.84	36.58	-	nr	<b>92.43</b>
lighting column including bracket arm and lantern; 10 m high	0.85	57.89	37.88	-	nr	<b>95.77</b>
traffic sign including posts	0.38	25.88	16.47	-	nr	<b>42.35</b>
Removal of existing reflectorised thermoplastic road markings						
100 mm wide line	-	-	-	-	m	<b>1.24</b>
150 mm wide line	-	-	-	-	m	<b>1.86</b>
200 mm wide line	-	-	-	-	m	<b>2.47</b>
arrow or letter ne 6.0 m long	-	-	-	-	nr	<b>19.17</b>
arrow or letter 6.0 - 16.0 m long	-	-	-	-	nr	<b>80.36</b>

**SERIES 300: FENCING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>General</b>						
This section is restricted to those fences and barriers which are most commonly found on Highway Works. Hedges have been included, despite not being specifically catered for in the MMHW. The re-erection cost for fencing taken from store assumes that major components are in good condition; the prices below allow a sum of 20 % of the value of new materials to cover minor repairs, new fixings and touching up any coatings.						
<b>RESOURCES - LABOUR</b>						
<b>Fencing/barrier gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time	-	7.14	-	-	-	-
1 skilled operative (skill rate 4) - 50% of time	-	6.66	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
Total Gang Rate / Hour	£	<b>40.80</b>	-	-	-	-
<b>Horticultural works gang</b>						
1 skilled operative (skill rate 4)	1.00	13.32	-	-	-	-
1 unskilled operative (general)	1.00	12.44	-	-	-	-
Total Gang Rate / Hour	2.00	<b>25.76</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Fencing/Barriers</b>						
agricultural type tractor; fencing auger	-	-	13.66	-	-	-
gas oil for ditto	-	-	4.28	-	-	-
drop sided trailer, two axles	-	-	0.34	-	-	-
power tools etc. (fencing)	-	-	3.13	-	-	-
Total Gang Rate / Hour	-	£	<b>21.41</b>	-	-	-
<b>RESOURCES - MATERIALS</b>						
All rates for materials are based on the most economically available materials with a minimum waste allowance of 2.5% and supplier's discount of 15%.						

**SERIES 300: FENCING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ENVIRONMENTAL BARRIERS</b>						
<b>Hedges</b>						
Set out, nick out and excavate trench minimum 400 mm deep and break up subsoil to minimum depth 300 mm	0.15	3.83	-	-	m	<b>3.83</b>
Supply and plant hedging plants ; backfilling with excavated topsoil						
single row plants at 200 mm centres	0.25	6.38	-	5.55	m	<b>11.94</b>
single row plants at 300 mm centres	0.17	4.34	-	3.70	m	<b>8.04</b>
single row plants at 400 mm centres	0.13	3.19	-	2.78	m	<b>5.97</b>
single row plants at 500 mm centres	0.10	2.55	-	2.22	m	<b>4.77</b>
single row plants at 600 mm centres	0.08	2.04	-	1.84	m	<b>3.89</b>
double row plants at 200 mm centres	0.50	12.77	-	11.11	m	<b>23.87</b>
double row plants at 300 mm centres	0.34	8.68	-	7.40	m	<b>16.08</b>
double row plants at 400 mm centres	0.25	6.38	-	5.55	m	<b>11.94</b>
double row plants at 500 mm centres	0.20	5.11	-	4.44	m	<b>9.55</b>
double row plants at 600 mm centres	0.16	4.09	-	3.69	m	<b>7.77</b>
Extra for incorporating manure at 1 m <sup>3</sup> / 30m <sup>3</sup>	0.60	7.46	-	0.28	m <sup>3</sup>	<b>7.75</b>
<b>Noise barriers</b>						
Noise barriers consist of the erection of reflective or absorbent acoustical screening to reduce nuisance from noise. Due to the divergence in performance requirements and specification for various locations it is not practical to state all inclusive unit costs. Therefore advice should be sought from Specialist Contractors in order to obtain accurate costings. However listed below are examples of sample specification together with approximate costings in order to obtain budget prices. NB:- The following unit costs are based upon a 2.0 m high barrier						
<b>Noise reflective barriers</b>						
Barrier with architectural precast concrete panels and integral posts	-	-	-	-	m <sup>2</sup>	<b>157.61</b>
Barrier with acoustical timber planks post support system	-	-	-	-	m <sup>2</sup>	<b>142.49</b>
<b>Sound absorptive barriers</b>						
Barrier with architectural precast wood fibre concrete panels and integral posts	-	-	-	-	m <sup>2</sup>	<b>188.69</b>
Barrier with perforated steel and mineral wool blankets in self-supporting system	-	-	-	-	m <sup>2</sup>	<b>209.47</b>

## SERIES 300: FENCING

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FENCING, GATES AND STILES</b>						
<b>Fencing, gates and stiles</b>						
Temporary fencing						
Type 1; 1.275 m high, timber posts and two strands of galvanised barbed wire and four strands of galvanised plain wire	0.06	2.43	1.29	2.40	m	<b>6.11</b>
Type 2; 1.275 m high, timber posts and two strands of galvanised barbed wire and four strands of galvanised plain wire	0.06	2.43	1.29	2.14	m	<b>5.86</b>
Type 3; 1.2 m high, timber posts and cleft chestnut paling	0.07	2.83	1.50	9.39	m	<b>13.71</b>
Type 4; 0.9 m high, timber posts and galvanised rectangular wire mesh	0.13	5.26	2.78	4.70	m	<b>12.74</b>
Timber rail fencing						
1.4 m high, timber posts and four rails	0.13	5.26	2.78	14.05	m	<b>22.09</b>
Plastic coated heavy pattern chain link fencing						
1.40 m high with 125 x 125 mm concrete posts	0.05	2.02	1.07	8.65	m	<b>11.74</b>
1.80 m high with 125 x 125 mm concrete posts	0.06	2.43	1.29	11.38	m	<b>15.09</b>
Plastic coated strained wire fencing						
1.35 m high, nine strand with 40 x 40 x 3 mm plastic coated RHS posts	0.16	6.47	3.42	16.09	m	<b>25.98</b>
1.80 m high, eleven strand with 50 x 50 x 3 mm plastic coated RHS posts	0.20	8.09	4.28	21.43	m	<b>33.80</b>
2.10 m high, fifteen strand with 50 x 50 x 3 mm plastic coated RHS posts	0.22	8.90	4.71	25.01	m	<b>38.62</b>
Woven wire fencing						
1.23 m high, galvanised wire with 75 x 150 mm timber posts	0.06	2.43	1.29	7.09	m	<b>10.80</b>
Close boarded fencing						
1.80 m high with 125 x 125 mm concrete posts	0.30	12.13	6.42	42.73	m	<b>61.29</b>
Concrete foundation						
to main posts	0.09	3.64	0.31	5.26	nr	<b>9.21</b>
to straining posts	0.09	3.64	0.31	5.26	nr	<b>9.21</b>
to struts	0.09	3.64	0.31	5.26	nr	<b>9.21</b>
to intermediate posts	0.09	3.64	0.31	5.26	nr	<b>9.21</b>
Steel tubular frame single field gates						
1.175 m high 3.60 m wide	0.30	12.13	6.42	64.12	nr	<b>82.68</b>
1.175 m high 4.50 m wide	0.30	12.13	6.42	82.43	nr	<b>100.99</b>
Steel tubular frame half mesh single field gates						
1.175 m high 3.60 m wide	0.30	12.13	6.42	82.43	nr	<b>100.99</b>
1.175 m high 4.50 m wide	0.30	12.13	6.42	100.74	nr	<b>119.30</b>
Steel tubular frame extra wide single field gates						
1.175 m high 4.88 m wide	0.30	12.13	6.42	91.59	nr	<b>110.14</b>
Steel tubular frame double field gates						
1.175 m high 5.02 m wide	0.60	24.27	12.85	137.41	nr	<b>174.52</b>
Timber single field gates						
1.27 m high 3.00 m wide	1.84	74.42	39.39	156.30	nr	<b>270.11</b>
1.27 m high 3.60 m wide	1.90	76.85	40.68	180.99	nr	<b>298.52</b>
1.27 m high 4.10 m wide	2.00	80.89	42.82	218.85	nr	<b>342.56</b>
1.27 m high 4.71 m wide	2.00	80.89	42.82	225.41	nr	<b>349.12</b>
Timber Type 1 wicket gates						
1.27 m high 1.20 m wide	1.20	48.54	25.69	49.36	nr	<b>123.59</b>
Timber Type 2 wicket gates						
1.27 m high 1.02 m wide	1.20	48.54	25.69	56.29	nr	<b>130.52</b>
Timber kissing gates						
1.27 m high 1.77 m wide	2.00	80.89	42.82	156.30	nr	<b>280.01</b>
Timber stiles Type 1						
1.45 m high 1.00 m wide	1.50	60.67	32.11	115.00	nr	<b>207.79</b>

**SERIES 300: FENCING**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Timber stiles Type 2 1.45 m high 1.00 m wide	1.40	56.62	29.97	86.43	nr	<b>173.03</b>
Extra for sheep netting on post and wire	0.04	1.42	0.12	0.56	m	<b>2.10</b>
pig netting on post and wire	0.04	1.42	0.12	0.61	m	<b>2.14</b>
<b>REMOVE FROM STORE AND RE-ERECT FENCING, GATES AND STILES</b>						
Timber rail fencing 1.4 m high, timber posts and four rails	0.13	5.26	2.78	2.83	m	<b>10.87</b>
Plastic coated heavy pattern chain link fencing 1.40 m high with 125 x 125 mm concrete posts	0.05	2.02	1.07	1.77	m	<b>4.86</b>
1.80 m high with 125 x 125 mm concrete posts	0.06	2.43	1.29	2.35	m	<b>6.06</b>
Plastic coated strained wire fencing 1.35 m high, nine strand with 40 x 40 x 3 mm plastic coated RHS posts	0.16	6.47	3.42	3.31	m	<b>13.21</b>
1.80 m high, eleven strand with 50 x 50 x 3 mm plastic coated RHS posts	0.20	8.09	4.28	4.41	m	<b>16.78</b>
2.10 m high, fifteen strand with 50 x 50 x 3 mm plastic coated RHS posts	0.22	8.90	4.71	4.67	m	<b>18.28</b>
Woven wire fencing 1.23 m high, galvanised wire with 75 x 150 mm timber posts	0.06	2.43	1.29	1.46	m	<b>5.17</b>
Close boarded fencing 1.80 m high with 125 x 125 mm concrete posts	0.30	12.13	6.42	7.88	m	<b>26.44</b>
Steel tubular frame single field gates 1.175 m high 3.60 m wide	0.30	12.13	6.42	13.22	nr	<b>31.77</b>
1.175 m high 4.50 m wide	0.30	12.13	6.42	16.98	nr	<b>35.54</b>
Steel tubular frame half mesh single field gates 1.175 m high 3.60 m wide	0.30	12.13	6.42	16.98	nr	<b>35.54</b>
1.175 m high 4.50 m wide	0.30	12.13	6.42	20.77	nr	<b>39.32</b>
Steel tubular frame extra wide single field gates 1.175 m high 4.88 m wide	0.30	12.13	6.42	18.89	nr	<b>37.44</b>
Steel tubular frame double field gates 1.175 m high 5.02 m wide	0.60	24.27	12.85	28.34	nr	<b>65.45</b>
Timber single field gates 1.27 m high 3.00 m wide	1.84	74.42	39.39	33.29	nr	<b>147.10</b>
1.27 m high 3.60 m wide	1.90	76.85	40.68	38.56	nr	<b>156.08</b>
1.27 m high 4.10 m wide	2.00	80.89	42.82	46.63	nr	<b>170.33</b>
1.27 m high 4.71 m wide	2.00	80.89	42.82	48.02	nr	<b>171.73</b>
Timber Type 1 wicket gates 1.27 m high 1.20 m wide	1.20	48.54	25.69	10.52	nr	<b>84.74</b>
Timber Type 2 wicket gates 1.27 m high 1.02 m wide	1.20	48.54	25.69	12.00	nr	<b>86.23</b>
Timber kissing gates 1.27 m high 1.77 m wide	2.00	80.89	42.82	33.29	nr	<b>157.00</b>
Timber stiles Type 1 1.45 m high 1.00 m wide	1.50	60.67	32.11	27.51	nr	<b>120.29</b>
Timber stiles Type 2 1.45 m high 1.00 m wide	1.40	56.62	29.97	20.69	nr	<b>107.28</b>
<b>EXCAVATION IN HARD MATERIAL</b>						
Extra over excavation for excavation in Hard Material in fencing works	0.50	20.22	-	-	m <sup>3</sup>	<b>20.22</b>

## SERIES 400: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>General</b>						
The re-erection cost for safety fencing taken from store assumes that major components are in good condition; the prices below allow a sum of 20 % of the value of new materials to cover minor repairs, new fixings and touching up any coatings. The heights of the following parapets are in accordance with the Standard Designs and DfT requirements. The rates include for all anchorages and fixings and in the case of steel, galvanising at works and painting four coat paint system on site together with etching the galvanised surface, as necessary.						
<b>RESOURCES - LABOUR</b>						
<b>Safety barrier gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
Total Gang Rate / Hour	£	<b>67.04</b>	-	-	-	-
<b>Parapet gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
Total Gang Rate / Hour	£	<b>67.04</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Safety barriers</b>						
agricultural type tractor; fencing auger	-	-	13.66	-	-	-
gas oil for ditto	-	-	4.28	-	-	-
drop sided trailer, two axles	-	-	0.34	-	-	-
small tools (part time)	-	-	2.06	-	-	-
Total Gang Rate / Hour	-	£	<b>20.33</b>	-	-	-
<b>Parapets</b>						
agricultural type tractor; front bucket - 50% of time	-	-	6.87	-	-	-
gas oil for ditto	-	-	2.14	-	-	-
2.80 m <sup>3</sup> /min (100 cfm) compressor; two tool	-	-	3.38	-	-	-
gas oil for ditto	-	-	2.85	-	-	-
compressor tools: heavy rock drill 33, 84 cfm	-	-	2.05	-	-	-
compressor tools: rotary drill, 10 cfm	-	-	1.04	-	-	-
8 t lorry with 1 t hiab - 50% of time	-	-	10.55	-	-	-
gas oil for ditto	-	-	1.78	-	-	-
Total Gang Rate / Hour	-	£	<b>30.66</b>	-	-	-

**SERIES 400: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>BEAM SAFETY BARRIERS</b>						
Prices generally are for beams "straight or curved exceeding 120m radius", for work to a tighter radius 50 - 120 m radius Add 15 % not exceeding 50 m radius Add 40 % Untensioned beams						
single sided corrugated beam	0.07	4.65	1.42	18.25	m	<b>24.32</b>
double sided corrugated beam	0.22	14.62	4.47	36.47	m	<b>55.56</b>
single sided open box beam	0.07	4.65	1.42	37.02	m	<b>43.09</b>
single sided double rail open box beam	0.22	14.62	4.47	74.03	m	<b>93.12</b>
double height open box beam	0.24	15.95	4.88	76.34	m	<b>97.17</b>
Tensioned beams						
single sided corrugated beam	0.10	6.65	2.03	19.28	m	<b>27.96</b>
double sided corrugated beam	0.12	7.97	2.44	39.75	m	<b>50.17</b>
Long driven post						
for single sided tensioned corrugated beam	0.06	3.65	1.12	43.22	nr	<b>47.99</b>
for double sided tensioned corrugated beam	0.06	3.65	1.12	43.22	nr	<b>47.99</b>
for single sided open box beam	0.06	3.65	1.12	43.22	nr	<b>47.99</b>
for double sided open box beam	0.06	3.65	1.12	43.22	nr	<b>47.99</b>
for double height open box beam	0.06	3.65	1.12	43.22	nr	<b>47.99</b>
Short post for setting in concrete or socket						
for single sided tensioned corrugated beam	0.06	3.99	1.22	16.66	nr	<b>21.87</b>
for double sided tensioned corrugated beam	0.06	3.99	1.22	16.97	nr	<b>22.18</b>
for single sided open box beam	0.06	3.99	1.22	20.23	nr	<b>25.44</b>
for double sided open box beam	0.06	3.99	1.22	24.11	nr	<b>29.32</b>
Mounting bracket fixed to structure						
for single sided open box beam	0.16	10.63	3.25	64.94	nr	<b>78.83</b>
Terminal section						
for untensioned single sided corrugated beam	0.71	47.18	14.44	467.50	nr	<b>529.12</b>
for untensioned double sided corrugated beam	1.25	83.07	25.42	495.00	nr	<b>603.48</b>
for untensioned single sided open box beam	1.01	67.12	20.54	500.50	nr	<b>588.16</b>
for untensioned double sided open box beam	1.78	118.29	36.19	841.50	nr	<b>995.98</b>
for tensioned single sided corrugated beam	0.96	63.80	19.52	326.15	nr	<b>409.46</b>
for tensioned double sided corrugated beam	1.70	112.97	34.56	499.13	nr	<b>646.66</b>
Full height anchorage						
for single sided tensioned corrugated beam	3.95	262.50	80.31	720.77	nr	<b>1063.58</b>
for double sided tensioned corrugated beam	4.35	289.08	88.44	840.40	nr	<b>1217.92</b>
for single sided open box beam	3.80	252.53	77.26	620.95	nr	<b>950.73</b>
for double sided open box beam	4.20	279.11	85.39	731.50	nr	<b>1096.00</b>
Expansion joint anchorage						
for single sided open box beam	4.52	300.37	91.90	1279.85	nr	<b>1672.12</b>
for double sided open box beam	5.15	342.24	104.70	1550.45	nr	<b>1997.40</b>
Type 048 connection to bridge parapet						
for single sided open box beam	0.70	46.52	14.23	171.25	nr	<b>232.00</b>
Connection piece for single sided open box beam to single sided corrugated beam						
	0.78	51.83	15.86	168.03	nr	<b>235.72</b>
Standard concrete foundation						
for post for corrugated beam	0.23	15.28	4.59	6.76	nr	<b>26.64</b>
for post for open box beam	0.23	15.28	4.67	8.43	nr	<b>28.38</b>
Concrete foundation Type 1 spanning filter drain						
for post for corrugated beam	0.25	16.61	5.08	11.93	nr	<b>33.62</b>
for post for open box beam	0.25	16.61	5.08	10.56	nr	<b>32.25</b>
Standard socketed foundation for post for open box beam						
	0.30	19.94	6.10	10.19	nr	<b>36.23</b>

**SERIES 400: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CONCRETE SAFETY BARRIERS</b>						
<b>Permanent vertical concrete safety barrier; TRL Design - DfT Approved</b>						
Intermediate units Type V01 & V02; 3 m long straight or curved exceeding 50 m radius	0.16	10.63	3.25	413.30	nr	<b>427.19</b>
curved not exceeding 50 m radius	0.20	13.29	4.07	413.30	nr	<b>430.66</b>
Make up units Type V05 & V06; 1 m long straight or curved exceeding 50 m radius	0.30	19.94	6.10	522.22	nr	<b>548.25</b>
Termination units Type V03 & V04; 3 m long	0.50	33.23	10.17	512.58	nr	<b>555.97</b>
Transition to single sided open box beam unit Type V08 & V09; 1.5 m long	0.37	24.59	7.52	609.38	nr	<b>641.49</b>
Transition to rectangular hollow section beam unit Type V10, V11 & V12; 1.5 m long	0.37	24.59	7.52	524.68	nr	<b>556.79</b>
Transition to double sided open box beam; 1.5 m long unit Type V07	0.37	24.59	7.52	586.28	nr	<b>618.39</b>
Anchor plate sets ( normally two plates per first and last three units in any run)	0.15	9.97	6.07	40.61	nr	<b>56.65</b>
<b>Temporary concrete safety barrier; TRL Design - DfT Approved</b>						
Intermediate units Type V28; 3 m long straight or curved exceeding 50 m radius	0.16	10.63	3.25	368.92	nr	<b>382.80</b>
curved not exceeding 50 m radius	0.20	13.29	4.07	368.92	nr	<b>386.28</b>
Termination units Type V29; 3 m long	0.50	33.23	10.17	413.47	nr	<b>456.86</b>
<b>WIRE ROPE SAFETY FENCES</b>						
<b>Brifen wire rope safety fencing DfT approved; based on 600 m lengths; 4 rope system; posts at 2.40 m general spacings.</b>						
Wire rope	0.03	1.99	0.61	13.92	m	<b>16.52</b>
Long driven line posts	0.05	3.32	1.02	25.70	nr	<b>30.04</b>
Long driven deflection posts	0.05	3.32	1.02	25.70	nr	<b>30.04</b>
Long driven height restraining posts	0.05	3.32	1.02	25.70	nr	<b>30.04</b>
Short line post for setting in concrete or socket	0.06	3.99	1.22	23.78	nr	<b>28.99</b>
Short deflection post for setting in concrete or socket	0.06	3.99	1.22	23.78	nr	<b>28.99</b>
Short height restraining post for setting in concrete or socket	0.06	3.99	1.22	23.78	nr	<b>28.99</b>
Fixed height surface mounted post fixed to structure or foundation	0.09	5.98	1.83	27.00	nr	<b>34.81</b>
Standard intermediate anchorage	2.00	132.91	40.66	312.00	nr	<b>485.57</b>
Standard end anchorage	2.00	132.91	40.66	112.46	nr	<b>286.04</b>
In situ standard concrete foundation for post	0.23	15.28	4.67	8.03	nr	<b>27.99</b>
In situ standard socketed foundation for post	0.33	21.93	6.71	8.03	nr	<b>36.67</b>
Concrete foundation Type 1 spanning filter drain for post	0.37	24.59	7.52	9.65	nr	<b>41.76</b>



**SERIES 400: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>VEHICLE PARAPETS</b>						
The heights of the follow parapets are in accordance with the Standard Designs and DfT requirements. The rates include for all anchorages and fixings and in the case of steel, galvanising at works and painting four coat paint system on site together with etching the galvanised surface as necessary.						
<b>STEEL PARAPETS</b>						
Metal parapet Group P1; 1.0 m high; comprising steel yielding posts and steel horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	187.14
curved not exceeding 50 m radius	-	-	-	-	m	202.73
Metal parapet Group P2 (48 Kph); 1.0 m high; comprising steel yielding posts and steel horizontal rails with vertical infill bars						
straight or curved exceeding 50 m radius	-	-	-	-	m	265.11
curved not exceeding 50 m radius	-	-	-	-	m	280.71
Metal parapet Group P2 (80 Kph); 1.0 m high; comprising steel yielding posts and steel horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	218.32
curved not exceeding 50 m radius	-	-	-	-	m	233.93
Metal parapet Group P2 (113 Kph); 1.0 m high; comprising steel yielding posts and steel horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	218.32
curved not exceeding 50 m radius	-	-	-	-	m	233.93
Metal parapet Group P4; 1.15 m high; comprising steel yielding posts and steel horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	187.14
curved not exceeding 50 m radius	-	-	-	-	m	202.73
Metal parapet Group P5; 1.25 m high; comprising steel yielding posts and steel horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	237.49
curved not exceeding 50 m radius	-	-	-	-	m	265.11
Metal parapet Group P5; 1.50 m high; comprising steel yielding posts and steel horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	265.11
curved not exceeding 50 m radius	-	-	-	-	m	280.71
Metal parapet Group P6; 1.50 m high; comprising steel yielding posts and steel horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	1239.79
curved not exceeding 50 m radius	-	-	-	-	m	1341.16
<b>ALUMINIUM PARAPETS</b>						
Metal parapet Group P1; 1.0 m high; comprising aluminium yielding / frangible posts and aluminium horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	183.25
curved not exceeding 50 m radius	-	-	-	-	m	198.51
Metal parapet Group P2 (80 Kph); 1.0 m high; comprising aluminium yielding / frangible posts and aluminium horizontal rails with mesh infill						
straight or curved exceeding 50 m radius	-	-	-	-	m	198.51
curved not exceeding 50 m radius	-	-	-	-	m	213.78

**SERIES 400: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ALUMINIUM PARAPETS - cont'd</b>						
Metal parapet Group P2 (113 Kph); 1.0 m high; comprising aluminium yielding / frangible posts and aluminium horizontal rails with mesh infill						
straight or curved exceeding 50 m radius	-	-	-	-	m	<b>198.51</b>
curved not exceeding 50 m radius	-	-	-	-	m	<b>208.56</b>
Metal parapet Group P4; 1.15 m high; comprising aluminium yielding / frangible posts and aluminium horizontal rails						
straight or curved exceeding 50 m radius	-	-	-	-	m	<b>190.87</b>
curved not exceeding 50 m radius	-	-	-	-	m	<b>206.15</b>
Metal parapet Group P5; 1.25 m high; comprising aluminium yielding / frangible posts and aluminium horizontal rails with solid sheet infill, anti-access panels						
straight or curved exceeding 50 m radius	-	-	-	-	m	<b>229.06</b>
curved not exceeding 50 m radius	-	-	-	-	m	<b>244.32</b>
Metal parapet Group P5; 1.50 m high; comprising aluminium yielding / frangible posts and aluminium horizontal rails with solid sheet infill, anti-access panels						
straight or curved exceeding 50 m radius	-	-	-	-	m	<b>259.60</b>
curved not exceeding 50 m radius	-	-	-	-	m	<b>259.60</b>
<b>CRASH CUSHIONS</b>						
Static crash cushion system to BS EN1317-3, Class 110km/hr	-	-	-	-	nr	<b>38000.00</b>
<b>REMOVE FROM STORE AND RE-ERECT BEAM SAFETY BARRIERS</b>						
Prices generally are for beams "straight or curved exceeding 120m radius", for work to a tighter radius						
50 - 120 m radius		Add 15 %				
not exceeding 50 m radius		Add 25 %				
<b>Untensioned beams</b>						
single sided corrugated beam	0.07	4.65	1.42	3.64	m	<b>9.71</b>
double sided corrugated beam	0.22	14.62	4.47	7.30	m	<b>26.40</b>
single sided open box beam	0.07	4.65	1.42	7.41	m	<b>13.49</b>
single sided double rail open box beam	0.22	14.62	4.47	15.06	m	<b>34.15</b>
double height open box beam	0.24	15.95	4.88	15.27	m	<b>36.10</b>
<b>Tensioned beams</b>						
single sided corrugated beam	0.10	6.65	2.03	3.85	m	<b>12.53</b>
double sided corrugated beam	0.12	7.97	2.44	7.95	m	<b>18.37</b>
<b>Long driven post</b>						
for single sided tensioned corrugated beam	0.06	3.65	1.12	8.63	nr	<b>13.41</b>
for double sided tensioned corrugated beam	0.06	3.65	1.12	8.65	nr	<b>13.42</b>
for single sided open box beam	0.06	3.65	1.12	8.71	nr	<b>13.48</b>
for double sided open box beam	0.06	3.65	1.12	10.13	nr	<b>14.90</b>
for double height open box beam	0.06	3.65	1.12	25.78	nr	<b>30.55</b>
<b>Short post for setting in concrete or socket</b>						
for single sided tensioned corrugated beam	0.06	3.99	1.22	16.81	nr	<b>22.02</b>
for double sided tensioned corrugated beam	0.06	3.99	1.22	17.14	nr	<b>22.35</b>
for single sided open box beam	0.06	3.99	1.22	20.42	nr	<b>25.62</b>
for double sided open box beam	0.06	3.99	1.22	24.33	nr	<b>29.54</b>
<b>Mounting bracket fixed to structure</b>						
for single sided open box beam	0.16	10.63	3.25	6.43	nr	<b>20.32</b>

**SERIES 400: ROAD RESTRAINT SYSTEMS (VEHICLE AND PEDESTRIAN)**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Terminal section</b>						
for untensioned single sided corrugated beam	0.71	47.18	14.44	93.50	nr	<b>155.12</b>
for untensioned double sided corrugated beam	1.25	83.07	25.42	99.11	nr	<b>207.59</b>
for untensioned single sided open box beam	1.01	67.12	20.54	100.10	nr	<b>187.76</b>
for untensioned double sided open box beam	1.78	118.29	36.19	163.35	nr	<b>317.83</b>
for tensioned single sided corrugated beam	0.96	63.80	19.52	62.42	nr	<b>145.74</b>
for tensioned double sided corrugated beam	1.70	112.97	34.56	97.30	nr	<b>244.83</b>
<b>Full height anchorage</b>						
for single sided tensioned corrugated beam	3.95	262.50	80.31	123.47	nr	<b>466.28</b>
for double sided tensioned corrugated beam	4.35	289.08	88.44	157.57	nr	<b>535.09</b>
for single sided open box beam	3.80	252.53	77.26	124.19	nr	<b>453.97</b>
for double sided open box beam	4.20	279.11	85.39	146.41	nr	<b>510.91</b>
<b>Expansion joint anchorage</b>						
for single sided open box beam	4.52	300.37	91.90	256.02	nr	<b>648.30</b>
for double sided open box beam	5.15	342.24	104.70	310.20	nr	<b>757.15</b>
<b>Type 048 connection to bridge parapet</b>						
for single sided open box beam	0.70	46.52	14.23	7.17	nr	<b>67.92</b>
Connection piece for single sided open box beam to single sided corrugated beam	0.78	51.83	15.86	168.03	nr	<b>235.72</b>
<b>Standard concrete foundation</b>						
for post for corrugated beam	0.23	15.28	4.59	6.76	nr	<b>26.64</b>
for post for open box beam	0.23	15.28	4.67	8.43	nr	<b>28.38</b>
<b>Concrete foundation Type 1 spanning filter drain</b>						
for post for corrugated beam	0.25	16.61	5.08	11.93	nr	<b>33.62</b>
for post for open box beam	0.25	16.61	5.08	10.56	nr	<b>32.25</b>
<b>Standard socketed foundation for post for open box beam</b>	0.30	19.94	6.10	10.19	nr	<b>36.23</b>
<b>PEDESTRIAN GUARD RAILS AND HANDRAILS</b>						
<b>New work</b>						
Tubular galvanised mild steel pedestrian guard rails to BS 7818 with mesh infill (105 swg, 50 x 50 mm mesh); 1.0 m high						
mounted on posts with concrete footing	0.16	10.63	3.25	168.46	m	<b>182.34</b>
mounted on posts bolted to structure or ground beam	0.14	9.30	2.85	168.46	m	<b>180.61</b>
Solid section galvanised steel pedestrian guard rails with vertical rails (group P4 parapet); 1.0 m high						
mounted on posts with concrete footing	0.19	12.63	3.86	22.17	m	<b>38.66</b>
mounted on posts bolted to structure or ground beam	0.17	11.30	3.46	153.39	m	<b>168.15</b>
Tubular double ball galvanised steel handrail						
50 mm diameter; 1.20 m high posts	0.15	9.97	3.05	141.50	m	<b>154.51</b>
63 mm diameter; 1.20 m high posts	0.15	9.97	3.05	200.66	m	<b>213.68</b>
Extra for concrete footings for handrail support posts	0.05	3.32	-	4.22	m	<b>7.54</b>
<b>Existing guard rails</b>						
Take from store and re-erect pedestrian guard railing, 3.0 m long x 1.0 m high panels						
	0.15	9.97	3.05	4.92	nr	<b>17.93</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
<b>General</b>						
The re-erection cost for covers and grating complete with frames taken from store assumes that major components are in good condition; the prices below allow a sum of 10 % of the value of new materials to cover minor repairs, new fixings and touching up any coatings.						
<b>RESOURCES - LABOUR</b>						
<b>Drains/sewers/culverts gang (small bore)</b>						
1 ganger/chargehand (skill rate 4) - 50% of time	-	7.14	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
Total Gang Rate / Hour	£	<b>61.53</b>	-	-	-	-
<b>Drains/sewers/culverts gang (large bore)</b>						
1 ganger/chargehand (skill rate 4) - 50% of time	-	7.14	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
1 plant operator (skill rate 3) - 30% of time	-	4.86	-	-	-	-
Total Gang Rate / Hour	£	<b>66.38</b>	-	-	-	-
<b>Gullies gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time	-	7.14	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
Total Gang Rate / Hour	£	<b>45.34</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Drains/sewers/culverts gang (small bore)</b>						
0.4 m <sup>3</sup> hydraulic excavator	-	-	24.32	-	-	-
2t dumper - 30% of time	-	-	2.04	-	-	-
360mm compaction plate - 30% of time	-	-	0.58	-	-	-
2.80m <sup>3</sup> /min compressor, 2 tool - 30% of time	-	-	1.87	-	-	-
disc saw - 30% of time	-	-	0.42	-	-	-
extra 15ft/50m hose - 30% of time	-	-	0.10	-	-	-
small pump - 30% of time	-	-	0.77	-	-	-
Total Gang Rate / Hour	-	£	<b>30.10</b>	-	-	-
Note: in addition to the above are the following allowances for trench struts/props/sheeting, assuming the need for close boarded earth support:						
average 1.00 m deep	-	-	1.32	-	m	<b>1.32</b>
average 1.50 m deep	-	-	1.47	-	m	<b>1.47</b>
average 2.00 m deep	-	-	1.70	-	m	<b>1.70</b>
average 2.50 m deep	-	-	2.02	-	m	<b>2.02</b>
average 3.00 m deep	-	-	2.55	-	m	<b>2.55</b>
average 3.50 m deep	-	-	3.15	-	m	<b>3.15</b>
Note: excavation in hard materials as above but with the addition of breaker attachments to the excavator as follows:						
generally : BRH91 (141kg)	-	-	3.88	-	-	<b>3.88</b>
reinforced concrete; BRH125 (310kg)	-	-	5.47	-	-	<b>5.47</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>(Drains/sewers/culverts gang (large bore))</b>						
i.e. greater than 700 mm bore						
0.4 m <sup>3</sup> hydraulic excavator	-	-	24.32	-	-	-
2t dumper - 30% of time	-	-	2.04	-	-	-
2.80 m <sup>3</sup> /min compressor, 2 tool - 30% of time	-	-	1.87	-	-	-
compaction plate / roller - 30% of time	-	-	0.58	-	-	-
disc saw - 30% of time	-	-	0.36	-	-	-
small pump - 30% of time	-	-	0.77	-	-	-
10 t crawler crane - 30% of time	-	-	8.12	-	-	-
Total Gang Rate / Hour	-	£	<b>38.06</b>	-	-	-
<b>Gullies</b>						
2t dumper - 30% of time	-	-	2.04	-	-	-
Stihl disc saw - 30% of time	-	-	0.36	-	-	-
Total Gang Rate / Hour	-	£	<b>2.40</b>	-	-	-
<b>RESOURCES - MATERIALS</b>						
For the purposes of bedding widths for pipe bedding materials, trenches have been taken as exceeding 1.50 m in depth; trenches to lesser depths are generally 150 mm narrower than those given here so that the rates need to be reduced proportionately.						
<b>DRAINS AND SERVICE DUCTS (EXCLUDE INFILTER DRAINS, NARROW FILTER DRAINS AND FIN DRAINS)</b>						
<b>Vitrified clay pipes to BS 65, plain ends with push-fit polypropylene flexible couplings</b>						
150 mm diameter drain or sewer in trench, depth to invert						
average 1.00 m deep	0.17	10.37	9.52	18.82	m	<b>38.71</b>
average 1.50 m deep	0.19	11.59	10.51	18.82	m	<b>40.92</b>
average 2.00 m deep	0.22	13.43	12.32	18.82	m	<b>44.56</b>
average 2.50 m deep	0.26	15.87	15.03	18.82	m	<b>49.71</b>
average 3.00 m deep	0.34	20.75	18.96	18.82	m	<b>58.52</b>
average 3.50 m deep	0.42	25.63	23.41	18.82	m	<b>67.86</b>
Extra for						
Type N sand bed 650 x 100 mm	0.04	2.44	2.24	1.28	m	<b>5.96</b>
Type T sand surround 650 wide x 100 mm	0.08	4.88	4.48	3.07	m	<b>12.43</b>
Type F granular bed 650 x 100 mm	0.05	3.05	2.81	1.86	m	<b>7.72</b>
Type S granular surround 650 wide x 100 mm	0.16	9.76	8.95	4.44	m	<b>23.15</b>
Type A concrete bed 650 x 100 mm	0.11	6.71	5.83	7.50	m	<b>20.04</b>
Type B 100 mm concrete bed and haunch	0.24	14.65	12.71	6.40	m	<b>33.76</b>
Type Z concrete surround 650 wide x 100 mm	0.22	13.43	11.66	17.96	m	<b>43.05</b>
225 mm diameter drain or sewer in trench, depth to invert						
average 1.50 m deep	0.20	12.21	6.95	59.43	m	<b>78.58</b>
average 2.00 m deep	0.24	14.65	13.42	59.43	m	<b>87.50</b>
average 2.50 m deep	0.28	17.09	15.60	59.43	m	<b>92.12</b>
average 3.00 m deep	0.35	21.36	19.49	59.43	m	<b>100.28</b>
average 3.50 m deep	0.44	26.85	24.51	59.43	m	<b>110.79</b>
average 4.00 m deep	0.56	34.17	31.20	59.43	m	<b>124.80</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DRAINS AND SERVICE DUCTS (EXCLUDE INFILTER DRAINS, NARROW FILTER DRAINS AND FIN DRAINS) - cont'd</b>						
<b>Vitrified clay pipes to BS 65, plain ends with push-fit polypropylene flexible couplings - cont'd</b>						
Extra for						
Type N sand bed 750 x 150 mm	0.12	7.32	6.36	2.22	m	<b>15.90</b>
Type T sand surround 750 wide x 150 mm	0.24	14.65	12.71	5.48	m	<b>32.84</b>
Type F granular bed 750 x 150 mm	0.13	7.93	6.89	3.19	m	<b>18.02</b>
Type S granular surround 750 wide x 150 mm	0.24	14.65	12.71	7.92	m	<b>35.28</b>
Type A concrete bed 750 x 150 mm	0.19	11.59	10.06	12.98	m	<b>34.64</b>
Type B 150 mm concrete bed and haunch	0.29	17.70	15.37	10.00	m	<b>43.06</b>
Type Z concrete surround 750 wide x 150 mm	0.36	21.97	19.07	32.18	m	<b>73.23</b>
300 mm diameter drain or sewer in trench, depth to invert						
average 1.50 m deep	0.21	12.82	11.76	82.69	m	<b>107.27</b>
average 2.00 m deep	0.26	15.87	14.56	82.69	m	<b>113.12</b>
average 2.50 m deep	0.30	18.31	16.73	82.69	m	<b>117.73</b>
average 3.00 m deep	0.37	22.58	20.66	82.69	m	<b>125.93</b>
average 4.00 m deep	0.61	37.23	34.00	82.69	m	<b>153.92</b>
average 5.00 m deep	1.01	61.64	56.22	82.69	m	<b>200.55</b>
Extra for						
Type N sand bed 800 x 150 mm	0.13	7.93	6.89	2.37	m	<b>17.19</b>
Type T sand surround 800 x 150 mm	0.26	15.87	13.45	7.62	m	<b>36.94</b>
Type F granular bed 800 x 150 mm	0.14	8.54	7.42	3.39	m	<b>19.36</b>
Type S granular surround 800 wide x 150 mm	0.26	15.87	13.78	10.79	m	<b>40.43</b>
Type A concrete bed 800 x 150 mm	0.20	12.21	10.60	13.85	m	<b>36.66</b>
Type B 150 mm concrete bed and haunch	0.36	21.97	19.07	12.62	m	<b>53.66</b>
Type Z concrete surround 800 wide x 150 mm	0.22	13.43	34.70	41.33	m	<b>89.46</b>
<b>Vitrified clay pipes to BS 65, spigot and socket joints with sealing ring</b>						
400 mm diameter drain or sewer in trench, depth to invert						
average 2.00 m deep	0.31	18.92	17.33	97.96	m	<b>134.21</b>
average 2.50 m deep	0.35	21.36	19.49	97.96	m	<b>138.81</b>
average 3.00 m deep	0.42	25.63	23.41	97.96	m	<b>147.00</b>
average 4.00 m deep	0.66	40.28	36.79	97.96	m	<b>175.02</b>
average 5.00 m deep	1.07	65.30	59.61	97.96	m	<b>222.87</b>
average 6.00 m deep	1.85	112.90	103.10	97.96	m	<b>313.95</b>
Extra for						
Type N sand bed 900 x 150 mm	0.14	8.54	7.42	2.66	m	<b>18.63</b>
Type T sand surround 900 wide x 150 mm	0.28	17.09	14.83	10.89	m	<b>42.81</b>
Type F granular bed 900 x 150 mm	0.15	9.15	7.94	3.86	m	<b>20.96</b>
Type S granular surround 900 x 150 mm	0.28	17.09	14.83	15.75	m	<b>47.67</b>
Type A concrete bed 900 x 150 mm	0.21	12.82	11.13	15.56	m	<b>39.50</b>
Type B, 150 mm concrete bed and haunch	0.43	26.24	22.78	16.62	m	<b>65.64</b>
Type Z concrete surround 900 wide x 150 mm	0.40	24.41	21.19	63.86	m	<b>109.47</b>

**SERIES 500: DRAINAGE AND SERVICE DUCTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Concrete pipes with rebated flexible joints to BS 5911-1</b>						
450 mm diameter piped culvert in trench, depth to invert						
average 2.00 m deep	0.33	20.14	18.46	24.36	m	<b>62.96</b>
average 3.00 m deep	0.44	26.85	24.32	24.36	m	<b>75.53</b>
average 4.00 m deep	0.72	43.94	39.80	24.36	m	<b>108.10</b>
average 6.00 m deep	1.65	100.69	91.72	24.36	m	<b>216.77</b>
Extra for						
Type A concrete bed 1050 x 150 mm	0.24	14.65	12.71	18.16	m	<b>45.52</b>
Type Z concrete surround 1050 wide x 150 mm	0.45	27.46	23.84	81.38	m	<b>132.68</b>
750 mm diameter piped culvert in trench, depth to invert						
average 2.00 m deep	0.38	25.02	26.87	72.16	m	<b>124.06</b>
average 3.00 m deep	0.52	34.24	36.64	72.16	m	<b>143.05</b>
average 4.00 m deep	0.92	60.58	64.86	72.16	m	<b>197.60</b>
average 6.00 m deep	2.05	134.98	144.25	72.16	m	<b>351.39</b>
Extra for						
Type A concrete bed 1250 x 150 mm	0.26	17.12	13.78	25.15	m	<b>56.05</b>
Type Z concrete surround 1250 wide x 150 mm	0.50	32.92	26.49	182.87	m	<b>242.28</b>
900 mm diameter piped culvert in trench, depth to invert						
average 2.00 m deep	0.43	28.31	30.38	96.93	m	<b>155.62</b>
average 3.00 m deep	0.62	40.82	43.78	96.93	m	<b>181.54</b>
average 4.00 m deep	1.06	69.80	74.72	96.93	m	<b>241.44</b>
average 6.00 m deep	2.25	148.15	158.30	96.93	m	<b>403.38</b>
Extra for						
Type A concrete bed 1500 x 150 mm	0.28	18.44	14.83	29.44	m	<b>62.71</b>
Type Z concrete surround 1500 wide x 150 mm	0.55	36.22	29.14	254.28	m	<b>319.63</b>
<b>Corrugated steel pipes galvanised, hot dip bitumen coated (Armco type)</b>						
1000 mm diameter piped culvert in trench, Type S granular surround, depth to invert						
average 2.00 m deep	0.99	65.19	69.88	134.07	m	<b>269.13</b>
1600 mm diameter piped culvert in trench, Type S granular surround, depth to invert						
average 2.00 m deep	2.13	140.25	150.38	221.06	m	<b>511.70</b>
2000 mm diameter piped culvert in trench, Type S granular surround, depth to invert						
average 3.00 m deep	2.97	195.56	209.67	447.72	m	<b>852.95</b>
2200 mm diameter piped culvert in trench, Type S granular surround, depth to invert						
average 3.00 m deep	3.29	216.63	232.21	505.57	m	<b>954.41</b>
<b>Clay cable ducts; Hepduct</b>						
100 mm diameter service duct in trench, Type S granular surround, depth to invert						
average 1.00 m deep	0.14	8.54	7.65	13.04	m	<b>29.23</b>
Two 100 mm diameter service ducts in trench, Type S granular surround, depth to invert						
average 1.00 m deep	0.24	14.65	13.15	25.84	m	<b>53.63</b>
Three 100 mm diameter service ducts in trench, Type S granular surround, depth to invert						
average 1.00 m deep	0.32	19.53	17.51	37.33	m	<b>74.37</b>
Four 100 mm diameter service ducts in trench, Type S granular surround, depth to invert						
average 1.00 m deep	0.40	24.41	21.93	51.36	m	<b>97.70</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DRAINS AND SERVICE DUCTS (EXCLUDE INFILTER DRAINS, NARROW FILTER DRAINS AND FIN DRAINS) - cont'd</b>						
<b>Clay cable ducts; Hepduct - cont'd</b>						
Six 100 mm diameter service ducts in trench, Type S granular surround, depth to invert average 1.00 m deep	0.60	36.62	32.81	71.12	m	<b>140.55</b>
Extra for						
Type Z concrete surround on single duct	0.08	4.88	4.24	10.41	m	<b>19.53</b>
Type Z concrete surround on additional ways	0.08	4.88	4.24	10.41	m	<b>19.53</b>
150 mm diameter conduit, per way	0.01	0.61	0.53	13.95	m	<b>15.10</b>
225 mm diameter conduit, per way	0.01	0.61	0.53	38.67	m	<b>39.81</b>
<b>FILTER DRAINS</b>						
<b>Vitrified clay perforated pipes to BS 65, sleeved joints</b>						
150 mm diameter filter drain in trench with Type A bed and Type A fill filter material,						
average 1.00 m deep	0.26	15.87	13.95	30.32	m	<b>60.14</b>
average 2.00 m deep	0.30	18.31	16.05	38.10	m	<b>72.45</b>
average 3.00 m deep	0.35	21.36	18.84	45.88	m	<b>86.08</b>
150 mm pipes with Type A bed and Type B fill, depth						
average 1.00 m deep	0.26	15.87	13.95	39.48	m	<b>69.30</b>
average 2.00 m deep	0.30	18.31	16.05	55.84	m	<b>90.20</b>
average 3.00 m deep	0.35	21.36	18.84	72.12	m	<b>112.31</b>
225 mm pipes with Type A bed and Type A fill, depth						
average 1.00 m deep	0.27	16.48	14.42	48.46	m	<b>79.36</b>
average 2.00 m deep	0.31	18.92	16.50	58.03	m	<b>93.45</b>
average 3.00 m deep	0.36	21.97	19.36	66.83	m	<b>108.15</b>
225 mm pipes with Type A bed and Type B fill, depth						
average 1.00 m deep	0.27	16.48	14.42	58.01	m	<b>88.91</b>
average 2.00 m deep	0.31	18.92	16.50	77.60	m	<b>113.02</b>
average 3.00 m deep	0.36	21.97	19.36	96.26	m	<b>137.59</b>
300 mm pipes with Type A bed and Type A fill, depth						
average 1.00 m deep	0.28	17.09	14.94	82.34	m	<b>114.37</b>
average 2.00 m deep	0.32	19.53	17.12	93.33	m	<b>129.97</b>
average 3.00 m deep	0.37	22.58	19.83	103.75	m	<b>146.17</b>
300 mm pipes with Type A bed and Type B fill, depth						
average 1.00 m deep	0.28	17.09	14.94	90.62	m	<b>122.65</b>
average 2.00 m deep	0.32	19.53	17.12	112.60	m	<b>149.25</b>
average 3.00 m deep	0.37	22.58	19.83	134.32	m	<b>176.73</b>
<b>Conc. porous pipe BS 5911-114, sleeved joints</b>						
150 mm pipes with Type A bed and Type A fill, depth						
average 1.00 m deep	0.26	15.87	13.95	16.55	m	<b>46.36</b>
average 2.00 m deep	0.30	18.31	16.05	24.32	m	<b>58.67</b>
average 3.00 m deep	0.35	21.36	18.84	32.11	m	<b>72.30</b>
150 mm pipes with Type A bed and Type B fill, depth						
average 1.00 m deep	0.26	15.87	13.95	25.71	m	<b>55.52</b>
average 2.00 m deep	0.30	18.31	16.05	42.06	m	<b>76.42</b>
average 3.00 m deep	0.35	21.36	18.84	58.34	m	<b>98.53</b>
225 mm pipes with Type A bed and Type A fill, depth						
average 1.00 m deep	0.27	16.48	14.42	18.94	m	<b>49.84</b>
average 2.00 m deep	0.31	18.92	16.50	28.51	m	<b>63.93</b>
average 3.00 m deep	0.36	21.97	19.36	37.30	m	<b>78.63</b>
225 mm pipes with Type A bed and Type B fill, depth						
average 1.00 m deep	0.27	16.48	14.42	28.48	m	<b>59.38</b>



## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
average 2.00 m deep	0.31	18.92	16.50	48.07	m	<b>83.49</b>
average 3.00 m deep	0.36	21.97	19.36	66.74	m	<b>108.06</b>
300 mm pipes with Type A bed and Type A fill, depth						
average 1.00 m deep	0.28	17.09	14.94	22.01	m	<b>54.04</b>
average 2.00 m deep	0.32	19.53	17.12	32.99	m	<b>69.64</b>
average 3.00 m deep	0.37	22.58	19.83	43.42	m	<b>85.83</b>
300 mm pipes with Type A bed and Type B fill, depth						
average 1.00 m deep	0.28	17.09	14.94	30.29	m	<b>62.32</b>
average 2.00 m deep	0.32	19.53	17.12	52.27	m	<b>88.92</b>
average 3.00 m deep	0.37	22.58	19.83	73.99	m	<b>116.40</b>
<b>Filter material contiguous with filter drains, sub-base material and lightweight aggregate infill</b>						
Type A	0.07	4.27	3.44	17.46	m <sup>3</sup>	<b>25.17</b>
Type B	0.07	4.27	3.56	37.16	m <sup>3</sup>	<b>44.99</b>
<b>Excavate and replace filter material contiguous with filter drain</b>						
Type A	0.47	14.19	17.01	17.46	m <sup>3</sup>	<b>48.67</b>
Type B	0.47	14.19	17.01	37.16	m <sup>3</sup>	<b>68.36</b>
<b>FIN DRAINS AND NARROW FILTER DRAINS</b>						
<b>Fin Drain DfT type 6 using 'Trammel' drainage fabrics and perforated clay drain; surrounding pipe with sand and granular fill</b>						
100 mm clay perforated pipes, depth						
average 1.00 m deep	0.17	10.37	9.33	18.34	m	<b>38.05</b>
average 2.00 m deep	0.23	14.04	12.59	25.67	m	<b>52.29</b>
<b>Fin Drain DfT type 7 using 'Trammel' drainage fabrics and slotted UPVC drain; surrounding pipe with sand and granular fill, backfilling with selected suitable material</b>						
100 mm UPVC slotted pipes, depth						
average 1.00 m deep	0.17	10.37	9.33	94.58	m	<b>114.28</b>
average 2.00 m deep	0.23	14.04	12.59	101.91	m	<b>128.53</b>
<b>Narrow Filter Drain DfT type 8 using 'Trammel' drainage fabrics and perforated UPVC drain; surrounding pipe with sand and granular fill, backfilling with granular material</b>						
110 mm UPVC perforated pipes, depth						
average 1.00 m deep	0.17	10.37	9.33	22.27	m	<b>41.97</b>
average 2.00 m deep	0.22	13.43	12.03	24.22	m	<b>49.68</b>
<b>Narrow Filter Drain DfT type 9 using 'Trammel' drainage fabrics and perforated UPVC drain; surrounding pipe with sand and granular fill, backfilling with granular material</b>						
110 mm UPVC perforated pipes, depth						
average 1.00 m deep	0.17	10.37	9.33	25.91	m	<b>45.62</b>
average 2.00 m deep	0.23	14.04	12.59	31.00	m	<b>57.63</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CONNECTIONS</b>						
Note: excavation presumed covered by new trench						
Connection of pipe to existing drain, sewer or piped culvert						
150 mm	0.42	25.63	16.11	28.41	nr	<b>70.16</b>
225 mm	0.60	36.62	27.29	105.70	nr	<b>169.61</b>
300 mm	1.15	70.18	54.64	204.98	nr	<b>329.80</b>
Connection of pipes to existing chambers						
150 mm to one brick	1.20	73.23	65.75	4.42	nr	<b>143.39</b>
150 mm to precast	0.60	36.62	32.86	4.42	nr	<b>73.89</b>
300 mm to one and a half brick	2.40	146.46	131.42	7.20	nr	<b>285.08</b>
<b>CHAMBERS AND GULLIES</b>						
<b>Notes</b>						
The rates assume the most efficient items of plant (excavator) and are optimum rates, assuming continuous output with no delays caused by other operations or works. Ground conditions are assumed to be good soil with no abnormal conditions that would affect outputs and consistency of work. Multiplier Table for Labour and Plant for various site conditions and for working:						
out of sequence with other works x 2.75 minimum						
in hard clay x 1.75 - 2.00						
in running sand x 2.75 minimum						
in broken rock x 2.75 - 3.50						
below water table x 2.00 minimum						
<b>Brick construction</b>						
Design criteria used in models:						
* class A engineering bricks						
* 215 thick walls generally; 328 thick to chambers exceeding 2.5 m deep						
* 225 plain concrete C20/20 base slab						
* 300 reinforced concrete C20/20 reducing slab						
* 125 reinforced concrete C20/20 top slab						
* maximum height of working chamber 2.0 m above benching						
* 750 x 750 access shaft						
* plain concrete C15/20 benching, 150 clay main channel longitudinally and two 100 branch channels						
* step irons at 300 mm centres, doubled if depth to invert exceeds 3000 mm						
* heavy duty manhole cover and frame						
750 x 700 chamber 500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	<b>39.55</b>
concrete base	-	-	-	-	-	<b>126.94</b>
brickwork chamber	-	-	-	-	-	<b>231.42</b>
concrete cover slab	-	-	-	-	-	<b>141.56</b>
concrete benching, main and branch channels	-	-	-	-	-	<b>22.05</b>
step irons	-	-	-	-	-	<b>14.16</b>
access cover and frame	-	-	-	-	-	<b>340.00</b>
TOTAL	-	-	-	-	£	<b>915.68</b>

**SERIES 500: DRAINAGE AND SERVICE DUCTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
750 x 700 chamber 1000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	79.10
concrete base	-	-	-	-	-	126.94
brickwork chamber	-	-	-	-	-	462.85
concrete cover slab	-	-	-	-	-	141.56
concrete benching; main and branch channels	-	-	-	-	-	22.05
step irons	-	-	-	-	-	31.15
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1203.65</b>
750 x 700 chamber 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	118.64
concrete base	-	-	-	-	-	126.94
brickwork chamber	-	-	-	-	-	694.27
concrete cover slab	-	-	-	-	-	141.56
concrete benching; main and branch channels	-	-	-	-	-	22.05
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1490.19</b>
900 x 700 chamber 500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	43.37
concrete base	-	-	-	-	-	141.12
brickwork chamber	-	-	-	-	-	248.43
concrete cover slab	-	-	-	-	-	154.81
concrete benching; main and branch channels	-	-	-	-	-	26.46
step irons	-	-	-	-	-	14.16
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>968.35</b>
900 x 700 chamber 1000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	86.74
concrete base	-	-	-	-	-	141.12
brickwork chamber	-	-	-	-	-	496.86
concrete cover slab	-	-	-	-	-	154.81
concrete benching; main and branch channels	-	-	-	-	-	26.46
step irons	-	-	-	-	-	31.15
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1277.14</b>
900 x 700 chamber 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	130.11
concrete base	-	-	-	-	-	141.12
brickwork chamber	-	-	-	-	-	745.29
concrete cover slab	-	-	-	-	-	154.81
concrete benching; main and branch channels	-	-	-	-	-	26.46
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1584.52</b>
1050 x 700 chamber 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	141.58
concrete base	-	-	-	-	-	155.30
brickwork chamber	-	-	-	-	-	796.32
concrete cover slab	-	-	-	-	-	168.06
concrete benching; main and branch channels	-	-	-	-	-	30.87
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1678.86</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CHAMBERS AND GULLIES - cont'd</b>						
<b>Brick construction - cont'd</b>						
1050 x 700 chamber 2500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	235.96
concrete base	-	-	-	-	-	155.30
brickwork chamber	-	-	-	-	-	1327.19
concrete cover slab	-	-	-	-	-	168.06
concrete benching; main and branch channels	-	-	-	-	-	30.87
step irons	-	-	-	-	-	77.88
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>2335.26</b>
1050 x 700 chamber 3500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	330.34
concrete base	-	-	-	-	-	155.30
brickwork chamber	-	-	-	-	-	1858.07
concrete reducing slab	-	-	-	-	-	168.06
brickwork access shaft	-	-	-	-	-	1897.75
concrete cover slab	-	-	-	-	-	137.15
concrete benching; main and branch channels	-	-	-	-	-	30.87
step irons	-	-	-	-	-	109.03
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>5026.57</b>
1350 x 700 chamber 2500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	274.18
concrete base	-	-	-	-	-	183.65
brickwork chamber	-	-	-	-	-	1497.26
concrete cover slab	-	-	-	-	-	194.56
concrete benching; main and branch channels	-	-	-	-	-	39.69
step irons	-	-	-	-	-	77.88
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>2607.22</b>
1350 x 700 chamber 3500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	383.85
concrete base	-	-	-	-	-	183.65
brickwork chamber	-	-	-	-	-	2096.17
concrete reducing slab	-	-	-	-	-	194.56
brickwork access shaft	-	-	-	-	-	1897.75
concrete cover slab	-	-	-	-	-	137.15
concrete benching; main and branch channels	-	-	-	-	-	39.69
step irons	-	-	-	-	-	109.03
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>5381.85</b>
1350 x 700 chamber 4500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	493.53
concrete base	-	-	-	-	-	183.65
brickwork chamber	-	-	-	-	-	2695.08
concrete reducing slab	-	-	-	-	-	194.56
brickwork access shaft	-	-	-	-	-	2439.97
concrete cover slab	-	-	-	-	-	137.15
concrete benching; main and branch channels	-	-	-	-	-	39.69
step irons	-	-	-	-	-	140.18
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>6663.81</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Precast concrete construction</b>						
Design criteria used in models:						
* circular shafts						
* 150 plain concrete surround						
* 225 plain concrete C20/20 base slab						
* precast reducing slab						
* precast top slab						
* maximum height of working chamber 2.0 m above benching						
* 750 diameter access shaft						
* plain concrete C15/20 benching, 150 clay main channel longitudinally and two 100 branch channels						
* step irons at 300 mm centres, doubled if depth to invert exceeds 3000 mm						
* heavy duty manhole cover and frame						
* in manholes over 6 m deep, landings at maximum intervals 675 diameter x 500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	27.78
concrete base	-	-	-	-	-	43.20
main chamber rings	-	-	-	-	-	21.15
cover slab	-	-	-	-	-	83.43
concrete surround	-	-	-	-	-	44.40
concrete benching, main and branch channels	-	-	-	-	-	56.40
step irons	-	-	-	-	-	15.58
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>631.94</b>
675 diameter x 750 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	37.04
concrete base	-	-	-	-	-	43.20
main chamber rings	-	-	-	-	-	48.18
cover slab	-	-	-	-	-	83.43
concrete surround	-	-	-	-	-	64.80
concrete benching, main and branch channels	-	-	-	-	-	56.40
step irons	-	-	-	-	-	23.36
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>696.41</b>
675 diameter x 1000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	44.85
concrete base	-	-	-	-	-	43.20
main chamber rings	-	-	-	-	-	76.38
cover slab	-	-	-	-	-	83.43
concrete surround	-	-	-	-	-	86.40
concrete benching, main and branch channels	-	-	-	-	-	56.40
step irons	-	-	-	-	-	31.15
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>761.81</b>
675 diameter x 1250 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	52.90
concrete base	-	-	-	-	-	43.20
main chamber rings	-	-	-	-	-	104.58
cover slab	-	-	-	-	-	83.43
concrete surround	-	-	-	-	-	106.80
concrete benching, main and branch channels	-	-	-	-	-	56.40
step irons	-	-	-	-	-	38.94
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>826.25</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CHAMBERS AND GULLIES - cont'd</b>						
<b>Precast concrete construction - cont'd</b>						
900 diameter x 750 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	102.53
concrete base	-	-	-	-	-	121.37
main chamber rings	-	-	-	-	-	57.18
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	68.66
concrete benching, main and branch channels	-	-	-	-	-	22.27
step irons	-	-	-	-	-	23.36
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>819.55</b>
900 diameter x 1000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	136.70
concrete base	-	-	-	-	-	121.37
main chamber rings	-	-	-	-	-	76.25
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	91.55
concrete benching, main and branch channels	-	-	-	-	-	22.27
step irons	-	-	-	-	-	31.15
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>903.47</b>
900 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	205.05
concrete base	-	-	-	-	-	121.37
main chamber rings	-	-	-	-	-	114.37
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	137.32
concrete benching, main and branch channels	-	-	-	-	-	22.27
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1071.29</b>
1200 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	253.94
concrete base	-	-	-	-	-	171.33
main chamber rings	-	-	-	-	-	120.37
cover slab	-	-	-	-	-	107.85
concrete surround	-	-	-	-	-	177.20
concrete benching, main and branch channels	-	-	-	-	-	39.59
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1257.01</b>
1200 diameter x 2000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	338.58
concrete base	-	-	-	-	-	171.33
main chamber rings	-	-	-	-	-	160.49
cover slab	-	-	-	-	-	107.85
concrete surround	-	-	-	-	-	236.27
concrete benching, main and branch channels	-	-	-	-	-	39.59
step irons	-	-	-	-	-	62.30
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1456.41</b>

**SERIES 500: DRAINAGE AND SERVICE DUCTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
1200 diameter x 2500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	423.23
concrete base	-	-	-	-	-	171.33
main chamber rings	-	-	-	-	-	200.62
cover slab	-	-	-	-	-	107.85
concrete surround	-	-	-	-	-	295.34
concrete benching, main and branch channels	-	-	-	-	-	39.59
step irons	-	-	-	-	-	77.88
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1655.84</b>
1200 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	507.87
concrete base	-	-	-	-	-	171.33
main chamber rings	-	-	-	-	-	240.74
cover slab	-	-	-	-	-	107.85
concrete surround	-	-	-	-	-	354.41
concrete benching, main and branch channels	-	-	-	-	-	39.59
step irons	-	-	-	-	-	93.46
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>1855.25</b>
1800 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	368.89
concrete base	-	-	-	-	-	295.92
main chamber rings	-	-	-	-	-	362.25
cover slab	-	-	-	-	-	289.80
concrete surround	-	-	-	-	-	256.97
concrete benching, main and branch channels	-	-	-	-	-	89.08
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>2049.64</b>
1800 diameter x 2000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	491.85
concrete base	-	-	-	-	-	295.92
main chamber rings	-	-	-	-	-	483.00
cover slab	-	-	-	-	-	289.80
concrete surround	-	-	-	-	-	342.62
concrete benching, main and branch channels	-	-	-	-	-	89.08
step irons	-	-	-	-	-	62.30
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>2394.57</b>
1800 diameter x 2500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	614.81
concrete base	-	-	-	-	-	295.92
main chamber rings	-	-	-	-	-	603.75
cover slab	-	-	-	-	-	289.80
concrete surround	-	-	-	-	-	428.28
concrete benching, main and branch channels	-	-	-	-	-	89.08
step irons	-	-	-	-	-	77.88
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>2739.52</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CHAMBERS AND GULLIES - cont'd</b>						
<b>Precast concrete construction - cont'd</b>						
1800 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	737.77
concrete base	-	-	-	-	-	295.92
main chamber rings	-	-	-	-	-	724.00
cover slab	-	-	-	-	-	289.80
concrete surround	-	-	-	-	-	513.93
concrete benching, main and branch channels	-	-	-	-	-	89.08
step irons	-	-	-	-	-	93.46
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>3083.96</b>
1800 diameter x 3500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	860.74
concrete base	-	-	-	-	-	295.92
main chamber rings	-	-	-	-	-	845.25
reducing slab	-	-	-	-	-	324.30
access shaft	-	-	-	-	-	266.86
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	599.59
concrete benching, main and branch channels	-	-	-	-	-	89.08
step irons	-	-	-	-	-	109.03
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>3814.95</b>
1800 diameter x 4000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	983.70
concrete base	-	-	-	-	-	295.92
main chamber rings	-	-	-	-	-	966.00
reducing slab	-	-	-	-	-	324.30
access shaft	-	-	-	-	-	304.98
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	685.24
concrete benching, main and branch channels	-	-	-	-	-	89.08
step irons	-	-	-	-	-	124.61
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>4198.01</b>
2400 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	506.74
concrete base	-	-	-	-	-	453.43
main chamber rings	-	-	-	-	-	921.15
cover slab	-	-	-	-	-	841.80
concrete surround	-	-	-	-	-	336.73
concrete benching, main and branch channels	-	-	-	-	-	158.36
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>3604.94</b>
2400 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	1013.48
concrete base	-	-	-	-	-	453.43
main chamber rings	-	-	-	-	-	1842.30
cover slab	-	-	-	-	-	841.80
concrete surround	-	-	-	-	-	673.46
concrete benching, main and branch channels	-	-	-	-	-	158.36
step irons	-	-	-	-	-	93.46
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>5416.29</b>



## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
2400 diameter x 4500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	1520.23
concrete base	-	-	-	-	-	453.43
main chamber rings	-	-	-	-	-	2763.45
reducing slab	-	-	-	-	-	910.80
access shaft	-	-	-	-	-	343.10
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	1010.18
concrete benching, main and branch channels	-	-	-	-	-	158.36
step irons	-	-	-	-	-	140.18
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>7723.91</b>
2700 diameter x 1500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	584.26
concrete base	-	-	-	-	-	544.53
main chamber rings	-	-	-	-	-	1066.05
cover slab	-	-	-	-	-	1283.40
concrete surround	-	-	-	-	-	376.61
concrete benching, main and branch channels	-	-	-	-	-	200.42
step irons	-	-	-	-	-	46.73
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>4442.00</b>
2700 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	1168.52
concrete base	-	-	-	-	-	544.53
main chamber rings	-	-	-	-	-	2132.10
cover slab	-	-	-	-	-	1283.40
concrete surround	-	-	-	-	-	753.22
concrete benching, main and branch channels	-	-	-	-	-	200.42
step irons	-	-	-	-	-	93.46
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>6515.65</b>
2700 diameter x 4500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	1752.70
concrete base	-	-	-	-	-	544.53
main chamber rings	-	-	-	-	-	3198.15
reducing slab	-	-	-	-	-	1490.40
access shaft	-	-	-	-	-	343.10
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	1129.82
concrete benching, main and branch channels	-	-	-	-	-	200.42
step irons	-	-	-	-	-	140.18
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	£	<b>9223.48</b>
3000 diameter x 3000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	1335.00
concrete base	-	-	-	-	-	643.85
main chamber rings	-	-	-	-	-	3001.50
cover slab	-	-	-	-	-	1656.00
concrete surround	-	-	-	-	-	832.98
concrete benching, main and branch channels	-	-	-	-	-	247.43
step irons	-	-	-	-	-	93.46
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	-	<b>8150.22</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CHAMBERS AND GULLIES - cont'd</b>						
<b>Precast concrete construction - cont'd</b>						
3000 diameter x 4500 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	2002.51
concrete base	-	-	-	-	-	643.85
main chamber rings	-	-	-	-	-	4502.25
reducing slab	-	-	-	-	-	1897.50
access shaft	-	-	-	-	-	343.10
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	1249.47
concrete benching, main and branch channels	-	-	-	-	-	247.43
step irons	-	-	-	-	-	140.18
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	-	<b>11450.47</b>
3000 diameter x 6000 depth to invert						
excavation, support, backfilling and disposal	-	-	-	-	-	2670.01
concrete base	-	-	-	-	-	643.85
main chamber rings	-	-	-	-	-	6003.00
reducing slab	-	-	-	-	-	1897.50
access shaft	-	-	-	-	-	457.47
cover slab	-	-	-	-	-	84.18
concrete surround	-	-	-	-	-	1665.96
concrete benching, main and branch channels	-	-	-	-	-	247.43
step irons	-	-	-	-	-	186.91
access cover and frame	-	-	-	-	-	340.00
TOTAL	-	-	-	-	-	<b>14196.31</b>
<b>Clayware vertical pipe complete with rest bend at base and tumbling bay junction to main drain complete with stopper; concrete grade C20 surround, 150 mm thick; additional excavation and disposal</b>						
100 pipe						
1.15 m to invert	-	-	-	-	nr	<b>101.85</b>
2.15 m to invert	-	-	-	-	nr	<b>130.07</b>
3.15 m to invert	-	-	-	-	nr	<b>157.06</b>
4.15 m to invert	-	-	-	-	nr	<b>186.51</b>
150 pipe						
1.15 m to invert	-	-	-	-	nr	<b>157.06</b>
2.15 m to invert	-	-	-	-	nr	<b>188.97</b>
3.15 m to invert	-	-	-	-	nr	<b>225.78</b>
4.15 m to invert	-	-	-	-	nr	<b>262.59</b>
225 pipe						
1.15 m to invert	-	-	-	-	nr	<b>312.90</b>
2.15 m to invert	-	-	-	-	nr	<b>366.89</b>
3.15 m to invert	-	-	-	-	nr	<b>423.33</b>
4.15 m to invert	-	-	-	-	nr	<b>482.23</b>
<b>Vitrified clay; set in concrete grade C20, 150 mm thick; additional excavation and disposal</b>						
Road gully						
450 mm diameter x 900 mm deep, 100 mm or 150 mm outlet; cast iron road gully grating and frame group 4, 434 x 434 mm, on Class B engineering brick seating						
	0.50	22.48	1.20	400.49	nr	<b>424.17</b>

**SERIES 500: DRAINAGE AND SERVICE DUCTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Yard gully (mud); trapped with rodding eye; galvanised bucket; stopper 225 mm diameter, 100 mm diameter outlet, cast iron hinged grate and frame	0.30	13.49	0.75	298.18	nr	<b>312.42</b>
Grease interceptors; internal access and bucket 600 x 450 mm, metal tray and lid, square hopper with horizontal inlet	0.35	15.73	0.84	1132.19	nr	<b>1148.76</b>
<b>Precast concrete; set in concrete grade C20P, 150 mm thick; additional excavation and disposal</b>						
Road gully; trapped with rodding eye; galvanised bucket; stopper 450 mm diameter x 900 mm deep, cast iron road gully grating and frame group 4, 434 x 434 mm, on Class B engineering brick seating	0.54	24.27	1.30	256.74	nr	<b>282.32</b>
<b>SOFT SPOTS AND OTHER VOIDS</b>						
Excavation of soft spots and other voids in bottom of trenches, chambers and gullies	0.07	4.27	3.85	-	m <sup>3</sup>	<b>8.13</b>
Filling of soft spots and other voids in bottom of trenches, chambers and gullies with imported selected sand	0.09	5.49	4.67	20.86	m <sup>3</sup>	<b>31.02</b>
Filling of soft spots and other voids in bottom of trenches, chambers and gullies with imported natural gravel	0.09	5.49	4.67	31.01	m <sup>3</sup>	<b>41.17</b>
Filling of soft spots and other voids in bottom of trenches, chambers and gullies with concrete Grade C15, 40 mm aggregate	0.09	5.49	4.62	103.24	m <sup>3</sup>	<b>113.35</b>
Filling of soft spots and other voids in bottom of trenches, chambers and gullies with concrete Grade C20, 20 mm aggregate	0.09	5.49	4.62	91.43	m <sup>3</sup>	<b>101.55</b>
<b>SUPPORTS LEFT IN EXCAVATION</b>						
Timber close boarded supports left in trench	-	-	8.67	-	m <sup>2</sup>	<b>8.67</b>
pits	-	-	8.67	-	m <sup>2</sup>	<b>8.67</b>
Steel trench sheeting supports left in trench	-	-	36.38	-	m <sup>2</sup>	<b>36.38</b>
pits	-	-	36.38	-	m <sup>2</sup>	<b>36.38</b>
<b>RENEWAL, RAISING OR LOWERING OF COVERS AND GRATINGS ON EXISTING CHAMBERS AND GULLIES</b>						
<b>REPLACEMENT, RAISING OR LOWERING OF COVERS AND GRATINGS ON EXISTING CHAMBERS AND GULLIES</b>						
Raising the level of 100 x 100 mm water stop tap boxes on 100 x 100 mm brick chambers by 150 mm or less	0.06	2.70	0.40	11.58	nr	<b>14.68</b>
Lowering the level of 100 x 100 mm water stop tap boxes on 100 x 100 mm brick chambers by 150 mm or less	0.04	1.80	0.26	6.95	nr	<b>9.01</b>
Raising the level of 420 x 420 mm cover and frame on 420 x 420 mm in-situ concrete chamber by 150 mm or less	0.10	4.50	0.66	20.07	nr	<b>25.23</b>

## SERIES 500: DRAINAGE AND SERVICE DUCTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>REPLACEMENT, RAISING OR LOWERING OF COVERS AND GRATINGS ON EXISTING CHAMBERS AND GULLIES - cont'd</b>						
Lowering the level of 420 x 420 mm British Telecom cover and frame on 420 x 420 mm in-situ concrete chamber by 150 mm or less	0.08	3.37	2.09	12.34	nr	17.81
Raising the level of 700 x 500 mm cover and frame on 700 x 500 mm in-situ concrete chamber by 150 mm or less	0.17	7.64	1.11	14.33	nr	23.09
Raising the level of 600 x 600 mm grade A heavy duty manhole cover and frame on 600 x 600 mm brick chamber by 150 mm or less	0.17	7.64	1.11	29.33	nr	38.08
by 150 - 300 mm	0.21	9.44	1.37	37.04	nr	47.85
Lowering the level of 600 x 600 mm grade A heavy duty manhole cover and frame on 600 x 600 mm brick chamber by 150 mm or less	0.10	4.50	0.66	17.77	nr	22.92
<b>REMOVE FROM STORE AND REINSTALL CHAMBER COVERS AND FRAMES AND GULLEY GRATINGS AND FRAMES</b>						
<b>REMOVE FROM STORE AND REINSTALL CHAMBER COVERS AND FRAMES AND GULLEY GRATINGS AND FRAMES</b>						
Remove from store and reinstall cover and frame 600 x 600 mm; Group 5; super heavy duty E600 cast iron	0.25	11.24	0.69	35.22	nr	47.15
600 x 600 mm; Group 4; heavy duty triangular D400 cast iron	0.25	11.24	0.69	12.09	nr	24.02
600 x 600 x 75 mm; Group 2; light duty single seal B125 cast iron	0.25	11.24	0.69	12.92	nr	24.85
600 x 600 x 100mm; Group 2; medium duty single seal B125 cast iron	0.25	11.24	0.69	21.44	nr	33.37
<b>GROUTING UP OF EXISTING DRAINS AND SERVICE DUCTS</b>						
<b>Concrete Grade C15</b>						
Sealing redundant road gullies	0.02	0.90	0.11	14.11	m <sup>3</sup>	15.12
Filling redundant chambers with ne 1.0 m deep to invert	0.09	5.49	4.29	56.61	nr	66.39
1.0 - 2.0 m deep to invert	0.21	12.82	10.01	91.49	nr	114.31
2.0 - 3.0 m deep to invert	0.55	33.56	26.20	152.45	nr	212.21
Grouting up of existing drains and service ducts 100 mm diameter	0.03	1.83	1.45	3.15	m	6.42
300 mm diameter	0.13	7.93	6.30	13.32	m	27.55
450 mm diameter	0.26	15.87	12.60	27.66	m	56.12
600 mm diameter	0.50	30.51	24.21	56.16	m	110.89
1200 mm diameter	1.70	103.74	82.29	157.00	m	343.04

**SERIES 500: DRAINAGE AND SERVICE DUCTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>EXCAVATION IN HARD MATERIAL</b>						
Extra over excavation for excavation in Hard Material in drainage:						
existing pavement, brickwork, concrete, masonry and the like	0.15	9.15	8.76	-	m <sup>3</sup>	<b>17.92</b>
rock	0.35	21.36	20.45	-	m <sup>3</sup>	<b>41.81</b>
reinforced concrete	0.60	36.62	36.01	-	m <sup>3</sup>	<b>72.63</b>
Reinstatement of pavement construction; extra over excavation for breaking up and subsequently reinstating 150 mm flexible surfacing and 280 mm sub-base						
100 mm diameter sewer, drain or service duct	0.09	5.49	5.11	15.56	m	<b>26.16</b>
150 mm diameter sewer, drain or service duct	0.10	6.10	5.68	16.59	m	<b>28.38</b>
225 mm diameter sewer, drain or service duct	0.10	6.10	5.68	18.15	m	<b>29.94</b>
300 mm diameter sewer, drain or service duct	0.10	6.10	5.68	18.67	m	<b>30.45</b>
375 mm diameter sewer, drain or service duct	0.10	6.10	5.68	19.18	m	<b>30.97</b>
450 mm diameter sewer, drain or service duct	0.12	7.32	6.23	20.22	m	<b>33.77</b>
2 way 100 mm diameter service ducts	0.10	6.10	5.68	16.08	m	<b>27.86</b>
3 way 100 mm diameter service ducts	0.10	6.10	5.68	16.59	m	<b>28.38</b>
4 way 100mm diameter service ducts	0.10	6.10	5.68	18.15	m	<b>29.94</b>

## SERIES 500: DETAILED RATES MANHOLES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>MANHOLES</b>						
<b>Materials</b>						
In order to arrive at an all in rate for enumerated manholes the various constituent elements have been broken down and unit rates given against each item.						
<b>Earthworks</b>						
Excavation by machine						
ne 2.0 m deep	0.22	13.43	6.10	-	m <sup>3</sup>	<b>19.53</b>
2.0 - 3.0 m deep	0.24	14.65	6.65	-	m <sup>3</sup>	<b>21.30</b>
3.0 - 4.0 m deep	0.26	15.87	7.21	-	m <sup>3</sup>	<b>23.08</b>
Backfilling						
ne 2.0 m deep	0.11	6.71	3.04	-	m <sup>3</sup>	<b>9.76</b>
2.0 - 3.0 m deep	0.11	6.71	3.04	-	m <sup>3</sup>	<b>9.76</b>
3.0 - 4.0 m deep	0.11	6.71	3.04	-	m <sup>3</sup>	<b>9.76</b>
Earthwork support						
ne 2.0 m deep	0.01	0.43	1.16	-	m <sup>3</sup>	<b>1.58</b>
2.0 - 3.0 m deep	0.01	0.67	2.01	-	m <sup>3</sup>	<b>2.69</b>
3.0 - 4.0 m deep	0.01	0.85	3.37	-	m <sup>3</sup>	<b>4.22</b>
Disposal of excavated material						
off site	0.55	21.84	7.83	-	m <sup>3</sup>	<b>29.67</b>
to spoil heap average 50 m distant	0.19	2.77	1.29	-	m <sup>3</sup>	<b>4.06</b>
<b>Mass concrete grade C15</b>						
Blinding; thickness						
ne 150 mm deep	1.05	13.43	3.73	92.31	m <sup>3</sup>	<b>109.48</b>
Surrounds to manholes; thickness						
ne 150 mm deep	2.30	29.42	7.92	92.31	m <sup>3</sup>	<b>129.66</b>
150 - 500 mm	1.70	21.75	5.86	92.31	m <sup>3</sup>	<b>119.92</b>
Benching to bottom of manhole						
650 mm diameter	1.00	12.79	3.38	7.66	nr	<b>23.83</b>
900 mm diameter	2.00	25.58	6.76	14.68	nr	<b>47.03</b>
1050 mm diameter	3.60	46.05	12.16	19.99	nr	<b>78.20</b>
1200 mm diameter	4.75	60.76	16.06	26.11	nr	<b>102.93</b>
1500 mm diameter	5.75	73.55	19.44	40.80	nr	<b>133.80</b>
rectangular	3.50	44.77	11.83	23.07	m <sup>2</sup>	<b>79.67</b>
<b>Reinforced concrete grade C20</b>						
Bases; thickness						
150 - 300 mm deep	2.30	29.42	7.77	92.91	m <sup>3</sup>	<b>130.11</b>
300 - 500 mm deep	2.50	31.98	8.45	92.91	m <sup>3</sup>	<b>133.34</b>
Suspended slabs; thickness						
ne 150 mm	3.45	44.13	11.67	92.91	m <sup>3</sup>	<b>148.72</b>
150 - 300 mm	2.70	34.54	9.12	92.91	m <sup>3</sup>	<b>136.58</b>
<b>Formwork; GRP forms</b>						
Plain curved, vertical						
to base and benching	0.60	7.68	2.03	11.13	m <sup>2</sup>	<b>20.84</b>
to surrounds	0.40	5.12	1.35	8.17	m <sup>2</sup>	<b>14.64</b>
<b>Bar reinforcement</b>						
See <a href="#">Series 1700</a>						

## SERIES 500: DETAILED RATES MANHOLES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Precast concrete circular manhole rings; BS 5911</b>						
<b>Part 1</b>						
Shaft rings						
675 mm; plain/reinforced	3.20	44.22	23.80	58.16	m	126.17
900 mm; plain/reinforced	3.80	52.51	28.25	76.59	m	157.35
1050 mm; plain/reinforced	4.20	58.03	31.24	83.30	m	172.57
1200 mm; plain/reinforced	4.68	64.67	34.81	100.76	m	200.24
1500 mm; reinforced	5.28	72.96	39.27	156.03	m	268.26
1800 mm; reinforced	6.00	82.91	44.64	211.04	m	338.58
2100 mm; reinforced	6.60	98.60	73.56	398.44	m	570.61
2400 mm; reinforced	7.20	107.57	80.15	503.29	m	691.01
2700 mm; reinforced	8.00	119.52	89.06	582.60	m	791.18
3000 mm; reinforced	8.60	128.48	95.73	792.63	m	1016.84
Reducing slabs + Landing slabs; 900 mm diameter access						
1050 mm; plain/reinforced	2.52	34.82	18.73	90.83	nr	144.38
1200 mm; plain/reinforced	2.80	38.69	20.84	117.76	nr	177.29
1500 mm; reinforced	3.16	43.66	23.49	195.98	nr	263.14
1800 mm; reinforced	3.60	49.74	26.79	257.66	nr	334.20
2100 mm; reinforced	4.00	59.76	44.53	526.68	nr	630.96
2400 mm; reinforced	4.40	65.74	49.00	686.65	nr	801.39
2700 mm; reinforced	4.80	71.71	53.43	1103.35	nr	1228.49
3000 mm; reinforced	5.20	77.69	57.90	1400.47	nr	1536.06
Cover slabs						
675 mm; plain/reinforced	1.84	25.42	13.70	47.67	nr	86.80
900 mm; plain/reinforced	2.16	29.85	16.08	71.66	nr	117.59
1050 mm; plain/reinforced	2.52	34.82	18.73	77.76	nr	131.31
1200 mm; plain/reinforced	2.80	38.69	20.84	94.59	nr	154.12
1500 mm; reinforced	3.16	43.66	23.49	155.55	nr	222.70
1800 mm; reinforced	3.60	49.74	26.79	221.79	nr	298.32
2100 mm; reinforced	4.00	59.76	44.53	446.78	nr	551.07
2400 mm; reinforced	4.40	65.74	49.00	603.89	nr	718.62
2700 mm; reinforced	4.80	71.71	53.43	1103.35	nr	1228.49
3000 mm; reinforced	5.20	77.69	57.90	1168.00	nr	1303.59
<b>Engineering bricks, Class B; PC £175.00/1000; in cement mortar (1:3)</b>						
Walls, built vertical, and straight						
one brick thick; depth ne 1.00 m	2.63	46.42	4.75	5.93	m <sup>2</sup>	57.10
one brick thick; depth 1.00 - 2.00 m	2.80	49.52	5.06	5.93	m <sup>2</sup>	60.51
one brick thick; depth 2.00 - 3.00 m	3.04	53.85	5.50	5.93	m <sup>2</sup>	65.29
one brick thick; depth 3.00 - 4.00 m	3.29	58.19	5.95	5.93	m <sup>2</sup>	70.06
one brick thick; depth 4.00 - 5.00 m	3.67	65.00	6.64	5.93	m <sup>2</sup>	77.56
one and a half bricks thick; depth ne 1.00 m	3.61	63.76	6.52	8.09	m <sup>2</sup>	78.36
one and a half bricks thick; depth 1.00 - 2.00 m	4.03	71.19	7.27	8.09	m <sup>2</sup>	86.55
one and a half bricks thick; depth 2.00 - 3.00 m	4.41	69.54	7.97	8.09	m <sup>2</sup>	85.60
one and a half bricks thick; depth 3.00 - 4.00 m	4.79	84.80	8.66	8.09	m <sup>2</sup>	101.56
one and a half bricks thick; depth 4.00 - 5.00 m	5.18	81.68	9.36	8.09	m <sup>2</sup>	99.13
<b>Step irons; BS 1247; malleable; galvanised</b>						
Built into joints; at depths						
ne 1.00 m	0.11	1.86	0.19	6.98	nr	9.03
1.00 - 2.00 m	0.11	1.86	0.19	6.98	nr	9.03
2.00 - 3.00 m	0.14	2.48	0.25	6.98	nr	9.71
3.00 - 4.00 m	0.17	3.09	0.32	6.98	nr	10.39
4.00 - 5.00 m	0.21	3.71	0.38	6.98	nr	11.07

## SERIES 500: DETAILED RATES MANHOLES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>MANHOLES - cont'd</b>						
<b>Step irons; BS 1247; malleable; galvanised - cont'd</b>						
Cast into concrete; at depths						
ne 1.00 m	0.09	1.17	0.19	6.98	nr	<b>8.34</b>
1.00 - 2.00 m	0.09	1.17	0.19	6.98	nr	<b>8.34</b>
2.00 - 3.00 m	0.12	1.56	0.25	6.98	nr	<b>8.79</b>
3.00 - 4.00 m	0.15	1.95	0.32	6.98	nr	<b>9.25</b>
4.00 - 5.00 m	0.18	2.34	0.38	6.98	nr	<b>9.70</b>
<b>Vitrified clayware channels; bedding in cement mortar in bottom of manhole</b>						
Half section straight						
100 mm	0.54	7.03	0.99	6.30	nr	<b>14.32</b>
150 mm	0.69	8.99	1.32	11.23	nr	<b>21.53</b>
225 mm	0.96	12.51	1.76	26.19	nr	<b>40.46</b>
300 mm	1.29	16.80	2.37	53.08	nr	<b>72.25</b>
Channel bend						
100 mm	0.42	5.47	0.77	6.82	nr	<b>13.07</b>
150 mm	0.57	7.43	1.05	11.24	nr	<b>19.72</b>
225 mm	0.84	10.94	1.54	37.57	nr	<b>50.06</b>
300 mm	1.20	15.63	2.21	76.60	nr	<b>94.44</b>
Channel branch						
100 mm	0.48	6.25	0.88	14.43	nr	<b>21.56</b>
150 mm	0.78	10.16	1.44	23.65	nr	<b>35.25</b>
225 mm	2.01	26.18	3.70	67.62	nr	<b>97.50</b>
300 mm	3.21	41.82	5.90	160.77	nr	<b>208.49</b>
Half section straight taper						
150 mm	0.66	8.60	1.22	18.09	nr	<b>27.90</b>
225 mm	0.99	12.90	1.82	73.39	nr	<b>88.11</b>
300 mm	1.44	18.76	2.65	145.23	nr	<b>166.63</b>
Half section branch channel bend						
100 mm	0.42	5.47	0.77	5.54	nr	<b>11.79</b>
150 mm	0.57	7.43	1.05	9.45	nr	<b>17.93</b>
225 mm	0.84	10.94	1.54	35.83	nr	<b>48.31</b>
300 mm	1.20	15.63	2.21	116.19	nr	<b>134.03</b>
Three quarter section branch channel bend						
100 mm	0.42	5.47	0.77	15.57	nr	<b>21.82</b>
150 mm	0.57	7.43	1.05	23.63	nr	<b>32.10</b>
225 mm	0.84	10.94	1.54	99.31	nr	<b>111.80</b>
300 mm	1.20	15.63	2.21	166.18	nr	<b>184.02</b>
<b>Spun concrete channels; bedding in cement mortar in bottom of manhole</b>						
Half section straight						
300 mm	1.14	14.85	2.41	9.19	nr	<b>26.44</b>
450 mm	2.25	29.31	4.75	15.50	nr	<b>49.56</b>
600 mm	3.15	41.03	6.64	28.69	nr	<b>76.36</b>
900 mm	5.91	76.99	12.46	55.16	nr	<b>144.60</b>
1200 mm	9.42	122.71	19.86	97.39	nr	<b>239.96</b>
<b>Labours</b>						
Build in pipes; to brickwork						
300 mm	0.28	4.95	0.49	1.04	nr	<b>6.48</b>
450 mm	0.39	6.81	0.68	1.46	nr	<b>8.94</b>
600 mm	0.53	9.29	0.92	1.96	nr	<b>12.16</b>
900 mm	0.70	12.38	1.23	3.46	nr	<b>17.06</b>
1200 mm	0.77	13.62	1.35	6.95	nr	<b>21.92</b>



## SERIES 500: DETAILED RATES MANHOLES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Build in pipes; to precast concrete						
300 mm	1.35	17.59	2.76	1.46	nr	<b>21.80</b>
450 mm	2.01	26.18	4.11	2.08	nr	<b>32.38</b>
600 mm	2.61	34.00	5.33	2.92	nr	<b>42.25</b>
900 mm	3.84	50.02	7.84	6.29	nr	<b>64.15</b>
1200 mm	4.83	62.92	9.86	11.03	nr	<b>83.81</b>
<b>Access covers and frames; coated; BS EN 124; bed frame in cement mortar; set cover in grease and sand</b>						
Group 5; super heavy duty; solid top 600 x 600 mm; E600	1.80	23.45	2.94	554.38	nr	<b>580.78</b>
Group 4; heavy duty; solid top 600 x 600 mm; double triangular, hinged; D400	1.44	18.76	2.35	190.46	nr	<b>211.57</b>
Group 2; medium duty 600 x 600 mm; single seal; B125	1.17	15.24	1.92	249.31	nr	<b>266.47</b>
Group 2; light duty 600 x 600 mm; single seal; B125	0.87	11.33	1.42	237.96	nr	<b>250.72</b>
<b>Manhole ancillaries</b>						
Manhole interceptors						
100 mm diameter	0.54	7.03	1.10	105.46	nr	<b>113.60</b>
150 mm diameter	0.60	7.82	1.23	151.64	nr	<b>160.68</b>
225 mm diameter	0.90	11.72	1.84	474.60	nr	<b>488.16</b>
300 mm diameter	1.20	15.63	2.41	1018.09	nr	<b>1036.13</b>
Rodding eye points (excluding pipework)						
100 mm diameter	1.20	15.63	2.45	39.95	nr	<b>58.03</b>
150 mm diameter	1.35	17.59	2.48	61.31	nr	<b>81.38</b>

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £																														
<p><b>GENERAL</b></p> <p><b>Notes</b>            The cost of earth moving and other associated works is dependent on matching the overall quantities and production rates called for by the programme of works with the most appropriate plant and assessing the most suitable version of that plant that will:</p> <ul style="list-style-type: none"> <li>* deal with the site conditions (e.g. type of ground, type of excavation, length of haul, prevailing weather, etc.);</li> <li>* comply with the specification requirements (e.g. compaction, separation of materials, surface tolerances, etc.);</li> <li>* complete the work economically (e.g. provide surface tolerances which will avoid undue excessive thickness of expensive imported materials).</li> </ul> <p><b>Excavation rates</b>            Unless stated the units for excavation in material other than topsoil rock or artificial hard materials are based on excavation in firm gravel soils. Factors for alternative types of soil:            Multiply the rates by:-</p> <table style="margin-left: 40px;"> <thead> <tr> <th></th> <th>Scrapers Dozers and Loaders</th> <th>Factor</th> <th>Backacters (minimum bucket size 0.5 m<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>Stiff clay</td> <td>1.5</td> <td>2.0</td> <td>1.7</td> </tr> <tr> <td>Chalk</td> <td>2.5</td> <td>3.0</td> <td>2.0</td> </tr> <tr> <td>Soft rock</td> <td>3.5</td> <td>2.5</td> <td>2.0</td> </tr> <tr> <td>Broken rock</td> <td>3.7</td> <td>2.5</td> <td>1.7</td> </tr> </tbody> </table> <p><b>Disposal rates</b>            The other important consideration in excavation of material is bulkage of material after it is dug and loaded onto transport. All pricing and estimating for disposal is based on the volume of solid material excavated and rates for disposal should be adjusted by the following factors for bulkage:</p> <table style="margin-left: 40px;"> <tbody> <tr> <td>Sand bulkage</td> <td>x 1.10</td> </tr> <tr> <td>Gravel bulkage</td> <td>x 1.20</td> </tr> <tr> <td>Compacted soil bulkage</td> <td>x 1.30</td> </tr> <tr> <td>Compacted sub-base, acceptable fill etc. bulkage</td> <td>x 1.30</td> </tr> <tr> <td>Stiff clay bulkage</td> <td>x 1.20</td> </tr> </tbody> </table> <p><b>Fill rates</b>            The price for filling presume the material being supplied in loose state.</p>								Scrapers Dozers and Loaders	Factor	Backacters (minimum bucket size 0.5 m <sup>3</sup> )	Stiff clay	1.5	2.0	1.7	Chalk	2.5	3.0	2.0	Soft rock	3.5	2.5	2.0	Broken rock	3.7	2.5	1.7	Sand bulkage	x 1.10	Gravel bulkage	x 1.20	Compacted soil bulkage	x 1.30	Compacted sub-base, acceptable fill etc. bulkage	x 1.30	Stiff clay bulkage	x 1.20
	Scrapers Dozers and Loaders	Factor	Backacters (minimum bucket size 0.5 m <sup>3</sup> )																																	
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## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Scraper gang</b>						
1 plant operator (skill rate 2)	-	18.05	-	-	-	-
Total Gang Rate / Hour	£	<b>18.05</b>	-	-	-	-
<b>Scraper and ripper bulldozer gang (hard material)</b>						
2 plant operator (skill rate 2)	-	36.10	-	-	-	-
Total Gang Rate / Hour	£	<b>36.10</b>	-	-	-	-
<b>General excavation gang</b>						
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
1 plant operator (skill rate 3) - 25% of time	-	4.05	-	-	-	-
1 banksman (skill rate 4)	-	13.32	-	-	-	-
Total Gang Rate / Hour	£	<b>33.56</b>	-	-	-	-
<b>Shore defences (armour stones) gang</b>						
1 plant operator (skill rate 2)	-	18.05	-	-	-	-
1 banksman (skill rate 4)	-	13.32	-	-	-	-
Total Gang Rate / Hour	£	<b>31.37</b>	-	-	-	-
<b>Filling gang</b>						
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
Total Gang Rate / Hour	£	<b>39.44</b>	-	-	-	-
<b>Treatment of filled surfaces gang</b>						
1 plant operator (skill rate 2)	-	18.05	-	-	-	-
Total Gang Rate / Hour	£	<b>18.05</b>	-	-	-	-
<b>Geotextiles (light sheets) gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time	-	7.14	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
Total Gang Rate / Hour	£	<b>32.02</b>	-	-	-	-
<b>Geotextiles (medium sheets) gang</b>						
1 ganger/chargehand (skill rate 4) - 20% of time	-	2.86	-	-	-	-
3 unskilled operatives (general)	-	37.32	-	-	-	-
Total Gang Rate / Hour	£	<b>40.18</b>	-	-	-	-
<b>Geotextiles (heavy sheets) gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time	-	7.14	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
Total Gang Rate / Hour	£	<b>46.58</b>	-	-	-	-
<b>Horticultural works gang</b>						
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
Total Gang Rate / Hour	£	<b>25.76</b>	-	-	-	-

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT</b>						
<b>Scraper excavation</b>						
motor scraper, 16.80 m <sup>3</sup> , elevating	-	-	97.34	-	-	-
Total Gang Rate / Hour	-	-	<b>97.34</b>	-	-	-
<b>Scraper and ripper bulldozer excavation</b>						
motor scraper, 16.80 m <sup>3</sup> , elevating	-	-	97.34	-	-	-
D8 tractor dozer	-	-	100.39	-	-	-
dozer attachment: triple shank ripper	-	-	6.66	-	-	-
Total Gang Rate / Hour	-	-	<b>204.39</b>	-	-	-
<b>General excavation</b>						
hydraulic crawler backacter, 0.40 m <sup>3</sup>	-	-	24.32	-	-	-
backacter attachments: percussion breaker (25% of time)	-	-	1.38	-	-	-
tractor loader, 1.50 m <sup>3</sup> (25% of time)	-	-	9.32	-	-	-
loader attachments: ripper (25% of time)	-	-	1.75	-	-	-
Total Gang Rate / Hour	-	-	<b>36.77</b>	-	-	-
<b>Shore defences (armour stones)</b>						
hydraulic crawler backacter, 1.20 m <sup>3</sup>	-	-	57.87	-	-	-
backacter attachments: rock bucket	-	-	3.02	-	-	-
backacter attachments: clamshell grab	-	-	4.05	-	-	-
Total Gang Rate / Hour	-	-	<b>64.94</b>	-	-	-
<b>Geotextiles (heavy sheets)</b>						
tractor loader, 1.5 m <sup>3</sup>	-	-	37.29	-	-	-
Total Gang Rate / Hour	-	-	<b>37.29</b>	-	-	-
<b>Filling</b>						
tractor loader, 1.5 m <sup>3</sup>	-	-	37.29	-	-	-
Total Gang Rate / Hour	-	-	<b>37.29</b>	-	-	-
<b>Treatment of filled surfaces</b>						
tractor loader, 1.50 m <sup>3</sup>	-	-	37.29	-	-	-
3 wheel deadweight roller, 10 tonne	-	-	18.45	-	-	-
Total Gang Rate / Hour	-	-	<b>55.74</b>	-	-	-
<b>EXCAVATION</b>						
<b>Typical motorway cutting generally using motorised scrapers and/or dozers on an average haul of 2000 m (one way)</b>						
Excavation of acceptable material Class 5A	0.01	0.14	0.78	-	m <sup>3</sup>	<b>0.92</b>
Excavation of acceptable material excluding Class 5A in cutting and other excavation	0.01	0.22	1.98	-	m <sup>3</sup>	<b>2.20</b>
<b>General excavation using backacters</b>						
Excavation of acceptable material excluding Class 5A in new watercourses	0.06	2.00	2.49	-	m <sup>3</sup>	<b>4.49</b>
Excavation of unacceptable material Class U1 / U2 in new watercourses	0.07	2.16	2.57	-	m <sup>3</sup>	<b>4.74</b>
<b>General excavation using backacters</b>						
Excavation of unacceptable material Class U1/U2 in clearing abandoned watercourses	0.06	1.83	2.19	-	m <sup>3</sup>	<b>4.02</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>General excavation using backacters and tractor loaders</b>						
Excavation of acceptable material Class 5A	0.04	1.33	1.54	-	m <sup>3</sup>	<b>2.87</b>
Excavation of acceptable material excluding Class 5A in structural foundations						
ne 3.0 m deep	0.08	2.50	2.96	-	m <sup>3</sup>	<b>5.46</b>
ne 6.0 m deep	0.20	6.66	7.75	-	m <sup>3</sup>	<b>14.41</b>
Excavation of acceptable material excluding Class 5A in foundations for corrugated steel buried structures and the like						
ne 3.0 m deep	0.08	2.50	2.96	-	m <sup>3</sup>	<b>5.46</b>
ne 6.0 m deep	0.20	6.66	7.75	-	m <sup>3</sup>	<b>14.41</b>
Excavation of unacceptable material Class U1 / U2 in structural foundations						
ne 3.0 m deep	0.09	2.83	3.37	-	m <sup>3</sup>	<b>6.20</b>
ne 6.0 m deep	0.21	6.99	8.19	-	m <sup>3</sup>	<b>15.18</b>
Excavation of unacceptable material Class U1 / U2 in foundations for corrugated steel buried structures and the like						
ne 3.0 m deep	0.09	2.83	3.37	-	m <sup>3</sup>	<b>6.20</b>
ne 6.0 m deep	0.21	6.99	8.19	-	m <sup>3</sup>	<b>15.18</b>
<b>General excavation using backacters and tractor loader with ripper</b>						
Excavation of acceptable material Class 5A	0.03	1.00	1.15	-	m <sup>3</sup>	<b>2.15</b>
Excavation of acceptable material excluding Class 5A in cutting and other excavation	0.04	1.33	1.54	-	m <sup>3</sup>	<b>2.87</b>
Excavate unacceptable material Class U1 / U2 in cutting and other excavation	0.04	1.33	1.54	-	m <sup>3</sup>	<b>2.87</b>
<b>EXCAVATION IN HARD MATERIAL</b>						
<b>Typical motorway cutting generally using motorised scrapers and/or dozers on an average haul of 2000 m (one way)</b>						
Excavate in hard material; using scraper and ripper bulldozer						
mass concrete/medium hard rock	0.09	3.22	18.40	-	m <sup>3</sup>	<b>21.62</b>
reinforced concrete/hard rock	0.15	5.37	30.66	-	m <sup>3</sup>	<b>36.03</b>
tarmacadam	0.16	5.73	3.27	-	m <sup>3</sup>	<b>9.00</b>
<b>General excavation using backacters</b>						
Extra over excavation in new watercourses for excavation in hard material						
rock	0.74	24.64	28.19	-	m <sup>3</sup>	<b>52.83</b>
pavements, brickwork, concrete and masonry	0.69	22.97	26.26	-	m <sup>3</sup>	<b>49.24</b>
reinforced concrete	1.12	37.29	42.60	-	m <sup>3</sup>	<b>79.90</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>EXCAVATION IN HARD MATERIAL - cont'd</b>						
<b>General excavation using backacters and tractor loaders</b>						
Extra over excavation in structural foundations for excavation in hard material						
rock	0.74	24.64	28.19	-	m <sup>3</sup>	<b>52.83</b>
pavements, brickwork, concrete and masonry	0.69	22.97	26.26	-	m <sup>3</sup>	<b>49.24</b>
reinforced concrete	1.12	37.29	42.60	-	m <sup>3</sup>	<b>79.90</b>
Extra over excavation for excavation in foundations for corrugated steel buried structures and the like for excavation in hard material						
rock	0.74	24.64	28.19	-	m <sup>3</sup>	<b>52.83</b>
pavements, brickwork, concrete and masonry	0.69	22.97	26.26	-	m <sup>3</sup>	<b>49.24</b>
reinforced concrete	1.12	37.29	42.60	-	m <sup>3</sup>	<b>79.90</b>
<b>General excavation using backacters and tractor loader with ripper</b>						
Extra over excavation for excavation in cutting and other excavation for excavation in hard material						
rock	0.71	23.64	27.01	-	m <sup>3</sup>	<b>50.65</b>
pavements, brickwork, concrete and masonry	0.66	21.98	25.12	-	m <sup>3</sup>	<b>47.10</b>
reinforced concrete	1.04	34.63	39.58	-	m <sup>3</sup>	<b>74.20</b>
<b>DEPOSITION OF FILL</b>						
Deposition of acceptable material Class 1C/6B in embankments and other areas of fill	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
strengthened embankments	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
reinforced earth structures	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
anchored earth structures	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
landscaped areas	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
environmental bunds	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
fill to structures	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
fill above structural concrete foundations	0.01	0.43	0.41	-	m <sup>3</sup>	<b>0.84</b>
<b>DISPOSAL OF MATERIAL</b>						
Disposal of acceptable material excluding Class 5A using 10 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.06	1.03	1.82	-	m <sup>3</sup>	<b>2.84</b>
ADD per further Km haul	0.03	0.51	0.91	-	m <sup>3</sup>	<b>1.42</b>
using 10 - 15 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.86	1.51	-	m <sup>3</sup>	<b>2.37</b>
ADD per further Km haul	0.03	0.43	0.76	-	m <sup>3</sup>	<b>1.18</b>
using 15 - 25 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.76	1.36	-	m <sup>3</sup>	<b>2.13</b>
ADD per further Km haul	0.02	0.37	0.67	-	m <sup>3</sup>	<b>1.04</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Disposal of acceptable material Class 5A (excluding resale value of soil)						
using 10 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.06	1.03	1.82	-	m <sup>3</sup>	<b>2.84</b>
ADD per further Km haul	0.03	0.51	0.91	-	m <sup>3</sup>	<b>1.42</b>
using 10 - 15 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.86	1.51	-	m <sup>3</sup>	<b>2.37</b>
ADD per further Km haul	0.03	0.43	0.76	-	m <sup>3</sup>	<b>1.18</b>
using 15 - 25 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.76	1.36	-	m <sup>3</sup>	<b>2.13</b>
ADD per further Km haul	0.02	0.37	0.67	-	m <sup>3</sup>	<b>1.04</b>
Disposal of unacceptable material Class U1						
using 10 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.06	1.03	1.82	-	m <sup>3</sup>	<b>2.84</b>
ADD per further Km haul	0.03	0.51	0.91	-	m <sup>3</sup>	<b>1.42</b>
using 10 - 15 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.86	1.51	-	m <sup>3</sup>	<b>2.37</b>
ADD per further Km haul	0.03	0.43	0.76	-	m <sup>3</sup>	<b>1.18</b>
using 15 - 25 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.76	1.36	-	m <sup>3</sup>	<b>2.13</b>
ADD per further Km haul	0.02	0.37	0.67	-	m <sup>3</sup>	<b>1.04</b>
Disposal of unacceptable material Class U2						
using 10 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.06	1.03	1.82	-	m <sup>3</sup>	<b>2.84</b>
ADD per further Km haul	0.03	0.51	0.91	-	m <sup>3</sup>	<b>1.42</b>
using 10 - 15 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.86	1.51	-	m <sup>3</sup>	<b>2.37</b>
ADD per further Km haul	0.03	0.43	0.76	-	m <sup>3</sup>	<b>1.18</b>
using 15 - 25 tonnes capacity tipping lorry for on-site or off-site use; haul distance to tip not exceeding 1 Km	0.05	0.76	1.36	-	m <sup>3</sup>	<b>2.13</b>
ADD per further Km haul	0.02	0.37	0.67	-	m <sup>3</sup>	<b>1.04</b>
Add to the above rates where tipping charges apply:						
non-hazardous waste	-	-	-	-	m <sup>3</sup>	<b>34.24</b>
hazardous waste	-	-	-	-	m <sup>3</sup>	<b>90.00</b>
special waste	-	-	-	-	m <sup>3</sup>	<b>98.50</b>
contaminated liquid	-	-	-	-	m <sup>3</sup>	<b>123.50</b>
contaminated sludge	-	-	-	-	m <sup>3</sup>	<b>154.86</b>
Add to the above rates where Landfill Tax applies:						
exempted material	-	-	-	-	m <sup>3</sup>	-
inactive or inert material	-	-	-	-	m <sup>3</sup>	<b>5.35</b>
other material	-	-	-	-	m <sup>3</sup>	<b>68.50</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>IMPORTED FILL</b>						
<b>Imported graded granular fill, natural gravels DfT Class 1A/B/C [1.9 t/m<sup>3</sup>]</b>						
Imported acceptable material in embankments and other areas of fill	0.02	0.70	0.67	20.35	m <sup>3</sup>	<b>21.73</b>
extra for Aggregate Tax	-	-	-	3.71	m <sup>3</sup>	<b>3.71</b>
<b>Imported graded granular fill, crushed gravels or rock DfT Class 1A/B/C [1.9 t/m<sup>3</sup>]; using tractor loader</b>						
Imported acceptable material in embankments and other areas of fill	0.02	0.70	0.67	22.92	m <sup>3</sup>	<b>24.30</b>
extra for Aggregate Tax	-	-	-	3.71	m <sup>3</sup>	<b>3.71</b>
<b>Cohesive material DfT Class 2A/B/C/D [1.8 t/m<sup>3</sup>]; using tractor loader</b>						
Imported acceptable material in embankments and other areas of fill	0.02	0.70	0.67	21.31	m <sup>3</sup>	<b>22.68</b>
landscaped areas	0.02	0.70	0.67	21.31	m <sup>3</sup>	<b>22.68</b>
environmental bunds	0.02	0.82	0.78	21.31	m <sup>3</sup>	<b>22.91</b>
fill to structures	0.02	0.94	0.89	21.31	m <sup>3</sup>	<b>23.14</b>
fill above structural concrete foundations	0.02	0.74	0.71	21.31	m <sup>3</sup>	<b>22.76</b>
<b>Reclaimed pulverised fuel ash DfT Class 2E [2.8 t/m<sup>3</sup>]; using tractor loader</b>						
Imported acceptable material in embankments and other areas of fill	0.02	0.70	0.67	20.02	m <sup>3</sup>	<b>21.39</b>
<b>Reclaimed quarry waste DfT Class 2E [1.8 t/m<sup>3</sup>]; using tractor loader</b>						
Imported acceptable material in embankments and other areas of fill	0.02	0.70	0.67	11.88	m <sup>3</sup>	<b>13.26</b>
extra for Aggregate Tax (fill other than from acceptable process)	-	-	-	3.51	m <sup>3</sup>	<b>3.51</b>
<b>Imported topsoil DfT Class 5B [1.44 t/m<sup>3</sup>]; using tractor loader</b>						
Imported topsoil Class 5B	0.02	0.70	0.67	21.38	m <sup>3</sup>	<b>22.76</b>
<b>Imported selected well graded granular fill DfT Class 6A (1.90 t/m<sup>3</sup>); using tractor loader</b>						
Imported acceptable material in embankments and other areas of fill	-	-	0.78	28.28	m <sup>3</sup>	<b>29.06</b>
landscape areas	0.02	0.82	0.78	28.28	m <sup>3</sup>	<b>29.88</b>
environmental bunds	0.02	0.70	0.67	28.28	m <sup>3</sup>	<b>29.65</b>
fill to structures	0.02	0.94	0.89	28.28	m <sup>3</sup>	<b>30.11</b>
fill above structural concrete foundations	0.02	0.74	0.71	28.28	m <sup>3</sup>	<b>29.73</b>
extra for Aggregate Tax	-	-	-	3.71	m <sup>3</sup>	<b>-</b>
<b>Imported selected granular fill, DfT Class 6F (1.9 t/m<sup>3</sup>); using tractor loader</b>						
Imported acceptable material in embankments and other areas of fill	0.10	3.71	3.54	19.86	m <sup>3</sup>	<b>27.11</b>
extra for Aggregate Tax	-	-	-	-	m <sup>3</sup>	<b>3.71</b>
<b>Imported selected well graded fill DfT Class 6I (1.90 t/m<sup>3</sup>); using tractor loader</b>						
Imported acceptable material reinforced earth structures	0.02	0.86	0.82	22.49	m <sup>3</sup>	<b>24.17</b>
extra for Aggregate Tax	-	-	-	-	m <sup>3</sup>	<b>3.71</b>



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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Imported rock fill (1.90 t/m<sup>3</sup>); using tractor loader</b>						
Imported acceptable material	0.02	0.78	0.75	33.10	m <sup>3</sup>	<b>34.63</b>
in embankments and other areas of fill	-	-	-	3.71	m <sup>3</sup>	<b>3.71</b>
extra for Aggregate Tax						
<b>Imported well graded granular material (1.90 t/m<sup>3</sup>); (bedding/free draining materials under shore protection) using tractor loader</b>						
Imported acceptable material	0.02	0.78	0.75	26.78	m <sup>3</sup>	<b>28.31</b>
in embankments and other areas of fill						
<b>Imported rock fill (as a core embankment) (1.90 t/ m<sup>3</sup>); using tractor loader</b>						
Imported acceptable material	0.03	1.29	1.23	33.10	m <sup>3</sup>	<b>35.62</b>
in embankments and other areas of fill	-	-	-	3.71	m <sup>3</sup>	<b>3.71</b>
extra for Aggregate Tax						
<b>Imported Armour Stones (1.90 t/m<sup>3</sup>) (shore protection of individual rocks up to 0.5 t each); using backacter</b>						
Imported acceptable material	0.06	1.74	3.64	47.13	m <sup>3</sup>	<b>52.51</b>
in embankments and other areas of fill	-	-	-	3.71	m <sup>3</sup>	<b>3.71</b>
extra for Aggregate Tax						
<b>Imported Armour Stones (1.90 t/m<sup>3</sup>) (shore protection of individual rocks up to 1.0 t each); using backacter</b>						
Imported acceptable material	0.03	1.00	2.08	66.41	m <sup>3</sup>	<b>69.48</b>
in embankments and other areas of fill	-	-	-	3.71	m <sup>3</sup>	<b>3.71</b>
extra for Aggregate Tax						
<b>Imported Armour Stones (1.90 t/m<sup>3</sup>) (shore protection of individual rocks up to 3.0 t each); using backacter</b>						
Imported acceptable material	0.03	0.81	1.70	73.91	m <sup>3</sup>	<b>76.42</b>
in embankments and other areas of fill	-	-	-	3.71	m <sup>3</sup>	<b>3.71</b>
extra for Aggregate Tax						
<b>COMPACTION OF FILL</b>						
Compaction of granular fill material						
in embankments and other areas of fill	0.01	0.05	0.28	-	m <sup>3</sup>	<b>0.33</b>
adjacent to structures	0.01	0.09	0.45	-	m <sup>3</sup>	<b>0.53</b>
above structural concrete foundations	0.01	0.13	0.67	-	m <sup>3</sup>	<b>0.80</b>
Compaction of fill material						
in sub-base or capping layers under verges, central reserves or side slopes	0.02	0.22	1.11	-	m <sup>3</sup>	<b>1.33</b>
adjacent to structures	0.04	0.38	1.95	-	m <sup>3</sup>	<b>2.33</b>
above structural concrete foundations	0.04	0.43	2.23	-	m <sup>3</sup>	<b>2.66</b>
Compaction of graded fill material						
in embankments and other areas of fill	0.01	0.07	0.33	-	m <sup>3</sup>	<b>0.40</b>
adjacent to structures	0.01	0.11	0.56	-	m <sup>3</sup>	<b>0.67</b>
above structural concrete foundations	0.02	0.16	0.84	-	m <sup>3</sup>	<b>1.00</b>
Compaction of rock fill materials						
in embankments and other areas of fill	0.01	0.10	0.50	-	m <sup>3</sup>	<b>0.60</b>
adjacent to structures	0.01	0.15	0.78	-	m <sup>3</sup>	<b>0.93</b>
above structural concrete foundations	0.02	0.18	0.95	-	m <sup>3</sup>	<b>1.13</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>COMPACTION OF FILL - cont'd</b>						
Compaction of clay fill material						
in embankments and other areas of fill	0.03	0.33	1.67	-	m <sup>3</sup>	<b>2.00</b>
adjacent to structures	0.05	0.52	2.68	-	m <sup>3</sup>	<b>3.20</b>
above structural concrete foundations	0.05	0.52	2.68	-	m <sup>3</sup>	<b>3.20</b>
<b>GEOTEXTILES</b>						
<b>Notes</b>						
The geotextile products mentioned below are not specifically confined to the individual uses stated but are examples of one of many scenarios to which they may be applied. Conversely, the scenarios are not limited to the geotextile used as an example. The heavier grades of sheeting will need to be manipulated into place by machine and cutting would be by hacksaw rather than knife. Care should be taken in assessing the wastage of the more expensive sheeting. The prices include for preparing surfaces, overlaps and turnups, jointing and sealing, fixing material in place if required and reasonable waste between 5% and 10%.						
<b>Stabilisation applications for reinforcement of granular sub-bases and capping layers placed over weak and variable soils.</b>						
For use in weak soils with moderate traffic intensities e.g. light access roads: Tensar SS20 Polypropylene Geogrid						
horizontal	0.04	1.33	-	2.15	m <sup>2</sup>	<b>3.49</b>
inclined at an angle 10-45° to the horizontal	0.05	1.68	-	2.15	m <sup>2</sup>	<b>3.84</b>
For use in weak soils with high traffic intensities and/ or high axle loadings: Tensar SS30 Polypropylene Geogrid						
horizontal	0.05	1.79	-	2.74	m <sup>2</sup>	<b>4.54</b>
inclined at an angle 10-45° to the horizontal	0.06	2.23	-	2.74	m <sup>2</sup>	<b>4.97</b>
For construction over very weak soils e.g. alluvium, marsh or peat, or firmer soil subject to exceptionally high axle loadings: Tensar SS40 Polypropylene Geogrid						
horizontal	0.05	2.08	1.68	4.24	m <sup>2</sup>	<b>8.00</b>
inclined at an angle 10-45° to the horizontal	0.06	2.59	2.09	4.24	m <sup>2</sup>	<b>8.91</b>
For trafficked areas where fill comprises of aggregate exceeding 100 mm: Tensar SSLA20 Polypropylene Geogrid						
horizontal	0.04	1.33	-	2.29	m <sup>2</sup>	<b>3.62</b>
inclined at an angle 10-45° to the horizontal	0.05	1.68	-	2.29	m <sup>2</sup>	<b>3.97</b>
For stabilisation and separation of granular fill from soft sub grade to prevent intermixing: Terram 1000						
horizontal	0.05	2.03	-	0.54	m <sup>2</sup>	<b>2.57</b>
inclined at an angle 10-45° to the horizontal	0.06	2.55	-	0.54	m <sup>2</sup>	<b>3.09</b>
For stabilisation and separation of granular fill from soft sub grade to prevent intermixing: Terram 2000						
horizontal	0.04	1.94	1.57	1.55	m <sup>2</sup>	<b>5.06</b>
inclined at an angle 10-45° to the horizontal	0.05	2.45	1.98	1.55	m <sup>2</sup>	<b>5.98</b>

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Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Reinforcement applications for asphalt pavements</b>						
For roads, hardstandings and airfield pavements:						
Tensor AR-G grid bonded to a geotextile						
horizontal	0.05	1.79	-	3.38	m <sup>2</sup>	<b>5.18</b>
inclined at an angle 10-45° to the horizontal	0.06	2.23	-	3.38	m <sup>2</sup>	<b>5.62</b>
<b>Slope Reinforcement and Embankment Support;</b>						
<b>For use where soils can only withstand limited shear stresses, therefore steep slopes require external support</b>						
Paragrid 30/155; 330g/m <sup>2</sup>						
horizontal	0.04	1.33	-	2.03	m <sup>2</sup>	<b>3.37</b>
inclined at an angle 10-45° to the horizontal	0.05	1.68	-	2.03	m <sup>2</sup>	<b>3.72</b>
Paragrid 100/255; 330g/m <sup>2</sup>						
horizontal	0.04	1.33	-	2.77	m <sup>2</sup>	<b>4.10</b>
inclined at an angle 10-45° to the horizontal	0.05	1.68	-	2.77	m <sup>2</sup>	<b>4.45</b>
Paralink 200; 1120g/m <sup>2</sup>						
horizontal	0.05	2.49	2.01	5.44	m <sup>2</sup>	<b>9.95</b>
inclined at an angle 10-45° to the horizontal	0.07	3.14	2.54	5.44	m <sup>2</sup>	<b>11.12</b>
Paralink 600; 2040g/m <sup>2</sup>						
horizontal	0.06	2.91	2.35	11.49	m <sup>2</sup>	<b>16.75</b>
inclined at an angle 10-45° to the horizontal	0.08	3.65	2.95	11.49	m <sup>2</sup>	<b>18.08</b>
TerramGrid 3/3 W						
horizontal	0.06	2.63	2.13	2.76	m <sup>2</sup>	<b>7.51</b>
inclined at an angle 10-45° to the horizontal	0.07	3.28	2.65	2.76	m <sup>2</sup>	<b>8.68</b>
<b>Scour and Erosion Protection</b>						
For use where erosion protection is required to the surface of a slope once its geotechnical stability has been achieved, and to allow grass establishment:						
Tensor 'Mat' Polyethylene mesh, fixed with Tensor pegs						
horizontal	0.04	1.63	-	5.13	m <sup>2</sup>	<b>6.76</b>
inclined at an angle 10-45° from the horizontal	0.05	2.03	-	5.45	m <sup>2</sup>	<b>7.48</b>
For use where hydraulic action exists, such as coastline protection from pressures exerted by waves, currents and tides: Typar SF56						
horizontal	0.05	2.36	1.90	0.60	m <sup>2</sup>	<b>4.85</b>
inclined at an angle 10-45° from the horizontal	0.06	2.96	2.39	0.60	m <sup>2</sup>	<b>5.94</b>
For protection against puncturing to reservoir liner: Typar SF56						
horizontal	0.05	2.36	1.90	0.60	m <sup>2</sup>	<b>4.85</b>
inclined at an angle 10-45° from the horizontal	0.06	2.96	2.39	0.60	m <sup>2</sup>	<b>5.94</b>
<b>Temporary parking areas</b>						
For reinforcement of grassed areas subject to wear from excessive pedestrian and light motor vehicle traffic: Netlon CE131 high density polyethylene geogrid, including fixing pegs						
sheeting	0.04	1.40	-	4.31	m <sup>2</sup>	<b>5.70</b>

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GEOTEXTILES - cont'd</b>						
<b>Landscaping applications</b>						
For prevention of weed growth in planted areas by incorporating a geotextile over topsoil: Typar SF20, including pegs						
horizontal	0.08	2.99	-	0.65	m <sup>2</sup>	<b>3.64</b>
inclined at an angle 10-45° to the horizontal	0.09	3.75	-	0.65	m <sup>2</sup>	<b>4.40</b>
For root growth control-Prevention of lateral spread of roots and mixing of road base and humus: Typar SF20						
horizontal	0.08	2.99	-	0.33	m <sup>2</sup>	<b>3.32</b>
inclined at an angle 10-45° to the horizontal	0.09	3.75	-	0.33	m <sup>2</sup>	<b>4.08</b>
<b>SOFT SPOTS AND OTHER VOIDS</b>						
<b>Excavation of soft spots and other voids using motorised scrapers and/or dozers</b>						
Excavate below cuttings or under embankments	0.05	0.90	4.87	-	m <sup>3</sup>	<b>5.77</b>
Excavate in side slopes	0.06	1.08	5.84	-	m <sup>3</sup>	<b>6.92</b>
<b>Excavation of soft spots and other voids using backacters and tractor loader</b>						
Excavate below structural foundations and foundations for corrugated steel buried structures						
	0.09	1.46	1.54	-	m <sup>3</sup>	<b>2.99</b>
<b>Imported graded granular fill; deposition using tractor loader and towed roller</b>						
Filling of soft spots and other voids below cuttings or under embankments						
	0.04	0.56	1.00	20.57	m <sup>3</sup>	<b>22.13</b>
Filling of soft spots and other voids in side slopes						
	0.04	0.69	1.23	20.57	m <sup>3</sup>	<b>22.48</b>
Filling of soft spots and other voids below structural foundations and foundations for corrugated steel buried structures						
	0.04	0.56	1.00	20.57	m <sup>3</sup>	<b>22.13</b>
<b>Imported rock fill; 1.9 t/m<sup>3</sup>; using tractor loader</b>						
Deposition into soft areas (rock punching)						
	0.03	0.98	0.93	33.10	m <sup>3</sup>	<b>35.01</b>
<b>DISUSED SEWERS, DRAINS, CABLES, DUCTS, PIPELINES AND THE LIKE OCCURRING AT FORMATION LEVEL; DISUSED BASEMENTS, CELLARS AND THE LIKE AND GULLIES</b>						
Removal of disused sewer or drain						
100 mm internal diameter; with less than 1 m of cover to formation level						
	0.16	2.36	3.36	-	m	<b>5.72</b>
150 mm internal diameter; with 1 to 2 m of cover to formation level						
	0.20	2.89	4.12	-	m	<b>7.01</b>
Backfilling with acceptable material of disused sewer or drain						
100 mm internal diameter; with less than 1 m of cover to formation level						
	0.23	3.39	4.84	-	m <sup>3</sup>	<b>8.23</b>
150 mm internal diameter; with 1 to 2 m of cover to formation level						
	0.23	3.39	4.84	-	m <sup>3</sup>	<b>8.23</b>
Backfilling of disused basements, cellars and the like with acceptable material						
	0.26	3.84	5.47	-	m <sup>3</sup>	<b>9.30</b>
Backfilling of disused gullies with concrete Grade C15						
	0.10	1.48	2.10	10.92	nr	<b>14.50</b>

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SUPPORTS LEFT IN EXCAVATION</b>						
Timber close boarded supports left in excavation	-	-	8.67	-	m <sup>2</sup>	<b>8.67</b>
Steel trench sheeting supports left in excavation	-	-	36.38	-	m <sup>2</sup>	<b>36.38</b>
<b>TOPSOILING AND STORAGE OF TOPSOIL</b>						
Topsoiling 150 mm thick to surfaces at 10° or less to horizontal	0.04	0.63	3.41	-	m <sup>2</sup>	<b>4.04</b>
more than 10° to horizontal	0.04	0.72	3.89	-	m <sup>2</sup>	<b>4.62</b>
Topsoiling 350 mm thick to surfaces at 10° or less to horizontal	0.05	0.81	4.38	-	m <sup>2</sup>	<b>5.19</b>
more than 10° to horizontal	0.05	0.90	4.87	-	m <sup>2</sup>	<b>5.77</b>
Topsoiling 450 mm thick to surfaces at 10° or less to horizontal	0.05	0.90	4.87	-	m <sup>2</sup>	<b>5.77</b>
more than 10° to horizontal	0.06	0.99	5.35	-	m <sup>2</sup>	<b>6.35</b>
Topsoiling 600 mm thick to surfaces at 10° or less to horizontal	0.05	0.90	4.87	-	m <sup>2</sup>	<b>5.77</b>
more than 10° to horizontal	0.06	0.99	5.35	-	m <sup>2</sup>	<b>6.35</b>
Permanent storage of topsoil	0.06	1.08	5.84	-	m <sup>3</sup>	<b>6.92</b>
<b>COMPLETION OF FORMATION AND SUB-FORMATION</b>						
Completion of sub-formation on material other than Class 1C, 6B or rock in cuttings	0.01	0.20	0.62	-	m <sup>2</sup>	<b>0.82</b>
<b>Completion of formation</b> on material other than Class 1C, 6B or rock in cuttings	0.01	0.21	0.48	-	m <sup>2</sup>	<b>0.68</b>
<b>LINING OF WATERCOURSES</b>						
Lining new watercourse invert with precast concrete units 63 mm thick	0.21	5.36	0.48	9.88	m <sup>2</sup>	<b>15.72</b>
Lining new watercourse side slopes with precast concrete units 63 mm thick	0.25	6.38	0.52	8.86	m <sup>2</sup>	<b>15.77</b>
Lining enlarged watercourse invert with precast concrete units 63 mm thick	0.24	6.13	0.54	9.88	m <sup>2</sup>	<b>16.55</b>
Lining enlarged watercourse side slopes with precast concrete units 63 mm thick	0.29	7.41	0.66	8.86	m <sup>2</sup>	<b>16.93</b>

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GROUND IMPROVEMENT</b>						
<b>Dynamic compaction</b>						
Ground consolidation by dynamic compaction is a technique which involves the dropping of a steel or concrete pounder several times in each location in a grid pattern that covers the whole site. For a ground compaction of up to 10 m, a 15 t pounder with a free fall of 20 m would be typical. Several passes over the site are normally required to achieve full compaction. The process is recommended for naturally cohesive soils and is usually uneconomic for areas of less than 4000 m <sup>2</sup> , for sites with granular or mixed granular cohesive soils and 6000 m <sup>2</sup> for a site with weak cohesive soils. The main considerations to be taken into account when using this method of consolidation are:						
* sufficient area to be viable						
* proximity and condition of adjacent property and services						
* need for blanket layer of granular material for a working surface and as backfill to offset induced settlement						
* water table level						
The granular blanket layer performs the dual functions of working surface and backfill material. Generally 300 mm thickness is required. The final bearing capacity and settlement criteria that can be achieved depends on the nature of the material being compacted. Allowable bearing capacity may be increased by up to twice the pre-treated value for the same settlement. Control testing can be by crater volume measurements, site levelling between passes, penetration tests or plate loading tests.						
<b>DYNAMIC COMPACTION</b>						
Dynamic compaction in main compaction with a 15 t pounder	-	-	-	-	m <sup>2</sup>	9.21
Dynamic compaction plant standing time	-	-	-	-	hr	15.90
Free-draining granular material in granular blanket	-	-	-	-	t	25.36
Control testing including levelling, piezometers and penetrometer testing	-	-	-	-	m <sup>2</sup>	3.49
Kentledge load test	-	-	-	-	nr	12000.00
<b>ESTABLISHMENT OF PLANT</b>						
Establishment of dynamic compaction plant	-	-	-	-	sum	40000.00
<b>VIBRATED STONE COLUMNS</b>						
<b>Refer to part 4, Class C: Ground Consolidation-vibro-replacement, for an explanation and items for vibrated stone columns</b>						

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GABION WALLING AND MATTRESSES</b>						
Gabion walling with plastic coated galvanised wire mesh, wire laced; filled with 50 mm Class 6G material						
2.0 x 1.0 x 1.0 m module sizes	3.98	45.77	10.29	47.25	m <sup>3</sup>	<b>103.31</b>
2.0 x 1.0 x 0.5 m module sizes	5.20	57.70	25.33	58.35	m <sup>3</sup>	<b>141.38</b>
Gabion walling with heavily galvanised woven wire mesh, wire laced; filled with 50 mm Class 6G material						
2.0 x 1.0 x 1.0 m module sizes	4.22	46.88	20.58	38.02	m <sup>3</sup>	<b>105.48</b>
2.0 x 1.0 x 0.5 m module sizes	5.20	57.70	25.33	47.99	m <sup>3</sup>	<b>131.02</b>
Mattress with plastic coated galvanised wire mesh; filled with 50 mm Class 6G material installed at 10° or less to the horizontal						
6.0 x 2.0 x 0.23 m module sizes	4.22	46.88	20.58	48.33	m <sup>3</sup>	<b>115.79</b>
<b>CRIB WALLING</b>						
<b>Notes</b>						
There are a number of products specially designated for large scale earth control. Crib walling consists of a rigid unit built of rectangular interlocking timber or precast concrete members forming a skeleton of cells laid on top of each other and filled with earth or rock. Prices for these items depend on quantity, difficulty of access to the site and availability of suitable filling material; estimates should be obtained from the manufacturer when the site conditions have been determined. Crib walling of timber components laid with a battering face; stone infill						
ne 1.5 m high	5.28	61.80	13.93	91.92	m <sup>2</sup>	<b>167.65</b>
ne 3.7 m high	7.11	83.22	16.80	96.20	m <sup>2</sup>	<b>196.22</b>
ne 4.2 m high	8.13	95.16	18.41	100.59	m <sup>2</sup>	<b>214.16</b>
ne 5.9 m high	10.71	125.35	22.46	112.47	m <sup>2</sup>	<b>260.29</b>
ne 7.4 m high	17.16	200.84	32.61	144.98	m <sup>2</sup>	<b>378.43</b>
Crib walling of precast concrete crib units, laid dry jointed with a battered face; stone infill						
1.0 m high; no dowels	6.75	79.00	30.63	100.09	m	<b>209.73</b>
1.5 m high; no dowels	9.36	109.55	42.47	150.14	m	<b>302.16</b>
2.5 m high; no dowels	22.11	258.78	103.83	297.14	m	<b>659.76</b>
4.0 m high; no dowels	34.11	399.23	160.19	475.43	m	<b>1034.85</b>
<b>GROUND ANCHORAGES</b>						
<b>GROUND ANCHORAGES - GENERALLY</b>						
Ground anchorages consist of the installation of a cable or solid bar tendon fixed in the ground by grouting and tensioned to exceed the working load to be carried. Ground anchors may be of a permanent or temporary nature and can be used in conjunction with diaphragm walling or sheet piling to eliminate the use of strutting etc. The following costs are based on the installation of 50 nr ground anchors						

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GROUND ANCHORAGE PLANT</b>						
Establishment of ground anchorage plant	-	-	-	-	sum	<b>10500.00</b>
Ground anchorage plant standing time	-	-	-	-	hr	<b>168.00</b>
<b>GROUND ANCHORAGES</b>						
Ground anchorages; temporary or permanent 15.0 m maximum depth; in rock, alluvial or clay; 0 - 50 t load	-	-	-	-	nr	<b>86.26</b>
15.0 m maximum depth; in rock or alluvial; 50 - 90 t load	-	-	-	-	nr	<b>103.21</b>
15.0 m maximum depth; in rock only; 90 - 150 t load	-	-	-	-	nr	<b>138.57</b>
Temporary tendons						
in rock, alluvial or clay; 0 - 50 t load	-	-	-	-	nr	<b>66.04</b>
in rock or alluvial; 50 - 90 t load	-	-	-	-	nr	<b>100.75</b>
in rock only; 90 - 150 t load	-	-	-	-	nr	<b>135.27</b>
Permanent tendons						
in rock, alluvial or clay; 0 - 50 t load	-	-	-	-	nr	<b>101.42</b>
in rock or alluvial; 50 - 90 t load	-	-	-	-	nr	<b>138.80</b>
in rock only; 90 - 150 t load	-	-	-	-	nr	<b>173.36</b>
<b>GROUND WATER LOWERING</b>						
The following unit costs are for dewatering pervious ground only and are for sets of equipment comprising:						
* hire of 1 nr diesel driven pump (WP 150/60 or similar) complete with allowance of £50 for fuel	-	-	-	-	day	<b>129.38</b>
* hire of 50 m of 150 mm diameter header pipe	-	-	-	-	day	<b>22.50</b>
* purchase of 35 nr of disposable well points	-	-	-	-	sum	<b>10828.13</b>
* hire of 18 m of delivery pipe	-	-	-	-	day	<b>8.72</b>
* hire of 1 nr diesel driven standby pump	-	-	-	-	day	<b>40.50</b>
* hire of 1 nr jetting pump with hoses (for installation of wellpoints only)	-	-	-	-	day	<b>67.50</b>
* cost of attendant labour and plant (2 hrs per day) inclusive of small dumper and bowser	-	-	-	-	day	<b>112.50</b>
Costs are based on 24 hr operation in 12 hr shifts with attendant operators (specialist advice)						
<b>Guide price for single set of equipment comprising pump, 150 mm diameter header pipe, 35 nr well points, delivery pipe and attendant labour and plant</b>						
Bring to site equipment and remove upon completion	-	-	-	-	sum	<b>2300.00</b>
Installation: 3 day hire of jetting pump	-	-	-	-	sum	<b>202.50</b>
Operating costs						
purchase of well points	-	-	-	-	nr	<b>309.38</b>
hire of pump, header pipe, delivery pipe and standby pump complete with fuel etc. and attendant labour and plant	-	-	-	-	day	<b>313.59</b>



## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>TRIAL PITS</b>						
<b>The following costs assume the use of mechanical plant and excavating and backfilling on the same day</b>						
Trial pit						
ne 1.0 m deep	1.44	16.85	9.91	-	nr	<b>26.76</b>
1.0 - 2.0 m deep	2.62	30.52	19.41	-	nr	<b>49.93</b>
over 2.0 m deep	3.18	37.22	21.89	-	nr	<b>59.11</b>
<b>BREAKING UP AND PERFORATION OF REDUNDANT PAVEMENTS</b>						
<b>Using scraper and ripper bulldozer</b>						
Breaking up of redundant concrete slab						
ne 100 mm deep	0.05	0.90	10.22	-	m <sup>2</sup>	<b>11.12</b>
100 to 200 mm deep	0.10	1.80	20.44	-	m <sup>2</sup>	<b>22.24</b>
Breaking up of redundant flexible pavement						
ne 100 mm deep	0.02	0.36	4.09	-	m <sup>2</sup>	<b>4.45</b>
100 to 200 mm deep	0.03	0.54	6.13	-	m <sup>2</sup>	<b>6.67</b>
<b>Using backacters and tractor loader with ripper</b>						
Breaking up of redundant reinforced concrete pavement						
ne 100 mm deep	0.28	4.19	4.42	-	m <sup>2</sup>	<b>8.61</b>
100 to 200 mm deep	0.49	7.33	7.74	-	m <sup>2</sup>	<b>15.07</b>
200 to 300 mm deep	0.70	10.47	11.08	-	m <sup>2</sup>	<b>21.55</b>
<b>Using scraper and ripper bulldozer</b>						
Breaking up of redundant flexible pavement using scraper and ripper bulldozer						
ne 100 mm deep	0.02	0.36	4.09	-	m <sup>2</sup>	<b>4.45</b>
100 to 200 mm deep	0.03	0.54	6.13	-	m <sup>2</sup>	<b>6.67</b>
<b>Using backacters and breakers</b>						
Perforation of redundant reinforced concrete pavement						
ne 100 mm deep	0.02	0.32	0.51	-	m <sup>2</sup>	<b>0.83</b>
100 to 200 mm deep	0.03	0.49	0.77	-	m <sup>2</sup>	<b>1.26</b>
200 to 300 mm deep	0.05	0.81	1.28	-	m <sup>2</sup>	<b>2.09</b>
Perforation of redundant flexible pavement						
ne 100 mm deep	0.01	0.16	0.27	-	m <sup>2</sup>	<b>0.43</b>
100 to 200 mm deep	0.02	0.24	0.39	-	m <sup>2</sup>	<b>0.63</b>
<b>PERFORATION OF REDUNDANT SLABS, BASEMENTS AND THE LIKE</b>						
Using backacters and breakers Perforation of redundant reinforced concrete slab						
ne 100 mm deep	0.02	0.32	0.51	-	m <sup>2</sup>	<b>0.83</b>
100 to 200 mm deep	0.03	0.49	0.77	-	m <sup>2</sup>	<b>1.26</b>
200 to 300 mm deep	0.05	0.81	1.28	-	m <sup>2</sup>	<b>2.09</b>
Perforation of redundant reinforced concrete basement						
ne 100 mm deep	0.02	0.34	0.53	-	m <sup>2</sup>	<b>0.87</b>
100 to 200 mm deep	0.03	0.51	0.81	-	m <sup>2</sup>	<b>1.32</b>
200 to 300 mm deep	0.05	0.85	1.34	-	m <sup>2</sup>	<b>2.19</b>

## SERIES 600: EARTHWORKS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>REINFORCED AND ANCHORED EARTH STRUCTURES</b>						
<b>SPECIALIST ADVICE</b>						
As each structure is different, it is virtually impossible to give accurate unit cost prices, as they will vary with the following parameters:						
* Type of structure						
* Where located (in water, dry condition)						
* Where geographically in the country						
* Type of fill						
* Duration of structure						
* Size of structure, etc.						
To arrive at the unit costs below assumptions have been made for a structure with the following characteristics :						
* Structure - retaining wall 6 m high x 150 m in length						
* Construction - as DfT Specification BE 3/78						
* Site conditions - good foundations						
* Fill - 5 m <sup>3</sup> per m <sup>2</sup> of wall face						
* Fill costs - DfT Specification average £9.50 / tonne						
Therefore specialist advice should be sought in order to give accurate budget costings for individual projects						
Retaining wall (per m <sup>2</sup> of face)						
concrete faced using ribbed strip	1.00	11.14	5.20	202.86	m <sup>2</sup>	<b>219.20</b>
concrete faced using flat strip	1.00	11.14	5.20	258.18	m <sup>2</sup>	<b>274.52</b>
concrete faced using polyester strip	1.00	29.56	10.72	221.29	m <sup>2</sup>	<b>261.57</b>
concrete faced using geogrid reinforcement	1.00	23.67	11.79	230.54	m <sup>2</sup>	<b>266.00</b>
preformed mesh using ribbed strip	1.00	13.11	8.10	165.97	m <sup>2</sup>	<b>187.18</b>

## SERIES 700: PAVEMENTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Sub-base laying gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 2)	-	18.05	-	-	-	-
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
Total Gang Rate / Hour	£	<b>86.72</b>	-	-	-	-
<b>Flexible paving gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
2 skilled operatives (skill rate 4)	-	26.64	-	-	-	-
4 unskilled operatives (general)	-	49.76	-	-	-	-
4 plant operators (skill rate 3)	-	64.76	-	-	-	-
Total Gang Rate / Hour	£	<b>155.44</b>	-	-	-	-
<b>Concrete paving gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
2 skilled operatives (skill rate 4)	-	26.64	-	-	-	-
4 unskilled operatives (general)	-	49.76	-	-	-	-
1 plant operator (skill rate 2)	-	18.05	-	-	-	-
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
Total Rate / Hour	£	<b>124.92</b>	-	-	-	-
<b>Road surface spraying gang</b>						
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
Total Gang Cost / Hour	£	<b>16.19</b>	-	-	-	-
<b>Road chippings gang</b>						
1 ganger/chargehand (skill rate 4) - 50% of time	-	7.14	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
3 plant operators (skill rate 3)	-	48.57	-	-	-	-
Total Gang Rate / Hour	£	<b>93.91</b>	-	-	-	-
<b>Cutting slabs gang</b>						
1 unskilled operative (general)	-	12.44	-	-	-	-
Total Gang Rate / Hour	£	<b>12.44</b>	-	-	-	-
<b>Concrete filled joints gang</b>						
1 ganger/chargehand - 50% of time	-	7.14	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
Total Gang Rate / Hour	£	<b>45.34</b>	-	-	-	-
<b>Milling gang</b>						
1 ganger/chargehand (skill rate 4)	2.00	14.28	-	-	-	-
2 skilled operatives (skill rate 4)	2.00	26.64	-	-	-	-
4 unskilled operatives (general)	4.00	49.76	-	-	-	-
1 plant operator (skill rate 2)	1.00	18.05	-	-	-	-
1 plant operator (skill rate 3)	1.00	16.19	-	-	-	-
Total Gang Rate / Hour	10.00	<b>124.92</b>	-	-	-	-

## SERIES 700: PAVEMENTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR - cont'd</b>						
<b>Rake and compact planed material gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
3 unskilled operatives (general)	-	37.32	-	-	-	-
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
Total Gang Rate / Hour	£	95.67	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Sub-base laying</b>						
93 kW motor grader	-	-	28.84	-	-	-
0.8 m <sup>3</sup> tractor loader	-	-	23.05	-	-	-
6 t towed vibratory roller	-	-	11.51	-	-	-
Total Gang Rate / Hour	-	£	63.40	-	-	-
<b>Flexible paving</b>						
2 asphalt pavers, 35 kW, 4.0 m	-	-	95.59	-	-	-
2 deadweight rollers, 3 point, 10 t tractor with front bucket and integral 2 tool compressor	-	£	36.90	-	-	-
compressor tools : rammer	-	-	20.02	-	-	-
compressor tools : poker vibrator	-	-	0.44	-	-	-
compressor tools : extra 15 m hose	-	-	1.52	-	-	-
tar sprayer, 100 litre	-	-	0.33	-	-	-
self propelled chip spreader	-	-	7.69	-	-	-
channel (heat) iron	-	-	10.73	-	-	-
Total Gang Rate / Hour	-	£	1.19	-	-	-
<b>Concrete paving</b>						
wheeled loader, 2.60 m <sup>3</sup>	-	-	59.98	-	-	-
concrete paver, 6.0 m	-	-	78.69	-	-	-
concrete slipform finisher	-	-	19.50	-	-	-
Total Gang Rate / Hour	-	£	158.17	-	-	-
<b>Road surface spraying</b>						
tar sprayer; 100 litre	-	-	7.69	-	-	-
Total Gang Rate / Hour	-	£	7.69	-	-	-
<b>Road chippings</b>						
deadweight roller, 3 point, 10 t	-	-	18.45	-	-	-
tar sprayer, 100 litre	-	-	7.69	-	-	-
self propelled chip spreader	-	-	10.73	-	-	-
channel (heat) iron	-	-	1.19	-	-	-
Total Gang Rate / Hour	-	£	38.05	-	-	-
<b>Cutting slabs</b>						
compressor, 65 cfm	-	-	4.88	-	-	-
12" disc cutter	-	-	1.41	3.52	-	-
Total Gang Rate / Hour	-	£	6.28	3.52	-	-
<b>Cold milling</b>						
cold planer, 2.10 m	-	-	56.13	-	-	-
wheeled loader, 2.60 m <sup>3</sup>	-	-	59.98	-	-	-
Total Gang Rate / Hour	-	£	116.11	-	-	-

## SERIES 700: PAVEMENTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Heat planing</b>						
heat planer, 4.5 m	-	-	80.81	-	-	-
wheeled loader, 2.60 m <sup>3</sup>	-	-	59.98	-	-	-
Total Gang Rate / Hour	-	£	<b>140.80</b>	-	-	-
<b>Rake and compact planed material</b>						
deadweight roller, 3 point, 10 t	-	-	18.45	-	-	-
tractor with front bucket and integral 2 tool	-	-	-	-	-	-
compressor	-	-	20.02	-	-	-
channel (heat) iron	-	-	1.19	-	-	-
Total Gang Rate / Hour	-	£	<b>39.66</b>	-	-	-
<b>SUB-BASE</b>						
The following unit costs are generally based on the Highways Agency Specification for Highway Works and reference is made throughout this Section to clauses within that specification.						
<b>Granular material DfT Type 1;</b>						
Sub-base in carriageway, hardshoulder and hardstrip						
75 mm deep	0.04	3.01	2.22	25.70	m <sup>3</sup>	<b>30.93</b>
100 mm deep	0.04	3.44	2.54	25.70	m <sup>3</sup>	<b>31.67</b>
150 mm deep	0.05	3.87	2.85	25.70	m <sup>3</sup>	<b>32.42</b>
200 mm deep	0.05	4.30	3.17	25.70	m <sup>3</sup>	<b>33.17</b>
<b>Granular material DfT Type 2;</b>						
Sub-base; spread and graded						
75 mm deep	0.04	3.01	2.22	21.95	m <sup>3</sup>	<b>27.18</b>
100 mm deep	0.04	3.44	2.54	21.95	m <sup>3</sup>	<b>27.92</b>
150 mm deep	0.05	3.87	2.85	21.95	m <sup>3</sup>	<b>28.67</b>
200 mm deep	0.05	4.30	3.17	21.95	m <sup>3</sup>	<b>29.42</b>
<b>Wet lean concrete DfT specified strength mix C20, 20 mm aggregate;</b>						
Sub-base; spread and graded						
100 mm deep	0.05	3.87	2.85	92.87	m <sup>3</sup>	<b>99.60</b>
200 mm deep	0.05	4.30	3.17	92.87	m <sup>3</sup>	<b>100.35</b>
<b>Hardcore;</b>						
Sub-base; spread and graded						
100 mm deep	0.04	3.44	2.54	39.83	m <sup>3</sup>	<b>45.81</b>
150 mm deep	0.05	3.87	2.85	39.83	m <sup>3</sup>	<b>46.56</b>
200 mm deep	0.05	4.30	3.17	39.83	m <sup>3</sup>	<b>47.30</b>
<b>Wet mix macadam; DfT Series 900;</b>						
Sub-base; spread and graded						
75 mm deep	0.04	3.01	3.36	26.07	m <sup>3</sup>	<b>32.44</b>
100 mm deep	0.04	3.44	3.49	26.07	m <sup>3</sup>	<b>33.00</b>
200 mm deep	0.05	4.30	3.68	26.07	m <sup>3</sup>	<b>34.05</b>

## SERIES 700: PAVEMENTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PAVEMENT (FLEXIBLE)</b>						
<b>Notes - Labour and Plant</b>						
All outputs are based on clear runs without undue delay to two pavers with a 75% utilisation The outputs can be adjusted as follows to take account of space or time influences on the utilisation Factors for varying utilisation of Labour and Plant:						
1 paver @ 75% utilisation = x 2.00						
1 paver @ 100% utilisation = x 1.50						
2 pavers @ 100% utilisation = x 0.75						
<b>Dense Bitumen Macadam</b>						
Base to DfT Clause 903						
100 mm deep	0.02	3.08	3.49	6.96	m <sup>2</sup>	<b>13.53</b>
150 mm deep	0.03	3.86	4.36	10.43	m <sup>2</sup>	<b>18.65</b>
200 mm deep	0.03	4.63	5.24	13.91	m <sup>2</sup>	<b>23.77</b>
Binder Course to DfT Clause 904						
50 mm deep	0.02	2.31	2.62	2.93	m <sup>2</sup>	<b>7.86</b>
100 mm deep	0.02	3.08	3.49	5.87	m <sup>2</sup>	<b>12.44</b>
Surface Course to DfT Clause 909						
30 mm deep	0.01	1.54	1.75	2.50	m <sup>2</sup>	<b>5.79</b>
50 mm deep	0.02	2.31	2.62	4.17	m <sup>2</sup>	<b>9.10</b>
<b>Bitumen Macadam</b>						
Binder Course to DfT Clause 901						
35 mm deep	0.01	1.54	1.75	2.66	m <sup>2</sup>	<b>5.95</b>
70 mm deep	0.02	2.31	2.62	5.31	m <sup>2</sup>	<b>10.25</b>
<b>Dense Tarmacadam</b>						
Base to DfT Clause 903						
50 mm deep	0.02	2.31	2.62	3.65	m <sup>2</sup>	<b>8.58</b>
100 mm deep	0.02	2.31	2.62	7.30	m <sup>2</sup>	<b>12.23</b>
Binder Course to DfT Clause 907						
60 mm deep	0.02	2.31	2.62	4.76	m <sup>2</sup>	<b>9.69</b>
80 mm deep	0.02	2.31	2.62	6.34	m <sup>2</sup>	<b>11.27</b>
<b>Dense Tar Surfacing</b>						
Surface Course to DfT Series 900						
30 mm deep	0.01	1.54	1.75	2.55	m <sup>2</sup>	<b>5.84</b>
50 mm deep	0.02	2.31	2.62	4.24	m <sup>2</sup>	<b>9.18</b>
<b>Cold Asphalt</b>						
Surface Course to DfT Series 900						
15 mm deep	0.01	1.54	1.75	1.30	m <sup>2</sup>	<b>4.59</b>
30 mm deep	0.01	1.54	1.75	2.58	m <sup>2</sup>	<b>5.87</b>
<b>Rolled Asphalt</b>						
Base to DfT Clause 904						
60 mm deep	0.02	2.31	2.62	4.47	m <sup>2</sup>	<b>9.40</b>
80 mm deep	0.02	2.31	2.62	5.96	m <sup>2</sup>	<b>10.90</b>
Surface Course to DfT Clause 905						
40 mm deep	0.02	2.31	2.62	4.05	m <sup>2</sup>	<b>8.98</b>
60 mm deep	0.02	2.31	2.62	6.08	m <sup>2</sup>	<b>11.01</b>

## SERIES 700: PAVEMENTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PAVEMENT (CONCRETE)</b>						
The following unit costs are for jointed reinforced concrete slabs, laid in reasonable areas (over 200 m <sup>2</sup> ) by paver train/slipformer						
<b>Designed mix; cement to BS EN 197-1; grade C30, 20 mm aggregate</b>						
Slab, runway, access roads or similar						
180 mm deep	0.02	1.86	2.37	14.80	m <sup>2</sup>	<b>19.03</b>
220 mm deep	0.02	2.23	2.85	18.09	m <sup>2</sup>	<b>23.16</b>
260 mm deep	0.02	2.73	3.48	21.37	m <sup>2</sup>	<b>27.58</b>
300 mm deep	0.03	3.10	3.95	24.66	m <sup>2</sup>	<b>31.71</b>
<b>Fabric reinforcement</b>						
Steel fabric reinforcement to BS4483						
Ref A142 nominal mass 2.22 kg	0.03	3.72	-	1.79	m <sup>2</sup>	<b>5.51</b>
Ref A252 nominal mass 3.95 kg	0.04	4.96	-	3.19	m <sup>2</sup>	<b>8.14</b>
Ref B385 nominal mass 4.53 kg	0.04	4.96	-	3.67	m <sup>2</sup>	<b>8.62</b>
Ref C636 nominal mass 5.55 kg	0.05	6.19	-	4.52	m <sup>2</sup>	<b>10.71</b>
Ref B503 nominal mass 5.93 kg	0.05	6.19	-	4.82	m <sup>2</sup>	<b>11.01</b>
<b>Mild steel bar reinforcement BS 4449</b>						
Bars; supplied in bent and cut lengths						
6 mm nominal size	8.00	991.12	-	535.30	t	<b>1526.42</b>
8 mm nominal size	6.74	835.02	-	535.30	t	<b>1370.32</b>
10 mm nominal size	6.74	835.02	-	530.25	t	<b>1365.27</b>
12 mm nominal size	6.74	835.02	-	520.15	t	<b>1355.17</b>
16 mm nominal size	6.15	761.92	-	514.59	t	<b>1276.51</b>
<b>High yield steel bar reinforcement BS 4449 or 4461</b>						
Bars; supplied in bent and cut lengths						
6 mm nominal size	8.00	991.12	-	555.50	t	<b>1546.62</b>
8 mm nominal size	6.74	835.02	-	550.45	t	<b>1385.47</b>
10 mm nominal size	6.74	835.02	-	550.45	t	<b>1385.47</b>
12 mm nominal size	6.74	835.02	-	540.35	t	<b>1375.37</b>
16 mm nominal size	6.15	761.92	-	535.30	t	<b>1297.22</b>
<b>Sheeting to prevent moisture loss</b>						
Polyethylene sheeting; lapped joints; horizontal below concrete pavements						
1000 gauge	0.01	1.24	-	0.88	m <sup>2</sup>	<b>2.12</b>
2000 gauge	0.01	1.24	-	1.60	m <sup>2</sup>	<b>2.84</b>
<b>Joints in concrete slabs</b>						
Longitudinal joints						
180 mm deep concrete	0.01	1.49	1.90	22.03	m	<b>25.41</b>
220 mm deep concrete	0.01	1.49	1.90	23.22	m	<b>26.60</b>
260 mm deep concrete	0.01	1.49	1.90	27.72	m	<b>31.10</b>
300 mm deep concrete	0.01	1.49	1.90	29.34	m	<b>32.72</b>
Expansion joints						
180 mm deep concrete	0.01	1.49	1.90	33.82	m	<b>37.20</b>
220 mm deep concrete	0.01	1.49	1.90	39.94	m	<b>43.32</b>
260 mm deep concrete	0.01	1.49	1.90	46.05	m	<b>49.43</b>
300 mm deep concrete	0.01	1.49	1.90	47.26	m	<b>50.65</b>

## SERIES 700: PAVEMENTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PAVEMENT (CONCRETE) - cont'd</b>						
<b>Joints in concrete slabs - cont'd</b>						
Contraction joints						
180 mm deep concrete	0.01	1.49	1.90	18.32	m	<b>21.70</b>
220 mm deep concrete	0.01	1.49	1.90	19.56	m	<b>22.95</b>
260 mm deep concrete	0.01	1.49	1.90	20.99	m	<b>24.38</b>
300 mm deep concrete	0.01	1.49	1.90	25.67	m	<b>29.06</b>
Construction joints						
180 mm deep concrete	0.01	1.49	1.90	10.94	m	<b>14.32</b>
220 mm deep concrete	0.01	1.49	1.90	12.23	m	<b>15.61</b>
260 mm deep concrete	0.01	1.49	1.90	13.46	m	<b>16.84</b>
300 mm deep concrete	0.01	1.49	1.90	14.66	m	<b>18.04</b>
Open joints with filler						
ne 0.5 m; 10 mm flexcell joint filler	0.11	4.94	-	3.45	m	<b>8.40</b>
0.5 - 1 m; 10 mm flexcell joint filler	0.11	4.94	-	4.96	m	<b>9.91</b>
Joint sealants						
10 x 20 mm hot bitumen sealant	0.14	6.29	-	3.40	m	<b>9.69</b>
20 x 20 mm cold polysulphide sealant	0.18	8.09	-	6.76	m	<b>14.85</b>
Trimming edges only of existing slabs, floors or similar surfaces ( wet or dry ); 6 mm cutting width						
50 mm deep	0.02	0.25	0.13	3.52	m	<b>3.89</b>
100 mm deep	0.03	0.37	0.20	3.79	m	<b>4.36</b>
Cutting existing slabs, floors or similar surfaces ( wet or dry ); 8 mm cutting width						
50 mm deep	0.03	0.31	0.15	3.74	m	<b>4.20</b>
100 mm deep	0.06	0.75	0.38	3.94	m	<b>5.06</b>
150 mm deep	0.08	1.00	0.50	4.01	m	<b>5.51</b>
<b>SURFACE TREATMENT</b>						
<b>Slurry sealing; BS 434 class K3</b>						
Slurry sealing to DfT Clause 918						
3 mm deep	0.02	0.24	0.12	1.37	m <sup>2</sup>	<b>1.73</b>
4 mm deep	0.02	0.24	0.12	1.89	m <sup>2</sup>	<b>2.25</b>
<b>Coated chippings, 9 - 11 kg/m<sup>2</sup></b>						
Surface dressing to DfT Clause 915						
6 mm nominal size	0.01	0.93	0.38	0.89	m <sup>2</sup>	<b>2.21</b>
8 mm nominal size	0.01	0.93	0.38	0.92	m <sup>2</sup>	<b>2.23</b>
10 mm nominal size	0.01	0.93	0.38	0.93	m <sup>2</sup>	<b>2.24</b>
12 mm nominal size	0.01	0.93	0.38	1.02	m <sup>2</sup>	<b>2.33</b>
<b>Anti Skid Surfacing System</b>						
High friction surfacing to DfT Clause 924						
Proprietary resin bonded surfacing system, colours (Buff, Grey, Red, Green)						
-	-	-	-	-	m <sup>2</sup>	<b>19.25</b>
<b>TACK COAT</b>						
<b>Bituminous spray; BS 434 K1 - 40</b>						
Tack coat to DfT Clause 920						
large areas; over 20 m <sup>2</sup>	0.02	0.24	0.12	0.29	m <sup>2</sup>	<b>0.65</b>



**SERIES 700: PAVEMENTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>COLD MILLING (PLANING)</b>						
Milling pavement (assumes disposal on site or re-use as fill but excludes transport if required)						
75 mm deep	0.03	3.35	3.14	-	m <sup>2</sup>	<b>6.48</b>
100 mm deep	0.04	4.46	4.18	-	m <sup>2</sup>	<b>8.64</b>
50 mm deep; scarifying surface	0.02	2.73	2.55	-	m <sup>2</sup>	<b>5.28</b>
75 mm deep; scarifying surface	0.04	4.58	4.30	-	m <sup>2</sup>	<b>8.88</b>
25 mm deep; heat planing for re-use	0.03	3.96	4.51	-	m <sup>2</sup>	<b>8.47</b>
50 mm deep; heat planing for re-use	0.06	6.94	7.88	-	m <sup>2</sup>	<b>14.82</b>
<b>IN-SITU RECYCLING</b>						
Raking over scarified or heat planed material; compacting with 10 t roller						
50 mm deep	0.01	0.95	0.40	-	m <sup>2</sup>	<b>1.35</b>

## SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
Measurement Note: sub-bases are shown separate from their associated paving to simplify the presentation of cost alternatives. Measurement Note: bases are shown separate from their associated kerb etc. to simplify the presentation of cost alternatives. Kerb quadrants, droppers are shown separately The re-erection cost for kerbs, channels and edgings etc. taken from store assumes that major components are in good condition; the prices below allow a sum of 20 % of the value of new materials to cover minor repairs together with an allowance for replacing a proportion of units.						
<b>RESOURCES - LABOUR</b>						
<b>Kerb laying gang</b>						
3 skilled operatives (skill rate 4)	-	39.96	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
1 plant operator (skill rate 3) - 25% of time	-	4.05	-	-	-	-
Total Gang Rate / Hour	£	<b>56.45</b>	-	-	-	-
<b>Path sub-base, bitmac and gravel laying gang</b>						
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 3)	-	16.19	-	-	-	-
Total Gang Rate / Hour	£	<b>54.39</b>	-	-	-	-
<b>Paviors and flagging gang</b>						
1 skilled operative (skill rate 4)	1.00	13.32	-	-	-	-
1 unskilled operative (general)	1.00	12.44	-	-	-	-
Total Gang Rate / Hour	2.00	<b>25.76</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Kerb laying</b>						
backhoe JCB 3CX (25% of time)	-	-	4.69	-	-	-
12" Stihl saw	-	-	1.19	-	-	-
road forms	-	-	2.16	-	-	-
Total Gang Rate / Hour	-	£	<b>8.04</b>	-	-	-
<b>Path sub-base, bitmac and gravel laying</b>						
backhoe JCB3CX	-	-	18.74	-	-	-
2 t dumper	-	-	6.80	-	-	-
pedestrian roller Bomag BW90S	-	-	4.86	-	-	-
Total Gang Rate / Hour	-	£	<b>30.40</b>	-	-	-
<b>Paviors and flagging</b>						
2 t dumper (33% of time)	-	-	2.27	-	-	-
Total Gang Rate / Hour	-	£	<b>2.27</b>	-	-	-

## SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>KERBS, CHANNELS, EDGINGS, COMBINED DRAINAGE AND KERB BLOCKS AND LINEAR DRAINAGE CHANNEL SYSTEMS</b>						
<b>Foundations to kerbs etc.</b>						
Mass concrete						
200 x 100 mm	0.01	0.56	0.07	1.84	m	2.47
300 x 150 mm	0.02	0.84	0.12	4.21	m	5.17
450 x 150 mm	0.02	1.12	0.16	6.22	m	7.50
100 x 100 mm haunching, per side	0.01	0.28	0.04	0.44	m	0.76
<b>Precast concrete units; BS 7263; bedded jointed and pointed in cement mortar</b>						
Kerbs; bullnosed, splayed or half battered; laid straight or curved exceeding 12 m radius						
125 x 150 mm	0.06	3.36	0.48	3.63	m	7.47
125 x 255 mm	0.07	3.92	0.56	4.61	m	9.09
150 x 305 mm	0.07	3.92	0.56	7.45	m	11.93
Kerbs; bullnosed, splayed or half battered; laid to curves not exceeding 12 m radius						
125 x 150 mm	0.07	3.64	0.52	3.63	m	7.79
125 x 255 mm	0.08	4.20	0.60	4.61	m	9.41
150 x 305 mm	0.08	4.20	0.60	7.46	m	12.26
Quadrants (normally included in general rate for kerbs; shown separately for estimating purposes)						
305 x 305 x 150 mm	0.08	4.48	0.64	8.29	nr	13.41
455 x 455 x 255 mm	0.10	5.60	0.80	9.85	nr	16.25
Drop kerbs (normally included in general rate for kerbs; shown separately for estimating purposes)						
125 x 255 mm	0.07	3.92	0.56	6.21	nr	10.69
150 x 305 mm	0.07	3.92	0.56	12.85	nr	17.33
Channels; laid straight or curved exceeding 12 m radius						
125 x 255 mm	0.07	3.92	0.56	6.48	m	10.96
Channels; laid to curves not exceeding 12 m radius						
255 x 125 mm	0.07	3.92	0.56	6.48	m	10.96
Edgings; laid straight or curved exceeding 12 m radius						
150 x 50 mm	0.04	2.24	0.32	3.43	m	5.99
Edgings; laid to curves not exceeding 12 m radius						
150 x 50 mm	0.05	2.52	0.36	4.69	m	7.57
<b>Precast concrete drainage channels; Charcon 'Safeticurb'; channels jointed with plastic rings and bedded, jointed and pointed in cement mortar</b>						
Channel unit; Type DBA/3; laid straight or curved exceeding 12 m radius						
250 x 250 mm; medium duty	0.08	4.20	0.60	42.04	m	46.84
305 x 305 mm; heavy duty	0.10	5.32	0.77	89.42	m	95.51
<b>Precast concrete 'Ellis Trief' safety kerb; bedded jointed and pointed in cement mortar</b>						
Kerbs; laid straight or curved exceeding 12 m radius						
415 x 380 mm	0.23	12.59	1.81	59.47	m	73.87
Kerbs; laid to curves not exceeding 12 m radius						
415 x 380 mm	0.25	13.99	2.01	59.47	m	75.47

## SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>KERBS, CHANNELS, EDGINGS, COMBINED DRAINAGE AND KERB BLOCKS AND LINEAR DRAINAGE CHANNEL SYSTEMS - cont'd</b>						
<b>Precast concrete combined kerb and drainage block 'Beany Block System'; bedded jointed and pointed in cement mortar</b>						
Kerb; top block, shallow base unit, standard cover plate and frame						
laid straight or curved exceeding 12 m radius	0.15	8.39	1.21	108.47	m	<b>118.07</b>
laid to curves not exceeding 12 m radius	0.20	11.19	1.61	151.51	m	<b>164.31</b>
Kerb; top block, standard base unit, standard cover plate and frame						
laid straight or curved exceeding 12 m radius	0.15	8.39	1.21	114.38	m	<b>123.98</b>
laid to curves not exceeding 12 m radius	0.20	11.19	1.61	159.79	m	<b>172.59</b>
Kerb; top block, deep base unit, standard cover plate and frame						
Straight or curved over 12 m radius	0.15	8.39	1.21	142.76	m	<b>152.36</b>
laid to curves not exceeding 12 m radius	0.20	11.19	1.61	199.52	m	<b>212.32</b>
Base block depth tapers	0.10	5.60	0.80	59.99	m	<b>66.39</b>
<b>Extruded asphalt edgings to pavings; slip formed BS 5931</b>						
Kerb; laid straight or curved exceeding 12 m radius						
75 mm kerb height	-	-	-	-	m	<b>6.29</b>
100 mm kerb height	-	-	-	-	m	<b>10.77</b>
125 mm kerb height	-	-	-	-	m	<b>12.75</b>
Channel; laid straight or curved exceeding 12 m radius						
300 mm channel width	-	-	-	-	m	<b>13.91</b>
250 mm channel width	-	-	-	-	m	<b>13.91</b>
Kerb; laid to curves not exceeding 12 m radius						
75 mm kerb height	-	-	-	-	m	<b>12.92</b>
100 mm kerb height	-	-	-	-	m	<b>10.77</b>
125 mm kerb height	-	-	-	-	m	<b>11.27</b>
Channel; laid to curves not exceeding 12 m radius						
300 mm channel width	-	-	-	-	m	<b>18.89</b>
250 mm channel width	-	-	-	-	m	<b>14.39</b>
<b>Extruded concrete; slip formed</b>						
Kerb; laid straight or curved exceeding 12 m radius						
100 mm kerb height	-	-	-	-	m	<b>11.82</b>
125 mm kerb height	-	-	-	-	m	<b>12.90</b>
Kerb; laid to curves not exceeding 12 m radius						
100 mm kerb height	-	-	-	-	m	<b>11.29</b>
125 mm kerb height	-	-	-	-	m	<b>11.45</b>

## SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ADDITIONAL CONCRETE FOR KERBS, CHANNELS, EDGINGS, COMBINED DRAINAGE AND KERB BLOCKS AND LINEAR DRAINAGE CHANNEL SYSTEMS</b>						
Additional in situ concrete concrete						
kerbs	0.50	27.98	3.58	91.43	m <sup>3</sup>	<b>122.99</b>
channels	0.50	27.98	3.58	91.43	m <sup>3</sup>	<b>122.99</b>
edgings	0.50	27.98	3.58	91.43	m <sup>3</sup>	<b>122.99</b>
<b>REMOVE FROM STORE AND RELAY KERBS, CHANNELS, EDGINGS, COMBINED DRAINAGE AND KERB BLOCKS AND LINEAR DRAINAGE CHANNEL SYSTEMS</b>						
<b>Remove from store and relay precast concrete units; bedded jointed and pointed in cement mortar</b>						
Kerbs; laid straight or curved exceeding 12 m radius						
125 x 150 mm	0.06	3.36	0.48	1.41	m	<b>5.25</b>
125 x 255 mm	0.07	3.92	0.56	1.61	m	<b>6.09</b>
150 x 305 mm	0.07	3.92	0.56	2.18	m	<b>6.66</b>
Kerbs; laid to curves not exceeding 12 m radius						
125 x 150 mm	0.07	3.64	0.52	1.41	m	<b>5.57</b>
125 x 255 mm	0.08	4.20	0.60	1.61	m	<b>6.41</b>
150 x 305 mm	0.08	4.20	0.60	2.18	m	<b>6.98</b>
Quadrants (normally included in general rate for kerbs; shown separately for estimating purposes)						
305 x 305 x 150 mm	0.08	4.48	0.64	2.35	nr	<b>7.47</b>
455 x 455 x 255 mm	0.10	5.60	0.80	2.66	nr	<b>9.06</b>
Drop kerbs (normally included in general rate for kerbs; shown separately for estimating purposes)						
125 x 255 mm	0.07	3.92	0.56	1.93	nr	<b>6.41</b>
150 x 305 mm	0.07	3.92	0.56	3.26	nr	<b>7.74</b>
Channels; laid straight or curved exceeding 12 m radius						
125 x 255 mm	0.07	3.92	0.56	1.99	m	<b>6.47</b>
Channels; laid to curves not exceeding 12 m radius						
255 x 125 mm	0.07	3.92	0.56	1.99	m	<b>6.47</b>
Edgings; laid straight or curved exceeding 12 m radius						
150 x 50 mm	0.04	2.24	0.32	1.37	m	<b>3.93</b>
Edgings; laid to curves not exceeding 12 m radius						
150 x 50 mm	0.05	2.52	0.36	1.37	m	<b>4.25</b>
<b>Remove from store and relay precast concrete drainage channels; Charcon 'Safeticurb'; channels jointed with plastic rings and bedded, jointed and pointed in cement mortar</b>						
Channel unit; Type DBA/3; laid straight or curved exceeding 12 m radius						
250 x 254 mm; medium duty	0.08	4.20	0.60	9.10	m	<b>13.90</b>
305 x 305 mm; heavy duty	0.10	5.32	0.77	18.58	m	<b>24.66</b>

## SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>REMOVE FROM STORE AND RELAY KERBS, CHANNELS, EDGINGS, COMBINED DRAINAGE AND KERB BLOCKS AND LINEAR DRAINAGE CHANNEL SYSTEMS - cont'd</b>						
<b>Remove from store and relay precast concrete 'Ellis Trief' safety kerb; bedded jointed and pointed in cement mortar</b>						
Kerbs; laid straight or curved exceeding 12 m radius 415 x 380 mm	0.23	12.59	1.81	12.59	m	<b>26.98</b>
Kerbs; laid to curves not exceeding 12 m radius 415 x 380 mm	0.25	13.99	2.01	12.59	m	<b>28.59</b>
<b>Remove from store and relay precast concrete combined kerb and drainage block 'Beany Block System'; bedded jointed and pointed in cement mortar</b>						
Kerb; top block, shallow base unit, standard cover plate and frame						
laid straight or curved exceeding 12 m radius	0.15	8.39	1.21	22.38	m	<b>31.98</b>
laid to curves not exceeding 12 m radius	0.20	11.19	1.61	30.99	m	<b>43.79</b>
Kerb; top block, standard base unit, standard cover plate and frame						
laid straight or curved exceeding 12 m radius	0.15	8.39	1.21	23.56	m	<b>33.17</b>
laid to curves not exceeding 12 m radius	0.20	11.19	1.61	32.65	m	<b>45.44</b>
Kerb; top block, deep base unit, standard cover plate and frame						
Straight or curved over 12 m radius	0.15	8.39	1.21	29.24	m	<b>38.84</b>
laid to curves not exceeding 12 m radius	0.20	11.19	1.61	40.59	m	<b>53.39</b>
Base block depth tapers	0.10	5.60	0.80	12.69	m	<b>19.09</b>
<b>FOOTWAYS AND PAVED AREAS</b>						
<b>Sub-bases</b>						
To paved area; sloping not exceeding 10° to the horizontal						
100 mm thick sand	0.01	0.49	0.27	3.81	m <sup>2</sup>	<b>4.57</b>
150 mm thick sand	0.01	0.65	0.37	5.72	m <sup>2</sup>	<b>6.73</b>
100 mm thick gravel	0.01	0.49	0.27	2.15	m <sup>2</sup>	<b>2.91</b>
150 mm thick gravel	0.01	0.65	0.37	3.23	m <sup>2</sup>	<b>4.24</b>
100 mm thick hardcore	0.01	0.49	0.27	1.14	m <sup>2</sup>	<b>1.90</b>
150 mm thick hardcore	0.01	0.65	0.37	1.71	m <sup>2</sup>	<b>2.72</b>
100 mm thick concrete grade 20/20	0.02	1.13	0.64	8.94	m <sup>2</sup>	<b>10.71</b>
150 mm thick concrete grade 20/20	0.03	1.73	0.97	13.40	m <sup>2</sup>	<b>16.10</b>
<b>Bitumen macadam surfacing; BS 4987; binder course of 20 mm open graded aggregate to clause 2.6.1 tables 5 - 7; surface course of 6 mm medium graded aggregate to clause 2.7.6 tables 32 - 33; excluding sub-base</b>						
Paved area 60 mm thick; comprising binder course 40 mm thick surface course 20 mm thick						
sloping at 10° or less to the horizontal	0.09	4.59	2.58	10.78	m <sup>2</sup>	<b>17.95</b>
sloping at more than 10° to the horizontal	0.10	5.13	2.89	10.78	m <sup>2</sup>	<b>18.79</b>

## SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Bitumen macadam surfacing; red additives; BS 4987; binder course of 20 mm open graded aggregate to clause 2.6.1 tables 5 - 7; surface course of 6 mm medium graded aggregate to clause 2.7.6 tables 32 - 33; excluding sub-base</b>						
Paved area 60 mm thick; comprising binder course 40 mm thick surface course 20 mm thick sloping at 10° or less to the horizontal	0.09	4.59	2.58	13.06	m <sup>2</sup>	<b>20.23</b>
sloping at more than 10° to the horizontal	0.10	5.13	2.89	13.06	m <sup>2</sup>	<b>21.07</b>
<b>Bitumen macadam surfacing; green additives; BS 4987; binder course of 20 mm open graded aggregate to clause 2.6.1 tables 5 - 7; surface course of 6 mm medium graded aggregate to clause 2.7.6 tables 32 - 33; excluding sub-base</b>						
Paved area 60 mm thick; comprising binder course 40 mm thick surface course 20 mm thick sloping at 10° or less to the horizontal	0.09	4.59	2.58	14.62	m <sup>2</sup>	<b>21.79</b>
sloping at more than 10° to the horizontal	0.10	5.13	2.89	14.62	m <sup>2</sup>	<b>22.63</b>
<b>Granular base surfacing; Central Reserve Treatments Limestone, graded 10 mm down laid and compacted; excluding sub-base</b>						
Paved area 100 mm thick; surface sprayed with two coats of cold bituminous emulsion; blinded with 6 mm quartzite fine gravel sloping not exceeding 10° to the horizontal	0.02	1.08	0.61	6.19	m <sup>2</sup>	<b>7.87</b>
<b>Ennstone Johnston Golden gravel; graded 13 mm to fines; rolled wet</b>						
Paved area 50 mm thick; single layer sloping not exceeding 10° to the horizontal	0.03	1.62	0.91	8.06	m <sup>2</sup>	<b>10.59</b>
<b>Precast concrete slabs; BS 7263; grey; 5 point bedding and pointing joints in cement mortar; excluding sub-base</b>						
Paved area 50 mm thick; comprising 600 x 450 x 50 mm units sloping at 10° or less to the horizontal	0.28	7.15	0.63	11.65	m <sup>2</sup>	<b>19.43</b>
Paved area 50 mm thick; comprising 600 x 600 x 50 mm units sloping at 10° or less to the horizontal	0.24	6.13	0.54	9.43	m <sup>2</sup>	<b>16.11</b>
Paved area 50 mm thick; comprising 900 x 600 x 50 mm units sloping at 10° or less to the horizontal	0.20	5.11	0.45	8.33	m <sup>2</sup>	<b>13.89</b>
Extra for coloured, 50 mm thick	-	-	-	3.65	m <sup>2</sup>	<b>3.65</b>
Paved area 63 mm thick; comprising 600 x 600 x 63 mm units sloping at 10° or less to the horizontal	0.25	6.38	0.56	11.53	m <sup>2</sup>	<b>18.47</b>
Paved area 63 mm thick; comprising 900 x 600 x 63 mm units sloping at 10° or less to the horizontal	0.21	5.36	0.48	9.43	m <sup>2</sup>	<b>15.27</b>
<b>Precast concrete rectangular paving blocks; BS 6717; grey; bedding on 50 mm thick dry sharp sand; filling joints; excluding sub-base</b>						
Paved area 80 mm thick; comprising 200 x 100 x 80 mm units sloping at 10° or less to the horizontal	0.30	7.66	0.68	16.33	m <sup>2</sup>	<b>24.67</b>

## SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FOOTWAYS AND PAVED AREAS - cont'd</b>						
<b>Precast concrete rectangular paving blocks; BS 6717; coloured; bedding on 50 mm thick dry sharp sand; filling joints; excluding sub-base</b> Paved area 80 mm thick; comprising 200 x 100 x 80 mm units sloping at 10° or less to the horizontal	0.30	7.66	0.68	17.26	m <sup>2</sup>	<b>25.60</b>
<b>Brick paviors delivered to site; bedding on 20 mm thick mortar; excluding sub-base</b> Paved area 85 mm thick; comprising 215 x 103 x 65 mm units sloping at 10° or less to the horizontal	0.30	7.66	0.68	26.03	m <sup>2</sup>	<b>34.37</b>
<b>Granite setts (2.88 kg/mm thickness/m<sup>2</sup>); bedding on 25 mm cement mortar; excluding sub-base</b> Paved area 100 mm thick; comprising 100 x 100 x 100 mm units; laid to random pattern sloping at 10° or less to the horizontal	0.90	22.98	2.04	62.46	m <sup>2</sup>	<b>87.48</b>
Paved area 100 mm thick; comprising 100 x 100 x 100 mm units; laid to specific pattern sloping at 10° or less to the horizontal	1.20	30.64	2.72	62.46	m <sup>2</sup>	<b>95.82</b>
<b>Cobble paving; 50 - 75 mm stones; bedding on 25 mm cement mortar; filling joints; excluding sub-base</b> Paved area; comprising 50 - 75 mm stones; laid to random pattern sloping at 10° or less to the horizontal	1.00	25.54	2.25	17.44	m <sup>2</sup>	<b>45.22</b>
<b>REMOVE FROM STORE AND RELAY PAVING FLAGS, SLABS AND BLOCKS</b>						
<b>Note</b> An allowance of 20 % of the cost of providing new pavings has been included in the rates below to allow for units which have to be replaced through unacceptable damage.						
<b>Remove from store and relay precast concrete slabs; 5 point bedding and pointing joints in cement mortar; excluding sub-base</b> Paved area 50 mm thick; comprising 600 x 450 x 50 mm units sloping at 10° or less to the horizontal	0.28	7.15	0.63	2.72	m <sup>2</sup>	<b>10.51</b>
Paved area 50 mm thick; comprising 600 x 600 x 50 mm units sloping at 10° or less to the horizontal	0.24	6.13	0.54	2.28	m <sup>2</sup>	<b>8.95</b>
Paved area 50 mm thick; comprising 900 x 600 x 50 mm units sloping at 10° or less to the horizontal	0.20	5.11	0.45	2.06	m <sup>2</sup>	<b>7.62</b>
Paved area 63 mm thick; comprising 600 x 600 x 63 mm units sloping at 10° or less to the horizontal	0.25	6.38	0.56	2.70	m <sup>2</sup>	<b>9.65</b>
Paved area 63 mm thick; comprising 900 x 600 x 63 mm units sloping at 10° or less to the horizontal	0.21	5.36	0.48	2.28	m <sup>2</sup>	<b>8.12</b>



**SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<p><b>Remove from store and relay precast concrete rectangular paving blocks; bedding on 50 mm thick dry sharp sand; filling joints; excluding sub-base</b></p> <p>Paved area 80 mm thick; comprising 200 x 100 x 80 mm units sloping at 10° or less to the horizontal</p>	0.30	7.66	0.68	4.16	m <sup>2</sup>	<b>12.50</b>
<p><b>Remove from store and relay brick paviors; bedding on 20 mm thick mortar; excluding sub-base</b></p> <p>Paved area 85 mm thick; comprising 215 x 103 x 65 mm units sloping at 10° or less to the horizontal</p>	0.30	7.66	0.68	6.34	m <sup>2</sup>	<b>14.68</b>

## SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
The re-erection cost for traffic signs taken from store assumes that major components are in good condition; the prices below allow a sum of 20 % of the value of new materials to cover minor repairs, new fixings and touching up any coatings.						
<b>RESOURCES - LABOUR</b>						
<b>Traffic signs gang</b>						
1 ganger/chargehand (skill rate 3)	-	15.84	-	-	-	-
1 skilled operative (skill rate 3)	-	14.88	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 3) - 25% of time	-	4.05	-	-	-	-
Total Gang Rate / Hour	£	<b>59.64</b>	-	-	-	-
<b>Bollards, furniture gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
Total Gang Rate / Hour	£	<b>52.48</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Traffic signs</b>						
JCB 3CX backhoe - 50% of time	-	-	9.37	-	-	-
125 cfm compressor - 50% of time	-	-	3.59	-	-	-
compressor tools: hand held hammer drill - 50% of time	-	-	0.47	-	-	-
compressor tools: clay spade - 50% of time	-	-	0.21	-	-	-
compressor tools: extra 15 m hose - 50% of time	-	-	0.17	-	-	-
8 t lorry with hiab lift - 50% of time	-	-	12.33	-	-	-
Total Rate / Hour	-	-	26.14	-	-	-
<b>Bollards, furniture</b>						
125 cfm compressor - 50% of time	-	-	3.59	-	-	-
compressor tools: hand held hammer drill - 50% of time	-	-	0.47	-	-	-
compressor tools:clay spade - 50% of time	-	-	0.21	-	-	-
compressor tools: extra 15 m hose - 50% of time	-	-	0.17	-	-	-
8 t lorry with hiab lift - 25% of time	-	-	6.17	-	-	-
Total Rate / Hour	-	-	10.60	-	-	-

## SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>TRAFFIC SIGNS</b>						
In this section prices will vary depending upon the diagram configurations. The following are average costs of signs and Bollards. Diagram numbers refer to the Traffic Signs Regulations and General Directions 2002 and the figure numbers refer to the Traffic Signs Manual. Examples of Prime Costs for Class 1 (High Intensity) traffic and road signs (ex works) for orders exceeding £1,000. Permanent traffic sign as non-lit unit on						
600 x 450 mm	-	-	-	-	nr	24.99
600 mm diameter	-	-	-	-	nr	30.28
600 mm triangular	-	-	-	-	nr	26.44
500 x 500 mm	-	-	-	-	nr	38.80
450 x 450 mm	-	-	-	-	nr	38.31
450 x 300 mm	-	-	-	-	nr	12.34
1200 x 400 mm (CHEVRONS)	-	-	-	-	nr	36.89
Examples of Prime Costs for Class 2 (Engineering Grade) traffic and road signs (ex works) for orders exceeding £1,000.						
600 x 450 mm	-	-	-	-	nr	24.99
600 mm diameter	-	-	-	-	nr	30.28
600 mm triangular	-	-	-	-	nr	26.44
500 x 500 mm	-	-	-	-	nr	38.80
450 x 450 mm	-	-	-	-	nr	38.31
450 x 300 mm	-	-	-	-	nr	12.34
1200 x 400 mm (CHEVRONS)	-	-	-	-	nr	36.89
<b>Standard reflectorised traffic signs</b>						
Note: Unit costs do not include concrete foundations (see <a href="#">Series 1700</a> ) Standard one post signs; 600 x 450 mm type C1 signs						
fixed back to back to another sign (measured separately) with aluminium clips to existing post (measured separately)	0.04	2.37	1.05	26.24	nr	29.65
Extra for fixing singly with aluminium clips	0.01	0.59	0.20	1.68	nr	2.47
Extra for fixing singly with stainless steel clips	0.01	0.59	0.56	11.50	nr	12.65
fixed back to back to another sign (measured separately) with stainless steel clips to one new 76 mm diameter plastic coated steel posts 1.75 m long	0.27	15.98	7.06	61.08	nr	84.13
Extra for fixing singly to one face only	0.01	0.59	0.20	-	nr	0.79
Extra for 76 mm diameter 1.75 m long aluminium post	0.02	1.18	0.42	12.42	nr	14.02
Extra for 76 mm diameter 3.5 m long plastic coated steel post	0.02	1.18	0.42	40.66	nr	42.26
Extra for 76 mm diameter 3.5 m long aluminium post	0.02	1.18	0.42	40.66	nr	42.26
Extra for excavation for post, in hard material	1.10	65.12	22.34	-	nr	87.46
Extra for single external illumination unit with fitted photo cell (excluding trenching and cabling - see <a href="#">Series 1400</a> ); unit cost per face illuminated	0.33	19.54	6.69	67.56	nr	93.79

## SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>TRAFFIC SIGNS - cont'd</b>						
<b>Standard reflectorised traffic signs - cont'd</b>						
Standard two post signs; 1200 x 400 mm, signs fixed back to back to another sign (measured separately) with stainless steel clips to two new 76 mm diameter plastic coated steel posts 1.75 m long	0.51	30.19	13.34	109.46	nr	<b>152.99</b>
Extra for fixing singly to one face only	0.02	1.18	0.42	-	nr	<b>1.60</b>
Extra for two 76 mm diameter 1.75 m long aluminium posts	0.04	2.37	0.81	24.84	nr	<b>28.02</b>
Extra for two 76 mm diameter 3.5 m long plastic coated steel posts	0.04	2.37	0.81	81.32	nr	<b>84.50</b>
Extra for two 76 mm diameter 3.5 m long aluminium post	0.04	2.37	0.81	81.32	nr	<b>84.50</b>
Extra for excavation for post, in hard material	1.10	65.12	22.34	-	nr	<b>87.46</b>
Extra for single external illumination unit with fitted photo cell (excluding trenching and cabling - see <a href="#">Series 1400</a> ); unit cost per face illuminated	0.58	34.34	11.78	94.63	nr	<b>140.75</b>
<b>Standard internally illuminated traffic signs</b>						
Bollard with integral mould-in translucent graphics (excluding trenching and cabling) fixing to concrete base	0.48	28.42	12.55	161.08	nr	<b>202.04</b>
<b>Special traffic signs</b>						
Note: Unit costs do not include concrete foundations (see <a href="#">Series 1700</a> ) or trenching and cabling (see <a href="#">Series 1400</a> ) Externally illuminated reflectorised traffic signs manufactured to order						
special signs, surface area 1.50 m <sup>2</sup> on two 100 mm diameter steel posts	-	-	-	-	nr	<b>656.22</b>
special signs, surface area 4.00 m <sup>2</sup> on three 100 mm diameter steel posts	-	-	-	-	nr	<b>1080.33</b>
Internally illuminated traffic signs manufactured to order						
special signs, surface area 0.25 m <sup>2</sup> on one new 76 mm diameter steel post	-	-	-	-	nr	<b>236.20</b>
special signs, surface area 0.75 m <sup>2</sup> on one new 100 mm diameter steel post	-	-	-	-	nr	<b>330.99</b>
special signs, surface area 4.00 m <sup>2</sup> on four new 120 mm diameter steel posts	-	-	-	-	nr	<b>842.50</b>
<b>Signs on gantries</b>						
Externally illuminated reflectorised signs						
1.50 m <sup>2</sup>	1.78	105.67	56.91	182.21	nr	<b>344.79</b>
2.50 m <sup>2</sup>	2.15	127.28	68.55	303.67	nr	<b>499.50</b>
3.00 m <sup>2</sup>	3.07	181.74	97.88	363.38	nr	<b>643.00</b>
Internally illuminated sign with translucent optical reflective sheeting and remote light source						
0.75 m <sup>2</sup>	1.56	92.35	49.74	1439.38	nr	<b>1581.46</b>
1.00 m <sup>2</sup>	1.70	100.64	54.20	1911.00	nr	<b>2065.84</b>
1.50 m <sup>2</sup>	2.41	142.67	76.84	2872.63	nr	<b>3092.13</b>
<b>Remove from Store and Re-erect Traffic Signs</b>						
Take from store and re-erect						
3.0 m high road sign	0.28	16.58	8.93	28.01	nr	<b>53.52</b>
road sign on two posts	0.50	29.60	15.94	56.03	nr	<b>101.57</b>

## SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ROAD MARKINGS</b>						
<b>Thermoplastic screed or spray</b>						
Note: Unit costs based upon new road with clean surface closed to traffic) Continuous line in reflectorised white						
150 mm wide	-	-	-	-	m	0.98
200 mm wide	-	-	-	-	m	1.30
Continuous line in reflectorised yellow						
100 mm wide	-	-	-	-	m	0.66
150 mm wide	-	-	-	-	m	0.98
Intermittent line in reflectorised white						
60 mm wide with 0.60 m line and 0.60 m gap	-	-	-	-	m	0.76
100 mm wide with 1.0 m line and 5.0 m gap	-	-	-	-	m	0.76
100 mm wide with 2.0 m line and 7.0 m gap	-	-	-	-	m	0.76
100 mm wide with 4.0 m line and 2.0 m gap	-	-	-	-	m	0.76
100 mm wide with 6.0 m line and 3.0 m gap	-	-	-	-	m	0.76
150 mm wide with 1.0 m line and 5.0 m gap	-	-	-	-	m	1.15
150 mm wide with 6.0 m line and 3.0 m gap	-	-	-	-	m	1.15
150 mm wide with 0.60 m line and 0.30 m gap	-	-	-	-	m	1.15
200 mm wide with 0.60 m line and 0.30 m gap	-	-	-	-	m	1.54
200 mm wide with 1.0 m line and 1.0 m gap	-	-	-	-	m	1.54
Ancillary line in reflectorised white						
150 mm wide in hatched areas	-	-	-	-	m	0.96
200 mm wide in hatched areas	-	-	-	-	m	1.50
Ancillary line in yellow						
150 mm wide in hatched areas	-	-	-	-	m	0.96
Triangles in reflectorised white						
1.6 m high	-	-	-	-	nr	8.91
2.0 m high	-	-	-	-	nr	12.10
3.75 m high	-	-	-	-	nr	15.92
Circles with enclosing arrows in reflectorised white						
1.6 m diameter	-	-	-	-	nr	63.67
Arrows in reflectorised white						
4.0 m long straight or turning	-	-	-	-	nr	25.47
6.0 m long straight or turning	-	-	-	-	nr	31.83
6.0 m long curved	-	-	-	-	nr	31.83
6.0 m long double headed	-	-	-	-	nr	44.57
8.0 m long double headed	-	-	-	-	nr	63.66
16.0 m long double headed	-	-	-	-	nr	95.50
32.0 m long double headed	-	-	-	-	nr	127.33
Kerb markings in yellow						
250 mm long	-	-	-	-	nr	0.65
Letters or numerals in reflectorised white						
1.6 m high	-	-	-	-	nr	8.29
2.0 m high	-	-	-	-	nr	12.10
3.75 m high	-	-	-	-	nr	21.02
<b>Verynyl strip markings</b>						
Note: Unit costs based upon new road with clean surface closed to traffic 'Verynyl' strip markings (pedestrian crossings and similar locations)						
200 mm wide line	-	-	-	-	m	8.30
600 x 300 mm single stud tile	-	-	-	-	nr	14.18

**SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>ROAD STUDS</b>						
100 x 100 mm square bi-directional reflecting road stud with amber corner cube reflectors	-	-	-	-	nr	<b>6.33</b>
140 x 254 mm rectangular one way reflecting road stud with red catseye reflectors	-	-	-	-	nr	<b>15.18</b>
140 x 254 mm rectangular one way reflecting road stud with green catseye reflectors	-	-	-	-	nr	<b>15.18</b>
140 x 254 mm rectangular bi-directional reflecting road stud with white catseye reflectors	-	-	-	-	nr	<b>15.18</b>
140 x 254 mm rectangular bi-directional reflecting road stud with amber catseye reflectors	-	-	-	-	nr	<b>15.18</b>
140 x 254 mm rectangular bi-directional reflecting road stud without catseye reflectors	-	-	-	-	nr	<b>9.49</b>
<b>REMOVE FROM STORE AND RE-INSTALL ROAD STUDS</b>						
Remove from store and re-install 100 x 100 mm square bi-directional reflecting road stud with corner cube reflectors	-	-	-	-	nr	<b>3.15</b>
Remove from store and re-install 140 x 254 mm rectangular one way reflecting road stud with catseye reflectors	-	-	-	-	nr	<b>7.59</b>
<b>TRAFFIC SIGNAL INSTALLATIONS</b>						
Traffic signal installation is carried out exclusively by specialist contractors, although certain items are dealt with by the main contractor or a subcontractor. The following detailed prices are given to assist in the calculation of the total installation cost. Installation of signal pedestals, loop detector unit pedestals, controller unit boxes and cable connection pillars						
signal pedestal	-	-	-	-	nr	<b>33.15</b>
loop detector unit pedestal	-	-	-	-	nr	<b>20.53</b>
controller unit box	-	-	-	-	nr	<b>50.51</b>
Excavate trench for traffic signal cable, depth ne 1.50 m; supports, backfilling						
450 mm wide	-	-	-	-	m	<b>6.31</b>
Extra for excavating in hard material	-	-	-	-	m <sup>3</sup>	<b>34.73</b>
Saw cutting grooves in pavement for detector loops and feeder cables; seal with hot bitumen sealant after installation						
25 mm deep	-	-	-	-	m	<b>5.51</b>
<b>MARKER POSTS</b>						
Glass reinforced plastic marker posts						
types 1,2,3 or 4	-	-	-	-	nr	<b>13.59</b>
types 5,6,7 or 8	-	-	-	-	nr	<b>12.88</b>
Line posts for emergency crossing						
Standard reflectorised traffic cylinder 1000 mm high 125 mm diameter; mounted in cats eye base (deliniator)	-	-	-	-	nr	<b>23.90</b>

**SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PERMANENT BOLLARDS</b>						
Permanent bollard; non-illuminated; precast concrete 150 mm minimum diameter 750 mm high	0.80	41.62	8.33	152.38	nr	<b>202.33</b>
300 mm minimum diameter 750 mm high Extra for exposed aggregate finish	0.80 -	41.62 -	8.33 -	179.33 13.00	nr nr	<b>229.28</b> <b>13.00</b>
Permanent bollard; non-illuminated; galvanised steel removable and lockable pattern	0.80	41.62	12.08	134.01	nr	<b>187.71</b>
<b>MISCELLANEOUS FURNITURE</b>						
Galvanised steel lifting traffic barrier 4.0 m wide	2.40	124.87	24.99	1181.45	nr	<b>1331.30</b>
Precast concrete seats bench seat 2.0 m long	0.75	39.02	7.82	223.68	nr	<b>270.52</b>
bench seat with concrete ends and timber slats 2.0 m long	0.75	39.02	7.82	258.21	nr	<b>305.04</b>
Timber seat fixed to concrete base bench seat 2.0 m long	0.45	23.41	4.07	301.37	nr	<b>328.85</b>
Metal seat bench seat 2.0 m long	0.75	39.02	7.82	323.55	nr	<b>370.39</b>

**SERIES 1300: ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>NOTES</b>						
For convenience in pricing this section departs from Series 1300 requirements and shows lighting column costs broken down into main components of columns, brackets, and lamps and cabling. The outputs assume operations are continuous and are based on at least 10 complete units and do not include any allowance for on site remedial works after erection of the columns. Painting and protection of the columns apart from galvanising is not included in the following prices or outputs. The re-erection cost for lighting columns taken from store assumes that major components are in good condition; the prices below allow a sum of 20 % of the value of new materials to cover minor repairs, new fixings and touching up any coatings.						
<b>RESOURCES - LABOUR</b>						
<b>Column erection gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
1 plant operator (craftsman) - 50% of time	-	10.34	-	-	-	-
Total Gang Rate / Hour	£	<b>50.38</b>	-	-	-	-
<b>Bracket erection gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
1 plant operator (craftsman)	-	20.68	-	-	-	-
Total Gang Rate / Hour	£	<b>62.84</b>	-	-	-	-
<b>Lanterns gang</b>						
1 skilled operative (skill rate 3)	-	14.88	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
1 plant operator (skill rate 4)	-	14.56	-	-	-	-
1 plant operator (craftsman)	-	20.68	-	-	-	-
Total Gang Rate / Hour	£	<b>63.44</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Columns and bracket arms</b>						
15 t mobile crane - 50% of time	-	-	16.40	-	-	-
125 cfm compressor - 50% of time	-	-	3.59	-	-	-
compressor tools: 2 single head scabblers - 50% of time	-	-	1.87	-	-	-
2 t dumper - 50% of time	-	-	3.40	-	-	-
Total Rate / Hour	-	£	<b>25.26</b>	-	-	-
<b>Bracket arms</b>						
15 t mobile crane	-	-	32.79	-	-	-
access platform, Simon hoist (50 ft)	-	-	34.78	-	-	-
Total rate / Hour	-	£	<b>67.57</b>	-	-	-



## SERIES 1300: ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Lanterns</b>						
15 t mobile crane	-	-	32.79	-	-	-
access platform, Simon hoist (50 ft)	-	-	34.78	-	-	-
Total Rate / Hour	-	£	<b>67.57</b>	-	-	-
<b>ROAD LIGHTING COLUMNS AND BRACKETS, WALL MOUNTINGS, CCTV MASTS AND CANTILEVER MASTS</b>						
Galvanised steel road lighting columns to BS EN 40 with flange plate base (including all control gear, switching, fuses and internal wiring)						
4.0 m nominal height	0.75	37.46	18.95	240.88	nr	<b>297.29</b>
6.0 m nominal height	0.80	39.96	27.71	361.31	nr	<b>428.98</b>
8.0 m nominal height	0.96	47.95	33.25	451.64	nr	<b>532.84</b>
10.0 m nominal height	1.28	63.93	44.33	541.97	nr	<b>650.23</b>
12.0 m nominal height	1.44	71.93	49.87	782.84	nr	<b>904.64</b>
15.0 m nominal height	1.76	87.91	60.95	1083.94	nr	<b>1232.80</b>
3.0 m cast iron column (pedestrian / landscape area)	0.75	37.46	25.98	301.09	nr	<b>364.54</b>
Precast concrete lighting columns to BS EN 40 with flange plate base (including all control gear, switching, fuses and internal wiring)						
5.0 m nominal height	0.75	37.46	25.98	238.50	nr	<b>301.94</b>
10.0 m nominal height	1.28	63.93	44.37	575.93	nr	<b>684.23</b>
Galvanised steel bracket arm to BS EN 40; with 5° uplift						
0.5 m projection, single arm	0.16	9.97	19.92	38.40	nr	<b>68.29</b>
1.0 m projection, single arm	0.19	11.84	12.84	82.08	nr	<b>106.75</b>
1.5 m projection, single arm	0.21	10.49	13.96	77.73	nr	<b>102.18</b>
2.0 m projection, single arm	0.27	16.82	18.24	108.90	nr	<b>143.97</b>
1.0 m projection, double arm	0.29	18.07	19.60	136.18	nr	<b>173.84</b>
2.0 m projection, double arm	0.32	19.94	21.62	164.22	nr	<b>205.78</b>
Precast concrete bracket arm to BS EN 40; with 5° uplift						
1.0 m projection, single arm	0.24	14.95	16.22	155.78	nr	<b>186.95</b>
2.0 m projection, single arm	0.32	19.94	21.62	186.91	nr	<b>228.47</b>
1.0 m projection, double arm	0.35	21.81	23.65	180.86	nr	<b>226.32</b>
2.0 m projection, double arm	0.37	23.05	25.00	219.79	nr	<b>267.85</b>
Lantern unit with photo-electric control set to switch on at 100 lux; lamps						
55W SON (P226); to suit 4 m and 5 m columns	0.40	25.17	20.47	290.77	nr	<b>336.41</b>
70W SON (P236); to suit 5 m and 6 m columns	0.40	25.17	20.47	293.83	nr	<b>339.47</b>
250W SON (P426); to suit 8 m, 10 m and 12 m columns	0.50	31.46	25.59	440.74	nr	<b>497.79</b>
Sphere 70W SON; to suit 3 m columns (P456)	0.50	31.46	25.59	527.97	nr	<b>585.02</b>
400W SON High pressure sodium; to suit 12 m and 15 m columns	0.50	31.46	25.59	612.12	nr	<b>669.17</b>

**SERIES 1300: ROAD LIGHTING COLUMNS AND BRACKETS, CCTV MASTS AND CANTILEVER MASTS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>REMOVE FROM STORE AND RE-ERECT ROAD LIGHTING COLUMNS AND BRACKETS, WALL MOUNTINGS, CCTV MASTS AND CANTILEVER MASTS</b>						
Re-erection of galvanised steel road lighting columns with flange plate base; including all control gear, switching, fuses and internal wiring						
4.0 m nominal height	0.75	37.46	18.97	18.70	nr	<b>75.13</b>
6.0 m nominal height	0.80	39.96	20.25	24.46	nr	<b>84.67</b>
8.0 m nominal height	0.96	47.95	24.25	30.22	nr	<b>102.42</b>
10.0 m nominal height	1.28	63.93	32.37	35.97	nr	<b>132.27</b>
12.0 m nominal height	1.44	71.93	36.41	41.73	nr	<b>150.07</b>
15.0 m nominal height	1.76	87.91	44.50	50.36	nr	<b>182.76</b>
3.0 m cast iron column (pedestrian / landscape area)	0.75	37.46	18.99	15.82	nr	<b>72.27</b>
Re-erection of precast concrete lighting columns with flange plate base; including all control gear, switching, fuses and internal wiring						
5.0 m nominal height	0.75	37.46	18.97	21.59	nr	<b>78.02</b>
10.0 m nominal height	1.28	63.93	32.37	35.97	nr	<b>132.27</b>
Re-erection of galvanised steel bracket arms						
0.5 m projection, single arm	0.16	9.97	10.81	21.20	nr	<b>41.98</b>
1.0 m projection, single arm	0.19	11.84	12.84	21.20	nr	<b>45.87</b>
1.5 m projection, single arm	0.21	13.08	14.19	21.20	nr	<b>48.47</b>
2.0 m projection, single arm	0.27	16.82	18.24	21.20	nr	<b>56.26</b>
1.0 m projection, double arm	0.29	18.07	19.60	21.20	nr	<b>58.86</b>
2.0 m projection, double arm	0.32	19.94	21.62	21.20	nr	<b>62.76</b>
Re-erection of precast concrete bracket arms						
1.0 m projection, single arm	0.24	14.95	16.22	21.20	nr	<b>52.37</b>
2.0 m projection, single arm	0.32	19.94	21.62	21.20	nr	<b>62.76</b>
1.0 m projection, double arm	0.35	21.81	24.41	21.20	nr	<b>67.42</b>
2.0 m projection, double arm	0.37	23.05	23.65	21.20	nr	<b>67.90</b>
Re-installing lantern unit with photo-electric control set to switch on at 100 lux; lamps						
55W SON (P226); to suit 4 m and 5 m columns	0.40	25.17	20.47	-	nr	<b>45.64</b>
70W SON (P236); to suit 5 m and 6 m columns	0.22	13.84	20.47	-	nr	<b>34.31</b>
250W SON (P426); to suit 8 m, 10 m and 12 m columns	0.50	31.46	25.59	-	nr	<b>57.05</b>
Sphere 70W SON; to suit 3 m (P456)	0.50	31.46	25.59	-	nr	<b>57.05</b>
400W SON High pressure sodium; to suit 12 m and 15 m columns	0.50	31.46	25.59	-	nr	<b>57.05</b>

## SERIES 1400: ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Trenching gang</b>						
1 ganger/chargehand (skill rate 4)	-	13.32	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 3) - 75% of time	-	12.14	-	-	-	-
Total Gang Rate / Hour	£	<b>63.66</b>	-	-	-	-
<b>Cable laying gang</b>						
1 ganger/chargehand (skill rate 4)	-	13.32	-	-	-	-
2 skilled operatives (skill rate 3)	-	29.76	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
Total Gang Rate / Hour	£	<b>56.40</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Service trenching</b>						
JCB 3CX backhoe - 50% of time	-	-	9.37	-	-	-
125 cfm compressor - 50% of time	-	-	3.59	-	-	-
compressor tools: 2 single head scabbler - 50% of time	-	-	1.87	-	-	-
2 t dumper - 50% of time	-	-	3.40	-	-	-
trench excavator - 25% of time	-	-	17.27	-	-	-
Total Rate / Hour	-	£	<b>35.50</b>	-	-	-
<b>Cable laying</b>						
8 t IVECO chassis or similar - 50% of time	-	-	6.49	-	-	-
Total Rate / Hour	-	£	<b>6.49</b>	-	-	-
<b>LOCATING BURIED ROAD LIGHTING AND TRAFFIC SIGNS CABLES</b>						
Locating buried road lighting and traffic signs cable in carriageways, footways, bridge decks and paved areas	0.25	15.78	8.88	-	m	<b>24.66</b>
in verges and central reserves	0.20	12.63	7.10	-	m	<b>19.73</b>
in side slopes of cuttings or side slopes of embankments	0.15	9.47	5.33	-	m	<b>14.80</b>
<b>TRENCH FOR CABLE OR DUCT</b>						
Trench for cable						
300 to 450 mm wide; depth not exceeding 1.5 m	0.15	9.47	5.33	-	m	<b>14.80</b>
450 to 600 mm wide; depth not exceeding 1.5 m	0.20	12.63	7.10	-	m	<b>19.73</b>
Extra for excavating rock or reinforced concrete in trench	0.50	31.56	17.76	-	m <sup>3</sup>	<b>49.32</b>
Extra for excavating brickwork or mass concrete in trench	0.40	25.25	14.20	-	m <sup>3</sup>	<b>39.45</b>
Extra for backfilling with pea gravel	0.02	1.26	0.72	20.27	m <sup>3</sup>	<b>22.25</b>
Extra for 450 x 100 mm sand cable bedding and covering	0.02	1.26	0.72	1.49	m	<b>3.47</b>
Extra for PVC marker tape	0.01	0.32	0.19	0.19	m	<b>0.69</b>
Extra for 150 x 300 clay cable tiles	0.05	3.16	1.77	4.83	m	<b>9.76</b>
Extra for 150 x 900 concrete cable tiles	0.03	1.89	1.07	8.21	m	<b>11.17</b>

## SERIES 1400: ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>CABLE AND DUCT</b>						
<b>600/1000V 2 core, PVC/SWA/PVC cable with copper conductors</b>						
Cable; in trench not exceeding 1.5 m deep						
2.5 mm <sup>2</sup>	0.01	0.56	0.06	2.96	m	<b>3.59</b>
4 mm <sup>2</sup>	0.02	1.12	0.13	3.93	m	<b>5.18</b>
6 mm <sup>2</sup>	0.02	1.12	0.13	4.60	m	<b>5.84</b>
10 mm <sup>2</sup>	0.02	1.12	0.13	6.32	m	<b>7.56</b>
16 mm <sup>2</sup>	0.02	1.12	0.13	7.91	m	<b>9.16</b>
25 mm <sup>2</sup>	0.03	1.68	0.19	10.02	m	<b>11.89</b>
<b>600/1000V 4 core, PVC/SWA/PVC cable with copper conductors</b>						
Cable; in trench not exceeding 1.5 m deep						
16. mm2	0.03	1.68	0.19	11.38	m	<b>13.25</b>
35 mm <sup>2</sup>	0.13	7.27	0.84	13.67	m	<b>21.79</b>
70 mm <sup>2</sup>	0.15	8.39	0.97	18.52	m	<b>27.89</b>
<b>600/1000V 2 core, PVC/SWA/PVC cable drawn into ducts, pipe bays or troughs</b>						
Cable; in trench not exceeding 1.5 m deep						
2.5 mm <sup>2</sup>	0.01	0.56	0.06	2.83	m	<b>3.45</b>
4 mm <sup>2</sup>	0.02	1.12	0.13	3.78	m	<b>5.03</b>
6 mm <sup>2</sup>	0.02	1.12	0.13	4.47	m	<b>5.72</b>
10 mm <sup>2</sup>	0.02	1.12	0.13	6.17	m	<b>7.41</b>
16 mm <sup>2</sup>	0.03	1.68	0.19	7.76	m	<b>9.63</b>
35 mm <sup>2</sup>	0.12	6.71	0.78	9.89	m	<b>17.39</b>
70 mm <sup>2</sup>	0.14	7.83	0.91	14.99	m	<b>23.73</b>
<b>CABLE JOINTS AND CABLE TERMINATIONS</b>						
Straight joint in 2 core PVC/SWA/PVC cable						
2.5 mm <sup>2</sup>	0.30	16.78	1.95	53.33	nr	<b>72.06</b>
4.0 mm <sup>2</sup>	0.30	16.78	1.95	53.33	nr	<b>72.06</b>
6.0 mm <sup>2</sup>	0.32	17.90	2.08	53.33	nr	<b>73.31</b>
10.0 mm <sup>2</sup>	0.42	23.50	2.73	54.44	nr	<b>80.66</b>
16.0 mm <sup>2</sup>	0.50	27.97	3.25	57.10	nr	<b>88.31</b>
35.0 mm <sup>2</sup>	0.80	44.76	5.19	72.62	nr	<b>122.57</b>
70.0 mm <sup>2</sup>	1.15	64.34	7.46	80.36	nr	<b>152.16</b>
Tee joint in 2 core PVC/SWA/PVC cable						
2.5 mm <sup>2</sup>	0.46	25.73	2.99	77.52	nr	<b>106.24</b>
4.0 mm <sup>2</sup>	0.46	25.73	2.99	77.52	nr	<b>106.24</b>
6.0 mm <sup>2</sup>	0.48	26.85	3.12	77.52	nr	<b>107.49</b>
10.0 mm <sup>2</sup>	0.62	34.69	4.02	79.52	nr	<b>118.23</b>
16.0 mm <sup>2</sup>	0.74	41.40	4.80	83.01	nr	<b>129.21</b>
25.0 mm <sup>2</sup>	0.91	50.91	5.91	88.92	nr	<b>145.73</b>
Tee joint in 4 core PVC/SWA/PVC cable						
16.0 mm <sup>2</sup>	1.10	61.54	7.14	91.30	nr	<b>159.98</b>
35.0 mm <sup>2</sup>	1.30	72.73	8.44	102.24	nr	<b>183.40</b>
70.0 mm <sup>2</sup>	1.60	89.51	10.38	146.82	nr	<b>246.71</b>

**SERIES 1400: ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Looped terminations of 2 core PVC/SWA/PVC cable in lit sign units, traffic signals installation control unit, pedestrian crossing control unit, road lighting column, wall mounting, subway distribution box, gantry distribution box or feeder pillar.						
2.5 mm <sup>2</sup>	0.15	8.39	0.97	7.61	nr	<b>16.98</b>
6.0 mm <sup>2</sup>	0.15	8.39	0.97	10.30	nr	<b>19.66</b>
10.0 mm <sup>2</sup>	0.16	8.95	1.04	13.39	nr	<b>23.38</b>
16.0 mm <sup>2</sup>	0.25	13.99	1.62	13.66	nr	<b>29.27</b>
25.0 mm <sup>2</sup>	0.30	16.78	1.95	19.06	nr	<b>37.79</b>
Terminations of 4 core PVC/SWA/PVC cable in lit sign units, traffic signals installation control unit, pedestrian crossing control unit, road lighting column, wall mounting, subway distribution box, gantry distribution box or feeder pillar.						
16.0 mm <sup>2</sup>	0.35	19.58	2.27	14.77	nr	<b>36.62</b>
35.0 mm <sup>2</sup>	0.55	30.77	3.57	26.94	nr	<b>61.28</b>
70.0 mm <sup>2</sup>	0.68	38.04	4.41	51.11	nr	<b>93.56</b>
<b>FEEDER PILLARS</b>						
Galvanised steel feeder pillars						
411 x 610 mm	4.64	259.58	30.11	240.88	nr	<b>530.57</b>
611 x 810 mm	4.24	237.20	27.52	355.29	nr	<b>620.01</b>
811 x 1110	4.96	277.48	32.19	469.71	nr	<b>779.38</b>
1111 x 1203 mm	4.19	234.41	27.26	541.97	nr	<b>803.63</b>
<b>EARTH ELECTRODES</b>						
Earth electrodes providing minimal protection using earth rods, plates or stops and protective tape and joint						
to suit columns ne 12.0 m	0.40	22.38	-	308.25	nr	<b>330.63</b>
to suit columns ne 15.0 m	0.40	22.38	-	408.82	nr	<b>431.19</b>
to suit Superstructure or Buildings using copper lead conductor (per 23 m height)	1.00	55.94	-	695.28	nr	<b>751.23</b>
<b>CHAMBERS</b>						
Brick chamber with galvanised steel cover and frame; depth to uppermost surface of base slab ne 1.0 m deep	-	-	-	-	nr	<b>839.92</b>

## SERIES 1500: MOTORWAY COMMUNICATIONS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Service trenching gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
1 plant operator (skill rate 3) - 75% of time	-	12.14	-	-	-	-
Total Gang Rate / Hour	£	<b>64.62</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Trenching</b>						
JCB 3CX backhoe (50% of time)	-	-	9.37	-	-	-
125 cfm compressor (50% of time)	-	-	3.59	-	-	-
compressor tools: 2 single head scabbler (50% of time)	-	-	1.87	-	-	-
2 t dumper (50% of time)	-	-	3.40	-	-	-
trench excavator (25% of time)	-	-	17.27	-	-	-
Total Gang Rate / Hour	-	£	<b>35.50</b>	-	-	-
<b>LOCATING BURIED COMMUNICATIONS CABLE</b>						
Locating buried road lighting and traffic signs cable in carriageways, footways, bridge decks and paved areas	0.25	15.78	8.88	-	m	<b>24.66</b>
in verges and central reserves	0.20	12.63	7.10	-	m	<b>19.73</b>
in side slopes of cuttings or side slopes of embankments	0.15	9.47	5.33	-	m	<b>14.80</b>
<b>TRENCH FOR COMMUNICATIONS CABLE OR DUCT</b>						
Trench for cable						
300 to 450 mm wide; depth not exceeding 1.5 m	0.15	9.47	5.33	-	m	<b>14.80</b>
450 to 600 mm wide; depth not exceeding 1.5 m	0.20	12.63	7.10	-	m	<b>19.73</b>
Extra for excavating rock or reinforced concrete in trench	0.50	31.56	17.76	-	m <sup>3</sup>	<b>49.32</b>
Extra for excavating brickwork or mass concrete in trench	0.40	25.25	14.20	-	m <sup>3</sup>	<b>39.45</b>
Extra for backfilling with pea gravel	0.02	1.26	0.72	20.27	m <sup>3</sup>	<b>22.25</b>
Extra for 450 x 100 mm sand cable bedding and covering	0.02	1.26	0.72	1.49	m	<b>3.47</b>
Extra for PVC marker tape	0.01	0.32	0.19	0.19	m	<b>0.69</b>
Extra for 150 x 300 clay cable tiles	0.05	3.16	1.77	4.83	m	<b>9.76</b>
Extra for 150 x 900 concrete cable tiles	0.03	1.89	1.07	8.21	m	<b>11.17</b>
<b>COMMUNICATIONS CABLE AND COMMUNICATIONS DUCT</b>						
Communication cables laid in trench						
type A1 2 pair 0.9 mm <sup>2</sup> armoured multi-pair	-	-	-	-	m	<b>4.51</b>
type A2 20 pair 0.9 mm <sup>2</sup> armoured multi-pair	-	-	-	-	m	<b>8.10</b>
type A3 30 pair 0.9 mm <sup>2</sup> armoured multi-pair	-	-	-	-	m	<b>9.94</b>

**SERIES 1500: MOTORWAY COMMUNICATIONS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Power cables laid in trench type A4 10.0 mm <sup>2</sup> armoured split concentric	-	-	-	-	m	7.07
Detector feeder cables laid in trench type A6 50/0.25m <sup>2</sup> single core detector feeder cable	-	-	-	-	m	5.43
type A7 50/0.25m <sup>2</sup> single core detector feeder cable	-	-	-	-	m	5.43
<b>COMMUNICATIONS CABLE JOINTS AND TERMINATIONS</b>						
Cable terminations of type 1 cable	-	-	-	-	nr	64.37
of type 2 cable	-	-	-	-	nr	287.62
of type 3 cable	-	-	-	-	nr	412.56
of type 4 cable	-	-	-	-	nr	68.98
of type 6 cable	-	-	-	-	nr	41.10
of type 7 cable	-	-	-	-	nr	41.10
<b>COMMUNICATIONS EQUIPMENT</b>						
Cabinet bases foundation plinth	-	-	-	-	nr	130.28
Matrix signal post bases foundation plinth	-	-	-	-	nr	134.89
CCTV camera bases foundation plinth	-	-	-	-	nr	130.28
Wall mounted brackets at maximum 15.0 m height	-	-	-	-	nr	43.46
Fix only the following equipment communication equipment cabinet, 600 type series	-	-	-	-	nr	140.32
terminator type II	-	-	-	-	nr	148.73
emergency telephone post	-	-	-	-	nr	74.52
telephone housing	-	-	-	-	nr	23.27
matrix signal post	-	-	-	-	nr	74.52
Motorwarn / fogwarn	-	-	-	-	nr	148.93
distributor on gantry	-	-	-	-	nr	189.63
isolator switch for gantry	-	-	-	-	nr	412.97
heater unit mounted on gantry; Henleys' 65 W type 22501	-	-	-	-	nr	28.29
Terminal blocks Klippon BK6	-	-	-	-	nr	7.48
Klippon BK12	-	-	-	-	nr	8.40
Work to pavement for loop detection circuits cut or form grooves in pavement for detector loops and feeders	-	-	-	-	m	5.02
additional cost for sealing with hot bitumen sealant	-	-	-	-	m	0.51
<b>CHAMBERS</b>						
Brick chamber with galvanised steel cover and frame; depth to uppermost surface of base slab ne 1.0 m deep	-	-	-	-	nr	839.92

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL</b>						
<b>Notes</b>						
There are a number of different types of piling which are available for use in differing situations. Selection of the most suitable type of piling for a particular site will depend on a number of factors including the physical conditions likely to be encountered during driving, the loads to be carried, the design of superstructure, etc. The most commonly used systems are included in this section. It is essential that a thorough and adequate site investigation is carried out to ascertain details of the ground strata and bearing capacities to enable a proper assessment to be made of the most suitable and economical type of piling to be adopted. There are so many factors, apart from design considerations, which influence the cost of piling that it is not possible to give more than an approximate indication of costs. To obtain reliable costs for a particular contract advice should be sought from a company specialising in the particular type of piling proposed. Some Specialist Contractors will also provide a design service if required.						
<b>PILING PLANT</b>						
<b>Driven precast concrete reinforced piles</b>						
Establishment of piling plant for						
235 x 235 mm precast reinforced and prestressed concrete piles in main piling	-	-	-	-	item	3750.00
275 x 275 mm precast reinforced and prestressed concrete piles in main piling	-	-	-	-	item	3750.00
350 x 350 mm precast reinforced and prestressed concrete piles in main piling	-	-	-	-	item	4000.00
Moving piling plant for						
235 x 235 mm precast reinforced and prestressed concrete piles in main piling	-	-	-	-	nr	40.04
275 x 275 mm precast reinforced and prestressed concrete piles in main piling	-	-	-	-	nr	40.04
350 x 350 mm precast reinforced and prestressed concrete piles in main piling	-	-	-	-	nr	64.07
<b>Bored in-situ reinforced concrete piling (tripod rig)</b>						
Establishment of piling plant for 500 mm diameter cast-in-place concrete piles (tripod rig) in main piling						
Moving piling plant for 500 mm diameter cast-in-place concrete piles (tripod rig) in main piling	-	-	-	-	nr	166.41
<b>Bored in-situ reinforced concrete piling (mobile rig)</b>						
Establishment of piling plant for 500 mm diameter cast-in-place concrete piles (mobile rig) in main piling						
Moving piling plant for 500 mm diameter cast-in-place concrete piles in (mobile rig) main piling	-	-	-	-	nr	219.34



## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Concrete injected piles (continuous flight augered)</b>						
Establishment of piling plant for cast-in-place concrete piles (CFA) in main piling						
450 mm diameter; 650kN	-	-	-	-	item	8000.00
600 mm diameter; 1400kN	-	-	-	-	item	8000.00
750 mm diameter; 2200kN	-	-	-	-	item	8000.00
Moving piling plant for cast-in-place concrete piles (CFA) in main piling						
450 mm diameter; 650kN	-	-	-	-	nr	40.00
600 mm diameter 1400kN	-	-	-	-	nr	40.00
750 mm diameter 2200kN	-	-	-	-	nr	40.00
<b>Driven cast in place piles; segmental casing method</b>						
Establishment of piling plant for cast-in-place concrete piles in main piling	-	-	-	-	item	11250.00
Moving piling plant for cast-in-place concrete piles in main piling	-	-	-	-	nr	120.75
Establishment of piling plant for cast-in-place concrete piles in main piling						
bottom driven	-	-	-	-	item	6000.00
top driven	-	-	-	-	item	6000.00
Moving piling plant for 430 mm diameter cast-in-place concrete piles in main piling						
bottom driven	-	-	-	-	nr	90.76
top driven	-	-	-	-	nr	62.80
<b>Steel bearing piles</b>						
Establishment of piling plant for steel bearing piles in main piling						
maximum 100 miles radius from base	-	-	-	-	item	6750.00
maximum 250 miles radius from base	-	-	-	-	item	16750.00
Moving piling plant for steel bearing piles in main piling	-	-	-	-	nr	248.06
<b>Z section sheet steel piles</b>						
Provision of all plant, equipment and labour including transport to and from the site and establishing and dismantling for						
driving of sheet piling	-	-	-	-	item	6200.00
extraction of sheet piling	-	-	-	-	item	5500.00
<b>U section sheet steel piles</b>						
Provision of plant, equipment and labour including transport to and from the site and establishing and dismantling for						
driving of sheet piling	-	-	-	-	item	6200.00
extraction of sheet piling	-	-	-	-	item	5500.00
Establishment of piling plant for steel tubular piles in main piling						
maximum 100 miles radius from base	-	-	-	-	item	6750.00
maximum 250 miles radius from base	-	-	-	-	item	16750.00
Moving piling plant for steel tubular piles in main piling	-	-	-	-	nr	248.06

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PRECAST CONCRETE PILES</b>						
<b>Driven precast reinforced concrete piles</b>						
The following unit costs cover the installation of driven precast concrete piles by using a hammer acting on a shoe fitted onto or cast into the pile unit. The costs are based installing 100 piles of nominal sizes stated, and a concrete strength of 50N/mm <sup>2</sup> suitably reinforced for a working load not exceeding 600kN, with piles average 15m long, on a clear site with reasonable access. Single pile lengths are normally a maximum of 13m long, at which point, a mechanical interlocking joint is required to extend the pile. These joints are most economically and practically formed at works. Lengths, sizes of sections, reinforcement details and concrete mixes vary for differing contractors, whose specialist advice should be sought for specific designs. Precast concrete piles; concrete 50N/mm <sup>2</sup>						
235 x 235 mm; 5 - 10 m in length; main piling	-	-	-	-	m	21.24
275 x 275 mm; 5 - 10 m in length; main piling	-	-	-	-	m	22.33
350 x 350 mm; 5 - 10 m in length; main piling	-	-	-	-	m	42.78
Mechanical Interlocking joint						
235 x 235 mm	-	-	-	-	nr	52.12
275 x 275 mm	-	-	-	-	nr	59.55
350 x 350 mm	-	-	-	-	nr	74.45
Driving vertical precast piles						
235 x 235 mm; 5 - 10 m in length; in main piling	-	-	-	-	m	3.19
275 x 275 mm; 5 - 10 m in length; in main piling	-	-	-	-	m	3.72
350 x 350 mm; 5 - 10 m in length; in main piling	-	-	-	-	m	4.47
Stripping vertical precast concrete pile heads						
235 x 235 mm piles in main piling	-	-	-	-	nr	33.14
275 x 275 mm piles in main piling	-	-	-	-	nr	43.11
350 x 350 mm piles in main piling	-	-	-	-	nr	66.30
Standing time						
275 x 275 mm	-	-	-	-	hr	167.82
350 x 350 mm	-	-	-	-	hr	200.24
<b>CAST IN PLACE PILES</b>						
<b>Bored in-situ reinforced concrete piling (tripod rig)</b>						
The following unit costs cover the construction of small diameter bored piling using light and compact tripod rigs requiring no expensive site levelling or access ways. Piling can be constructed in very restricted headroom or on confined and difficult sites. Standard diameters are between 400 and 600 mm with a normal maximum depth of 30 m. The costs are based on installing 100 piles of 500 mm nominal diameter, a concrete strength of 20N/mm <sup>2</sup> with nominal reinforcement, on a clear site with reasonable access. Disposal of excavated material is included separately. Vertical 500 mm diameter cast-in-place piles; 20N/mm <sup>2</sup> concrete; nominal reinforcement; in main piling						
Vertical 500 mm diameter empty bores in main piling	-	-	-	-	m	187.71
Add for boring through obstructions	-	-	-	-	hr	113.72
Standing time	-	-	-	-	hr	108.98

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Bored in-situ reinforced concrete piling (mobile rig)</b>						
The following unit costs cover the construction of small diameter bored piles using lorry or crawler mounted rotary boring rigs. This type of plant is more mobile and faster in operation than the tripod rigs and is ideal for large contracts in cohesive ground. Construction of piles under bentonite suspension can be carried out to obviate the use of liners. Standard diameters of 450 to 900 mm diameter can be constructed to depths of 30 m. The costs are based on installing 100 piles of 500 mm nominal diameter, a concrete strength of 20N/mm <sup>2</sup> with nominal reinforcement, on a clear site with reasonable access. Disposal of excavated material is included separately. Vertical 500 mm diameter cast-in-place piles; 20N/mm <sup>2</sup> concrete; nominal reinforcement	-	-	-	-	m	<b>114.10</b>
Vertical 500 mm diameter empty bores	-	-	-	-	m	<b>52.30</b>
Add for boring through obstructions	-	-	-	-	hr	<b>480.00</b>
Standing time	-	-	-	-	hr	<b>450.00</b>
<b>Concrete injected piles (continuous flight augered)</b>						
The following unit costs cover the construction of piles by screwing a continuous flight auger into the ground to a design depth (Determined prior to commencement of piling operations and upon which the rates are based and subsequently varied to actual depths). Concrete is then pumped through the hollow stem of the auger to the bottom and the pile formed as the auger is withdrawn. Spoil is removed by the auger as it is withdrawn. This is a fast method of construction without causing disturbance or vibration to adjacent ground. No casing is required even in unsuitable soils. Reinforcement can be placed after grouting is complete. The costs are based on installing 100 piles on a clear site with reasonable access. Disposal of excavated material is included separately. Vertical cast-in-place piles; 20N/mm <sup>2</sup> concrete						
450 mm diameter; 650kN; 10 - 15m in length; main piling	-	-	-	-	m	<b>20.36</b>
600 mm diameter; 1400kN; 10 - 15m in length; main piling	-	-	-	-	m	<b>49.24</b>
750 mm diameter; 2200kN; 10 - 15m in length; main piling	-	-	-	-	m	<b>53.36</b>
Vertical empty bores						
450 mm diameter	-	-	-	-	m	<b>25.24</b>
600 mm diameter	-	-	-	-	m	<b>2.16</b>
750 mm diameter	-	-	-	-	m	<b>29.90</b>
Standing time / Boring through obstructions time						
450 mm diameter	-	-	-	-	hr	<b>400.00</b>
600 mm diameter	-	-	-	-	hr	<b>400.00</b>
750 mm diameter	-	-	-	-	hr	<b>400.00</b>

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>DRIVEN CAST-IN-PLACE PILES</b>						
<b>Driven cast-in-place piles; segmental casing method</b>						
The following unit costs cover the construction of piles by driving into hard material using a serrated thick wall tube. It is oscillated and pressed into the hard material using a hydraulic attachment to the piling rig. The hard material is broken up using chiselling methods and is then removed by mechanical grab. Vertical cast-in-place piles; 20N/mm <sup>2</sup> concrete						
620 mm diameter; 10 - 15m in length; main piling	-	-	-	-	m	166.48
1180 mm diameter; 10 - 15m in length; main piling	-	-	-	-	m	185.45
1500 mm diameter; 10 - 15m in length; main piling	-	-	-	-	m	253.26
Standing time	-	-	-	-	hr	275.63
Add for driving through obstructions	-	-	-	-	hr	293.00
<b>Driven in-situ reinforced concrete piling</b>						
The following unit costs cover the construction of piles by driving a tube into the ground either by using an internal hammer acting on a gravel or concrete plug or, as is more usual, by using an external hammer on a driving helmet at the top of the tube. After driving to the required depth an enlarged base is formed by hammering out successive charges of concrete down the tube. The tube is then filled with concrete which is compacted as the tube is vibrated and withdrawn. Piles of 350 to 500 mm diameter can be constructed with rakes up to 1 in 4 to carry working loads up to 120t per pile. The costs are based on installing 100 piles of 430 mm nominal diameter, a concrete strength of 20N/mm <sup>2</sup> suitably reinforced for a working load not exceeding 750kN, on a clear site with reasonable access. SEE SECTION PILING PLANT						
Establishment of piling plant for cast-in-place concrete piles in main piling						
bottom driven	-	-	-	-	item	8000.00
top driven	-	-	-	-	item	8000.00
SEE SECTION PILING PLANT Moving piling plant for 430 mm diameter cast-in-place concrete piles in main piling						
bottom driven	-	-	-	-	nr	40.00
top driven	-	-	-	-	nr	40.00
Vertical 430 mm diameter cast-in-place piles 20N/mm <sup>2</sup> concrete; reinforcement for 750kN maximum load						
bottom driven	-	-	-	-	m	20.36
top driven	-	-	-	-	m	20.36
Standing time	-	-	-	-	hr	175.00
Add for driving through obstructions where within the capabilities of the normal plant						
	-	-	-	-	hr	185.00
Stripping vertical concrete pile heads						
430 mm diameter heads	-	-	-	-	nr	75.00

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>REINFORCEMENT FOR CAST-IN-PLACE PILES</b>						
<b>Mild steel</b>						
Steel bar reinforcement						
6 mm nominal size; not exceeding 12 in length	-	-	-	-	t	590.00
8 mm nominal size; not exceeding 12 in length	-	-	-	-	t	590.00
10 mm nominal size; not exceeding 12 in length	-	-	-	-	t	585.00
12 mm nominal size; not exceeding 12 in length	-	-	-	-	t	575.00
16 mm nominal size; not exceeding 12 in length	-	-	-	-	t	590.00
25 mm nominal size; not exceeding 12 in length	-	-	-	-	t	590.00
32 mm nominal size; not exceeding 12 in length	-	-	-	-	t	575.00
40 mm nominal size; not exceeding 12 in length	-	-	-	-	t	580.00
Steel helical reinforcement						
6 mm nominal size; not exceeding 12 in length	-	-	-	-	t	610.00
8 mm nominal size; not exceeding 12 in length	-	-	-	-	t	610.00
10 mm nominal size; not exceeding 12 in length	-	-	-	-	t	585.00
12 mm nominal size; not exceeding 12 in length	-	-	-	-	t	595.00
<b>High tensile steel</b>						
Steel bar reinforcement						
6 mm nominal size; not exceeding 12 in length	-	-	-	-	t	610.00
8 mm nominal size; not exceeding 12 in length	-	-	-	-	t	610.00
10 mm nominal size; not exceeding 12 in length	-	-	-	-	t	605.00
12 mm nominal size; not exceeding 12 in length	-	-	-	-	t	595.00
16 mm nominal size; not exceeding 12 in length	-	-	-	-	t	590.00
25 mm nominal size; not exceeding 12 in length	-	-	-	-	t	590.00
32 mm nominal size; not exceeding 12 in length	-	-	-	-	t	595.00
40 mm nominal size; not exceeding 12 in length	-	-	-	-	t	600.00
Steel helical reinforcement						
6 mm nominal size; not exceeding 12 in length	-	-	-	-	t	630.00
8 mm nominal size; not exceeding 12 in length	-	-	-	-	t	630.00
10 mm nominal size; not exceeding 12 in length	-	-	-	-	t	625.00
12 mm nominal size; not exceeding 12 in length	-	-	-	-	t	615.00
<b>STEEL BEARING PILES</b>						
Steel bearing piles are commonly carried out by a Specialist Contractor and whose advice should be sought to arrive at accurate costing. However the following items can be used to assess a budget cost for such work. The following unit costs are based upon driving 100nr steel bearing piles on a clear site with reasonable access. Supply is based on delivery 75 miles from works, in loads over 20t.						
<b>Steel bearing piles</b>						
Standing time	-	-	-	-	hr	379.56
203 x 203 x 45 kg/m steel bearing piles; Grade S275						
not exceeding 5m in length in main piling	-	-	-	-	m	48.89
5 - 10m in length in main piling	-	-	-	-	m	48.14
10 - 15m in length in main piling	-	-	-	-	m	48.14
15 - 20m in length in main piling	-	-	-	-	m	48.39
203 x 203 x 54 kg/m steel bearing piles; Grade S275						
not exceeding 5m in length in main piling	-	-	-	-	m	63.18
5 - 10m in length in main piling	-	-	-	-	m	62.29
10 - 15m in length in main piling	-	-	-	-	m	62.29
15 - 20m in length in main piling	-	-	-	-	m	62.58

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>STEEL BEARING PILES - cont'd</b>						
<b>Steel bearing piles - cont'd</b>						
254 x 254 x 63 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	74.36
5 - 10m in length	-	-	-	-	m	73.32
10 - 15m in length	-	-	-	-	m	73.32
15 - 20m in length	-	-	-	-	m	73.67
254 x 254 x 71 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	83.81
5 - 10m in length	-	-	-	-	m	82.64
10 - 15m in length	-	-	-	-	m	82.64
15 - 20m in length	-	-	-	-	m	83.03
254 x 254 x 85 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	100.33
5 - 10m in length	-	-	-	-	m	98.93
10 - 15m in length	-	-	-	-	m	98.93
15 - 20m in length	-	-	-	-	m	99.40
305 x 305 x 79 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	94.90
5 - 10m in length	-	-	-	-	m	93.60
10 - 15m in length	-	-	-	-	m	93.60
15 - 20m in length	-	-	-	-	m	94.03
305 x 305 x 95kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	114.12
5 - 10m in length	-	-	-	-	m	112.55
10 - 15m in length	-	-	-	-	m	112.55
15 - 20m in length	-	-	-	-	m	113.08
305 x 305 x 110 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	122.95
5 - 10m in length	-	-	-	-	m	121.13
10 - 15m in length	-	-	-	-	m	121.13
15 - 20m in length	-	-	-	-	m	121.74
305 x 305 x 126 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	140.83
5 - 10m in length	-	-	-	-	m	138.75
10 - 15m in length	-	-	-	-	m	138.75
15 - 20m in length	-	-	-	-	m	139.44
305 x 305 x 149 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	166.54
5 - 10m in length	-	-	-	-	m	164.08
10 - 15m in length	-	-	-	-	m	164.08
15 - 20m in length	-	-	-	-	m	164.90
305 x 305 x 186 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	207.89
5 - 10m in length	-	-	-	-	m	204.82
10 - 15m in length	-	-	-	-	m	204.82
15 - 20m in length	-	-	-	-	m	205.84
305 x 305 x 233 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	249.24
5 - 10m in length	-	-	-	-	m	245.56
10 - 15m in length	-	-	-	-	m	245.56
15 - 20m in length	-	-	-	-	m	246.79
356 x 368 x 109 kg/m steel bearing piles; Grade S275 ne 5m in length	-	-	-	-	m	124.11
5 - 10m in length	-	-	-	-	m	122.31
10 - 15m in length	-	-	-	-	m	122.31
15 - 20m in length	-	-	-	-	m	122.91

**SERIES 1600: PILING AND EMBEDDED RETAINING WALLS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
356 x 368 x 133 kg/m steel bearing piles; Grade S275						
ne 5m in length	-	-	-	-	m	151.43
5 - 10m in length	-	-	-	-	m	149.24
10 - 15m in length	-	-	-	-	m	149.24
15 - 20m in length	-	-	-	-	m	149.97
356 x 368 x 152kg/m steel bearing piles; Grade S275						
ne 5m in length	-	-	-	-	m	173.07
5 - 10m in length	-	-	-	-	m	170.56
10 - 15m in length	-	-	-	-	m	170.56
15 - 20m in length	-	-	-	-	m	171.39
356 x 368 x 174 kg/m steel bearing piles; Grade S275						
ne 5m in length	-	-	-	-	m	198.11
5 - 10m in length	-	-	-	-	m	195.24
10 - 15m in length	-	-	-	-	m	195.24
15 - 20m in length	-	-	-	-	m	196.20
Driving vertical steel bearing piles						
section weight not exceeding 70 kg/m	-	-	-	-	m	7.08
section weight 70 - 90 kg/m	-	-	-	-	m	7.08
section weight 90 - 110 kg/m	-	-	-	-	m	7.08
section weight 90 - 110 kg/m	-	-	-	-	m	7.20
section weight 110 - 130 kg/m	-	-	-	-	m	7.20
section weight 150 - 170 kg/m	-	-	-	-	m	7.31
Driving raking steel bearing piles						
section weight not exceeding 70 kg/m	-	-	-	-	m	7.46
section weight 70 - 90 kg/m	-	-	-	-	m	7.46
section weight 90 - 110 kg/m	-	-	-	-	m	7.46
section weight 110 - 130 kg/m	-	-	-	-	m	7.56
section weight 130 - 150 kg/m	-	-	-	-	m	7.56
section weight 150 - 170 kg/m	-	-	-	-	m	7.80
section weight 170 - 190 kg/m	-	-	-	-	m	7.80
section weight 190 - 210 kg/m	-	-	-	-	m	7.92
allow 30% of the respective item above for the lengthened section only Welding on lengthening pieces to vertical steel bearing piles						
203 x 203 x any kg/m	-	-	-	-	nr	110.70
254 x 254 x any kg/m	-	-	-	-	nr	138.39
305 x 305 x any kg/m	-	-	-	-	nr	166.07
356 x 368 x any kg/m	-	-	-	-	nr	194.66
Cutting or burning off surplus length of vertical steel bearing piles						
203 x 203 x any kg/m	-	-	-	-	nr	5.54
254 x 254 x any kg/m	-	-	-	-	nr	8.31
305 x 305 x any kg/m	-	-	-	-	nr	9.69
356 x 368 x any kg/m	-	-	-	-	nr	11.07
<b>STEEL TUBULAR PILES</b>						
Steel tubular piles are commonly carried out by a Specialist Contractor and whose advice should be sought to arrive at accurate costings. However the following items can be used to assess a budget cost for each work. The following unit costs are based upon driving 100nr steel tubular piles on a clear site with reasonable access. Standing time						
Steel Grade 275; delivered in 10 - 20 t loads; mass 60 - 120 kg/m	-	-	-	-	hr	309.19
section 508 mm x 8 mm x 98.6 kg/m	-	-	-	-	m	112.90
section 559 mm x 8 mm x 109 kg/m	-	-	-	-	m	124.81

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>STEEL TUBULAR PILES - cont'd</b>						
Steel Grade 275; delivered in 10 - 20 t loads; mass 120 - 250 kg/m						
section 508 mm x 10 mm x 123 kg/m	-	-	-	-	m	140.84
section 508 mm x 12.5 mm x 153 kg/m	-	-	-	-	m	175.19
section 508 mm x 16 mm x 194 kg/m	-	-	-	-	m	222.13
section 508 mm x 20 mm x 241 kg/m	-	-	-	-	m	275.94
section 559 mm x 10 mm x 135 kg/m	-	-	-	-	m	154.57
section 559 mm x 12.5 mm x 168 kg/m	-	-	-	-	m	192.36
section 559 mm x 16 mm x 214 kg/m	-	-	-	-	m	245.03
section 610 mm x 8 mm x 119 kg/m	-	-	-	-	m	136.25
section 610 mm x 10 mm x 148 kg/m	-	-	-	-	m	169.46
section 610 mm x 12.5 mm x 184 kg/m	-	-	-	-	m	210.68
section 610 mm x 16 mm x 234 kg/m	-	-	-	-	m	267.93
section 660 mm x 8 mm x 129 kg/m	-	-	-	-	m	147.71
section 660 mm x 10 mm x 160 kg/m	-	-	-	-	m	183.20
section 660 mm x 12.5 mm x 200 kg/m	-	-	-	-	m	229.00
section 711 mm x 8 mm x 134 kg/m	-	-	-	-	m	153.43
section 711 mm x 10 mm x 173 kg/m	-	-	-	-	m	198.09
section 711 mm x 12 mm x 215 kg/m	-	-	-	-	m	246.18
section 762 mm x 8 mm x 149 kg/m	-	-	-	-	m	170.60
section 762 mm x 10 mm x 185 kg/m	-	-	-	-	m	211.82
section 762 mm x 12.5 mm x 231 kg/m	-	-	-	-	m	264.50
Steel Grade 275; delivered in 10 - 20 t loads; mass 250 - 500 kg/m						
section 559 mm x 20 mm x 266 kg/m	-	-	-	-	m	304.57
section 610 mm x 20 mm x 291 kg/m	-	-	-	-	m	333.19
section 660 mm x 16 mm x 254 kg/m	-	-	-	-	m	290.83
section 660 mm x 20 mm x 316 kg/m	-	-	-	-	m	361.82
section 660 mm x 25 mm x 392 kg/m	-	-	-	-	m	448.84
section 711 mm x 16 mm x 274 kg/m	-	-	-	-	m	313.73
section 711 mm x 20 mm x 341 kg/m	-	-	-	-	m	390.44
section 711 mm x 25 mm x 423 kg/m	-	-	-	-	m	484.33
section 762 mm x 16 mm x 294 kg/m	-	-	-	-	m	336.63
section 762 mm x 20 mm x 366 kg/m	-	-	-	-	m	419.07
section 762 mm x 25 mm x 454 kg/m	-	-	-	-	m	519.83
Driving vertical steel tubular piles						
mass 60 - 120 kg/m	-	-	-	-	m	7.08
mass 120 - 150 kg/m	-	-	-	-	m	7.20
mass 150 - 160 kg/m	-	-	-	-	m	7.31
mass 160 - 190 kg/m	-	-	-	-	m	7.42
mass 190 - 220 kg/m	-	-	-	-	m	7.53
mass 220 - 250 kg/m	-	-	-	-	m	7.64
mass 250 - 280 kg/m	-	-	-	-	m	7.75
mass 280 - 310 kg/m	-	-	-	-	m	7.88
mass 310 - 340 kg/m	-	-	-	-	m	7.98
mass 340 -370 kg/m	-	-	-	-	m	8.10
mass 370 - 400 kg/m	-	-	-	-	m	8.32
mass 400 - 430 kg/m	-	-	-	-	m	8.43
mass 430 - 460 kg/m	-	-	-	-	m	8.66



**SERIES 1600: PILING AND EMBEDDED RETAINING WALLS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Driving raking steel tubular piles						
mass 60 - 120 kg/m	-	-	-	-	m	7.46
mass 120 - 150 kg/m	-	-	-	-	m	7.56
mass 150 - 160 kg/m	-	-	-	-	m	7.69
mass 160 - 190 kg/m	-	-	-	-	m	7.80
mass 190 - 220 kg/m	-	-	-	-	m	7.92
mass 220 - 250 kg/m	-	-	-	-	m	8.04
mass 250 - 280 kg/m	-	-	-	-	m	8.16
mass 280 - 310 kg/m	-	-	-	-	m	8.27
mass 310 - 340 kg/m	-	-	-	-	m	8.39
mass 340 -370 kg/m	-	-	-	-	m	8.52
mass 370 - 400 kg/m	-	-	-	-	m	8.75
mass 400 - 430 kg/m	-	-	-	-	m	8.87
mass 430 - 460 kg/m	-	-	-	-	m	9.10
Driving lengthened vertical steel tubular piles						
mass 60 - 120 kg/m	-	-	-	-	m	9.20
mass 120 - 150 kg/m	-	-	-	-	m	9.35
mass 150 - 160 kg/m	-	-	-	-	m	9.50
mass 160 - 190 kg/m	-	-	-	-	m	9.65
mass 190 - 220 kg/m	-	-	-	-	m	9.80
mass 220 - 250 kg/m	-	-	-	-	m	9.93
mass 250 - 280 kg/m	-	-	-	-	m	10.08
mass 280 - 310 kg/m	-	-	-	-	m	10.24
mass 310 - 340 kg/m	-	-	-	-	m	10.37
mass 340 -370 kg/m	-	-	-	-	m	10.52
mass 370 - 400 kg/m	-	-	-	-	m	10.82
mass 400 - 430 kg/m	-	-	-	-	m	10.96
mass 430 - 460 kg/m	-	-	-	-	m	11.26
Driving lengthened raking steel tubular piles						
mass 60 - 120 kg/m	-	-	-	-	m	9.69
mass 120 - 150 kg/m	-	-	-	-	m	9.84
mass 150 - 160 kg/m	-	-	-	-	m	10.00
mass 160 - 190 kg/m	-	-	-	-	m	10.14
mass 190 - 220 kg/m	-	-	-	-	m	10.30
mass 220 - 250 kg/m	-	-	-	-	m	10.46
mass 250 - 280 kg/m	-	-	-	-	m	10.61
mass 280 - 310 kg/m	-	-	-	-	m	10.76
mass 310 - 340 kg/m	-	-	-	-	m	10.92
mass 340 -370 kg/m	-	-	-	-	m	11.07
mass 370 - 400 kg/m	-	-	-	-	m	11.37
mass 400 - 430 kg/m	-	-	-	-	m	11.53
mass 430 - 460 kg/m	-	-	-	-	m	11.83
Welding on lengthening piece to steel tubular piles						
section diameter 508 x any thickness	-	-	-	-	nr	157.41
section diameter 559 x any thickness	-	-	-	-	nr	166.40
section diameter 610 x any thickness	-	-	-	-	nr	175.40
section diameter 660 x any thickness	-	-	-	-	nr	184.39
section diameter 711 x any thickness	-	-	-	-	nr	193.39
section diameter 762 x any thickness	-	-	-	-	nr	202.38
Cutting or burning off surplus length of steel tubular piles						
section diameter 508 x any thickness	-	-	-	-	nr	10.29
section diameter 559 x any thickness	-	-	-	-	nr	10.34
section diameter 610 x any thickness	-	-	-	-	nr	10.40
section diameter 660 x any thickness	-	-	-	-	nr	10.45
section diameter 711 x any thickness	-	-	-	-	nr	10.53
section diameter 762 x any thickness	-	-	-	-	nr	10.59

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PROOF LOADING OF PILES</b>						
<b>Driven precast concrete piles</b>						
Establishment of proof loading equipment; proof loading of vertical precast concrete piles with maintained load to 900 kN	-	-	-	-	item	<b>2760.00</b>
Establishment of proof loading equipment; proof loading of vertical precast concrete piles by dynamic testing with piling hammer	-	-	-	-	nr	<b>690.00</b>
<b>Bored in-situ reinforced concrete piling (tripod rig)</b>						
Establishment of proof loading equipment for bored cast-in-place piles	-	-	-	-	item	<b>1000.00</b>
Proof loading of vertical cast-in-place piles with maximum test load of 600kN on a working pile 500mm diameter using tension piles as reaction	-	-	-	-	nr	<b>3500.00</b>
<b>Bored in-situ reinforced concrete piling (mobile rig)</b>						
Establishment of proof loading equipment for bored cast-in-place piles	-	-	-	-	item	<b>1400.00</b>
Proof loading of vertical cast-in-place piles with maximum test load of 600kN on a working pile 500mm diameter using tension piles as reaction	-	-	-	-	nr	<b>3610.00</b>
<b>Concrete injected piles (continuous flight augered)</b>						
Establishment of proof loading equipment for bored cast-in-place piles	-	-	-	-	item	<b>1500.00</b>
450 mm diameter; 650kN	-	-	-	-	item	<b>1500.00</b>
600 mm diameter; 1400kN	-	-	-	-	item	<b>1500.00</b>
750 mm diameter; 2200kN	-	-	-	-	item	<b>1500.00</b>
Proof loading of vertical cast-in-place piles to 1.5 times working load	-	-	-	-	nr	<b>2500.00</b>
450 mm diameter; 650kN	-	-	-	-	nr	<b>3750.00</b>
600 mm diameter; 1400kN	-	-	-	-	nr	<b>4000.00</b>
750 mm diameter; 2200kN	-	-	-	-	nr	<b>4000.00</b>
Electronic integrity testing cost per pile (minimum 40 piles per visit)	-	-	-	-	nr	<b>25.00</b>
<b>Segmental casing method piles</b>						
Establishment of proof loading equipment for driven cast-in-place piles	-	-	-	-	item	<b>1250.00</b>
Proof loading of vertical cast-in-place piles with maximum test load of 600kN on a working pile 500 mm diameter using non-working tension piles as reaction	-	-	-	-	nr	<b>4000.00</b>

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Driven in-situ reinforced concrete piling</b>						
Establishment of proof loading equipment for driven cast-in-place piles						
bottom driven	-	-	-	-	item	<b>1000.00</b>
top driven	-	-	-	-	item	<b>1000.00</b>
Proof loading of vertical cast-in-place piles with maximum test load of 1125kN on a working pile 430 mm diameter using non-working tension piles as reaction						
bottom driven	-	-	-	-	nr	<b>3500.00</b>
top driven	-	-	-	-	nr	<b>3500.00</b>
Electronic integrity testing						
Cost per pile (minimum 40 piles per visit)	-	-	-	-	nr	<b>25.00</b>
<b>Steel bearing piles</b>						
Establishment of proof loading equipment for steel bearing piles in main piling						
	-	-	-	-	item	<b>7000.00</b>
Proof loading of vertical steel bearing piles with maximum test load of 108 t load on a working pile using non-working tension piles as reaction						
	-	-	-	-	nr	<b>6500.00</b>
<b>Steel tubular piles</b>						
Establishment of proof loading equipment for steel tubular piles						
	-	-	-	-	item	<b>7000.00</b>
Proof loading of steel tubular piles with maximum test load of 108 t load on a working pile using non-working tension piles as reaction						
	-	-	-	-	nr	<b>6500.00</b>
<b>STEEL SHEET PILES</b>						
Sheet steel piling is commonly carried out by a Specialist Contractor, whose advice should be sought to arrive at accurate costings. However, the following items can be used to assess a budget for such work. The following unit costs are based on driving/ extracting 1,500m <sup>2</sup> of sheet piling on a clear site with reasonable access. Note: area of driven piles will vary from area supplied dependant upon pitch line of piling and provision for such allowance has been made in PC for supply. The materials cost below includes the manufacturers tariffs for a 200 mile delivery radius from works, delivery in 5-10t loads and with an allowance of 10% to cover waste / projecting piles etc.						
<b>Arcelor Mittal Z section steel piles; EN 10248 grade S270GP steel</b>						
The following unit costs are based on driving/ extracting 1,500m <sup>2</sup> of sheet piling on a clear site with reasonable access. Provision of all plant, equipment and labour including transport to and from the site and establishing and dismantling for						
driving of sheet piling	-	-	-	-	sum	<b>6200.00</b>
extraction of sheet piling	-	-	-	-	sum	<b>5500.00</b>
Standing time	-	-	-	-	hr	<b>383.84</b>

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>STEEL SHEET PILES - cont'd</b>						
<b>Arcelor Mittal Z section steel piles; EN 10248 grade S270GP steel - cont'd</b>						
Section modulus 800 - 1200 cm <sup>3</sup> /m; section reference AZ 12; mass 98.7 kg/m <sup>2</sup> ; sectional modulus 1200 cm <sup>3</sup> /m; EN 10248 grade S270GP steel						
length of welded corner piles	-	-	-	-	m	92.72
length of welded junction piles	-	-	-	-	m	129.79
driven area	-	-	-	-	m <sup>2</sup>	42.46
area of piles of length not exceeding 14 m	-	-	-	-	m <sup>2</sup>	76.95
length 14- 24 m	-	-	-	-	m <sup>2</sup>	82.71
area of piles of length exceeding 24 m	-	-	-	-	m <sup>2</sup>	85.47
Section modulus 1200 - 2000 cm <sup>3</sup> /m; section reference AZ 17; mass 108.6 kg/m <sup>2</sup> ; sectional modulus 1665 cm <sup>3</sup> /m; EN 10248 grade S270GP steel						
length of welded corner piles	-	-	-	-	m	92.72
length of welded junction piles	-	-	-	-	m	129.79
driven area	-	-	-	-	m <sup>2</sup>	37.84
area of piles of length not exceeding 14 m	-	-	-	-	m <sup>2</sup>	81.33
length 14- 24 m	-	-	-	-	m <sup>2</sup>	82.71
area of piles of length exceeding 24 m	-	-	-	-	m <sup>2</sup>	85.47
Section modulus 2000 - 3000 cm <sup>3</sup> /m; section reference AZ 26; mass 155.2 kg/m <sup>2</sup> ; sectional modulus 2600 cm <sup>3</sup> /m; EN 10248 grade S270GP steel						
driven area	-	-	-	-	m <sup>2</sup>	33.67
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	92.16
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	93.72
Section modulus 3000 - 4000 cm <sup>3</sup> /m; section reference AZ 36; mass 194.0 kg/m <sup>2</sup> ; sectional modulus 3600 cm <sup>3</sup> /m; EN 10248 grade S270GP steel						
driven area	-	-	-	-	m <sup>2</sup>	26.75
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	112.52
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	114.43
Straight section modulus ne 500 cm <sup>3</sup> /m; section reference AS 500-12 mass 149 kg/m <sup>2</sup> ; sectional modulus 51 cm <sup>3</sup> /m; EN 10248 grade S270GP steel						
driven area	-	-	-	-	m <sup>2</sup>	29.65
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	152.44
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	156.00
One coat black tar vinyl (PC1) protective treatment applied all surfaces at shop to minimum dry film thickness up to 150 microns to steel piles						
section reference AZ 12; pile area	-	-	-	-	m <sup>2</sup>	8.32
section reference AZ 17; pile area	-	-	-	-	m <sup>2</sup>	8.50
section reference AZ 26; pile area	-	-	-	-	m <sup>2</sup>	9.30
section reference AZ 36; pile area	-	-	-	-	m <sup>2</sup>	9.90
section reference AS 500 - 12; pile area	-	-	-	-	m <sup>2</sup>	10.34
One coat black high build isocyanate cured epoxy pitch (PC2) protective treatment applied all surfaces at shop to minimum dry film thickness up to 450 microns to steel piles						
section reference AZ 12; pile area	-	-	-	-	m <sup>2</sup>	16.63
section reference AZ 17; pile area	-	-	-	-	m <sup>2</sup>	17.02
section reference AZ 26; pile area	-	-	-	-	m <sup>2</sup>	18.60
section reference AZ 36; pile area	-	-	-	-	m <sup>2</sup>	19.80
section reference AS 500 - 12; pile area	-	-	-	-	m <sup>2</sup>	20.68

## SERIES 1600: PILING AND EMBEDDED RETAINING WALLS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>Arcelor Mittal U section steel piles; EN 10248 grade S270GP steel</b>						
The following unit costs are based on driving/ extracting 1,500 m <sup>2</sup> of sheet piling on a clear site with reasonable access. Provision of plant, equipment and labour including transport to and from the site and establishing and dismantling						
driving of sheet piling	-	-	-	-	sum	<b>6200.00</b>
extraction of sheet piling	-	-	-	-	sum	<b>5500.00</b>
Standing time	-	-	-	-	hr	<b>285.00</b>
Section modulus 500 - 800 cm <sup>3</sup> /m; section reference PU 6; mass 76.0 kg/m <sup>2</sup> ; sectional modulus 600 cm <sup>3</sup> /m						
driven area	-	-	-	-	m <sup>2</sup>	<b>49.82</b>
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	<b>64.36</b>
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	<b>65.45</b>
Section modulus 800 - 1200 cm <sup>3</sup> /m; section reference PU 8; mass 90.9 kg/m <sup>2</sup> ; sectional modulus 830 cm <sup>3</sup> /m						
driven area	-	-	-	-	m <sup>2</sup>	<b>42.46</b>
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	<b>64.36</b>
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	<b>65.52</b>
Section modulus 1200 - 2000 cm <sup>3</sup> /m; section reference PU 12; mass 110.1 kg/m <sup>2</sup> ; sectional modulus 1200 cm <sup>3</sup> /m						
driven area	-	-	-	-	m <sup>2</sup>	<b>37.84</b>
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	<b>78.20</b>
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	<b>79.55</b>
Section modulus 1200 - 2000 cm <sup>3</sup> /m; section reference PU 18; mass 128.2 kg/m <sup>2</sup> ; sectional modulus 1800 cm <sup>3</sup> /m						
driven area	-	-	-	-	m <sup>2</sup>	<b>33.67</b>
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	<b>90.83</b>
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	<b>92.40</b>
Section modulus 2000 - 3000 cm <sup>3</sup> /m; section reference PU 22; mass 143.6 kg/m <sup>2</sup> ; sectional modulus 2200 cm <sup>3</sup> /m						
driven area	-	-	-	-	m <sup>2</sup>	<b>30.91</b>
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	<b>109.93</b>
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	<b>112.59</b>
Section modulus 3000 - 4000 cm <sup>3</sup> /m; section reference PU 32; mass 190.2 kg/m <sup>2</sup> ; sectional modulus 3200 cm <sup>3</sup> /m						
driven area	-	-	-	-	m <sup>2</sup>	<b>26.75</b>
area of piles of length 6 - 18 m	-	-	-	-	m <sup>2</sup>	<b>124.28</b>
area of piles of length 18 - 24 m	-	-	-	-	m <sup>2</sup>	<b>127.27</b>
One coat black tar vinyl (PC1) protective treatment applied all surfaces at shop to minimum dry film thickness up to 150 microns to steel piles						
section reference PU 6; pile area	-	-	-	-	m <sup>2</sup>	<b>7.00</b>
section reference PU 8; pile area	-	-	-	-	m <sup>2</sup>	<b>7.12</b>
section reference PU 12; pile area	-	-	-	-	m <sup>2</sup>	<b>7.44</b>
section reference PU 18; pile area	-	-	-	-	m <sup>2</sup>	<b>7.98</b>
section reference PU 22; pile area	-	-	-	-	m <sup>2</sup>	<b>8.27</b>
section reference PU 32; pile area	-	-	-	-	m <sup>2</sup>	<b>8.39</b>

**SERIES 1600: PILING AND EMBEDDED RETAINING WALLS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>STEEL SHEET PILES - cont'd</b>						
<b>Arcelor Mittal U section steel piles; EN 10248 grade S270GP steel - cont'd</b>						
One coat black high build isocyanate cured epoxy pitch (PC2) protective treatment applied all surfaces at shop to minimum dry film thickness up to 450 microns to steel piles						
section reference PU 6; pile area	-	-	-	-	m <sup>2</sup>	<b>13.99</b>
section reference PU 8; pile area	-	-	-	-	m <sup>2</sup>	<b>14.23</b>
section reference PU 12; pile area	-	-	-	-	m <sup>2</sup>	<b>14.87</b>
section reference PU 18; pile area	-	-	-	-	m <sup>2</sup>	<b>15.95</b>
section reference PU 22; pile area	-	-	-	-	m <sup>2</sup>	<b>16.54</b>
section reference PU 32; pile area	-	-	-	-	m <sup>2</sup>	<b>16.79</b>
<b>EMBEDDED RETAINING WALL PLANT</b>						
Diaphragm walls are the construction of vertical walls, cast in place in a trench excavation. They can be formed in reinforced concrete to provide structural elements for temporary or permanent retaining walls. Wall thicknesses of 500 to 1,500mm up to 40m deep may be constructed. Special equipment such as the Hydrofraise can construct walls up to 100 m deep. Restricted urban sites will significantly increase the costs.						
The following costs are based on constructing a diaphragm wall with an excavated volume of 4000 m <sup>3</sup> using a grab. Typical progress would be up to 500 m per week. Establishment of standard diaphragm walling plant, including bentonite storage tanks.						
	-	-	-	-	item	<b>120000.00</b>
Standing time	-	-	-	-	hr	<b>925.00</b>
Guide walls (twin)	-	-	-	-	m	<b>340.00</b>
Waterproofed joints	-	-	-	-	m	<b>6.50</b>
<b>DIAPHRAGM WALLS</b>						
Excavation for walls 1000mm thick, disposal of soil and placing of concrete						
	-	-	-	-	m <sup>3</sup>	<b>440.00</b>
Provide and place reinforcement cages	-	-	-	-	t	<b>750.00</b>
Excavate/chisel in hard materials/rock	-	-	-	-	hr	<b>975.00</b>

## SERIES 1700: STRUCTURAL CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL</b>						
<b>Notes</b>						
Refer also to Civil Engineering - Concrete, Formwork, Reinforcement and Precast Concrete, although this section is fundamentally different in that the provision of concrete of different classes and its placement is combined in the unit costs.						
<b>RESOURCES - LABOUR</b>						
<b>Concreting gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
2 skilled operatives (skill rate 4)	-	26.64	-	-	-	-
4 unskilled operatives (general)	-	49.76	-	-	-	-
1 plant operator (skill rate 3) - 25% of time	-	4.05	-	-	-	-
Total Gang Rate / Hour	£	<b>94.72</b>	-	-	-	-
<b>Formwork gang</b>						
1 foreman (craftsman)	-	22.32	-	-	-	-
2 joiners (craftsman)	-	38.30	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
1 plant operator (craftsman) - 25% of time	-	5.17	-	-	-	-
Total Gang Rate / Hour	£	<b>78.23</b>	-	-	-	-
<b>Reinforcement gang</b>						
1 foreman (craftsman)	-	22.32	-	-	-	-
4 steel fixers (craftsman)	-	76.60	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
1 plant operator (craftsman) - 25% of time	-	5.17	-	-	-	-
Total Gang Rate / Hour	£	<b>116.53</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Concreting</b>						
10 t crane- 25% of time	-	-	6.41	-	-	-
gas oil for ditto	-	-	0.36	-	-	-
0.76 m <sup>3</sup> concrete skip - 25% of time	-	-	0.25	-	-	-
11.3 m <sup>3</sup> /min compressor, 4 tool	-	-	9.76	-	-	-
gas oil for ditto	-	-	7.13	-	-	-
4 poker vibrators P5475 mm or less in thickness	-	-	5.24	-	-	-
Total Gang Rate / Hour	-	£	<b>29.14</b>	-	-	-
<b>Formwork</b>						
20 t crawler crane - 25% of time	-	-	6.96	-	-	-
gas oil for ditto	-	-	0.42	-	-	-
22" saw bench	-	-	1.34	-	-	-
gas oil for ditto	-	-	0.47	-	-	-
small power tools (formwork)	-	-	2.25	-	-	-
Total Gang Rate / Hour	-	£	<b>11.44</b>	-	-	-

## SERIES 1700: STRUCTURAL CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT - cont'd</b>						
<b>Reinforcement</b>						
30 t crawler crane (25% of time)	-	-	7.63	-	-	-
gas oil for ditto	-	-	0.42	-	-	-
bar cropper	-	-	1.96	-	-	-
small power tools (reinforcement)	-	-	0.73	-	-	-
tirfors, kentledge etc.	-	-	0.89	-	-	-
Total Gang Rate / Hour	-	£	<b>11.62</b>	-	-	-
<b>RESOURCES - MATERIALS</b>						
Wastage allowances 5% onto delivered ready mixed concrete						
<b>IN-SITU CONCRETE</b>						
<b>In-situ concrete Grade C10</b>						
Blinding						
75 mm or less in thickness	0.18	16.91	5.24	93.93	m <sup>3</sup>	<b>116.08</b>
Blinding; in narrow widths up to 1.0 m wide or in bottoms of trenches up to 2.5 m wide; excluding formwork						
75 mm or less in thickness	0.20	18.78	5.83	93.93	m <sup>3</sup>	<b>118.55</b>
<b>In-situ concrete Grade C15</b>						
Blinding; excluding formwork						
75 mm or less in thickness	0.16	15.03	4.66	94.39	m <sup>3</sup>	<b>114.08</b>
Blinding; in narrow widths up to 1.0 m wide or in bottoms of trenches up to 2.5 m wide; excluding formwork						
75 mm or less in thickness	0.18	16.91	5.24	94.39	m <sup>3</sup>	<b>116.55</b>
<b>In-situ concrete Grade C20/20</b>						
Bases, footings, pile caps and ground beams; thickness						
ne 150 mm	0.20	18.78	5.83	93.01	m <sup>3</sup>	<b>117.62</b>
150 - 300 mm	0.17	15.97	4.97	93.01	m <sup>3</sup>	<b>113.95</b>
300 - 500 mm	0.15	14.09	4.39	93.01	m <sup>3</sup>	<b>111.49</b>
exceeding 500 mm	0.14	13.15	4.08	93.01	m <sup>3</sup>	<b>110.24</b>
Walls; thickness						
ne 150 mm	0.21	19.72	6.14	93.01	m <sup>3</sup>	<b>118.87</b>
150 - 300 mm	0.15	14.09	4.39	93.01	m <sup>3</sup>	<b>111.49</b>
300 - 500 mm	0.13	12.21	3.81	93.01	m <sup>3</sup>	<b>109.03</b>
exceeding 500 mm	0.12	11.27	3.50	93.01	m <sup>3</sup>	<b>107.78</b>
Suspended slabs; thickness						
ne 150 mm	0.27	25.36	7.89	93.01	m <sup>3</sup>	<b>126.26</b>
150 - 300 mm	0.21	19.72	6.14	93.01	m <sup>3</sup>	<b>118.87</b>
300 - 500 mm	0.19	17.85	5.56	93.01	m <sup>3</sup>	<b>116.41</b>
exceeding 500 mm	0.19	17.85	5.56	93.01	m <sup>3</sup>	<b>116.41</b>
Columns, piers and beams; cross-sectional area						
ne 0.03 m <sup>2</sup>	0.50	46.96	14.57	93.01	m <sup>3</sup>	<b>154.54</b>
0.03 - 0.10 m <sup>2</sup>	0.40	37.57	11.66	93.01	m <sup>3</sup>	<b>142.23</b>
0.10 - 0.25 m <sup>2</sup>	0.35	32.87	10.22	93.01	m <sup>3</sup>	<b>136.10</b>
0.12 - 1.00 m <sup>2</sup>	0.35	32.87	10.22	93.01	m <sup>3</sup>	<b>136.10</b>
exceeding 1 m <sup>2</sup>	0.28	26.30	8.16	93.01	m <sup>3</sup>	<b>127.47</b>



## SERIES 1700: STRUCTURAL CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
ADD to the above prices for						
sulphate resisting cement	-	-	-	-	m <sup>3</sup>	<b>10.66</b>
air entrained concrete	-	-	-	-	m <sup>3</sup>	<b>5.50</b>
water repellent concrete	-	-	-	-	m <sup>3</sup>	<b>5.54</b>
<b>In-situ concrete Grade C30/20</b>						
Bases, footings, pile caps and ground beams; thickness						
ne 150 mm	0.21	19.72	6.14	95.99	m <sup>3</sup>	<b>121.85</b>
150 - 300 mm	0.18	16.91	5.24	95.99	m <sup>3</sup>	<b>118.14</b>
300 - 500 mm	0.15	14.09	4.39	95.99	m <sup>3</sup>	<b>114.47</b>
exceeding 500 mm	0.14	13.15	4.08	95.99	m <sup>3</sup>	<b>113.22</b>
Walls; thickness						
ne 150 mm	0.22	20.66	6.41	95.99	m <sup>3</sup>	<b>123.07</b>
150 - 300 mm	0.16	15.03	5.78	95.99	m <sup>3</sup>	<b>116.80</b>
300 - 500 mm	0.13	12.21	4.72	95.99	m <sup>3</sup>	<b>112.92</b>
exceeding 500 mm	0.12	11.27	4.34	95.99	m <sup>3</sup>	<b>111.60</b>
Suspended slabs; thickness						
ne 150 mm	0.28	26.30	10.12	95.99	m <sup>3</sup>	<b>132.41</b>
150 - 300 mm	0.22	20.66	7.96	95.99	m <sup>3</sup>	<b>124.61</b>
300 - 500 mm	0.19	17.85	6.89	95.99	m <sup>3</sup>	<b>120.73</b>
exceeding 500 mm	0.18	16.91	6.51	95.99	m <sup>3</sup>	<b>119.41</b>
Columns, piers and beams; cross-sectional area						
ne 0.03 m <sup>2</sup>	0.53	49.78	19.18	95.99	m <sup>3</sup>	<b>164.95</b>
0.03 - 0.10 m <sup>2</sup>	0.42	39.45	15.19	95.99	m <sup>3</sup>	<b>150.63</b>
0.10 - 0.25 m <sup>2</sup>	0.36	33.81	13.02	95.99	m <sup>3</sup>	<b>142.82</b>
0.25 - 1.00 m <sup>2</sup>	0.35	32.87	12.67	95.99	m <sup>3</sup>	<b>141.54</b>
exceeding 1 m <sup>2</sup>	0.28	26.30	10.12	95.99	m <sup>3</sup>	<b>132.41</b>
ADD to the above prices for						
sulphate resisting cement	-	-	-	-	m <sup>3</sup>	<b>10.66</b>
air entrained concrete	-	-	-	-	m <sup>3</sup>	<b>5.50</b>
water repellent concrete	-	-	-	-	m <sup>3</sup>	<b>5.54</b>
<b>PRECAST CONCRETE</b>						
The cost of precast concrete item is very much dependant on the complexity of the moulds, the number of units to be cast from each mould and the size and the weight of the unit to be handled. The unit rates below are for standard precast items that are often to be found on a Civil Engineering project. It would be misleading to quote for indicative costs for tailor-made precast concrete units and it is advisable to contact specialist manufacturers for guide prices.						

## SERIES 1700: STRUCTURAL CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PRECAST CONCRETE - cont'd</b>						
<b>Pretensioned prestressed beams; concrete Grade C20</b>						
Beams						
100 x 65 x 1050 mm long	1.00	3.32	1.88	7.75	nr	<b>12.95</b>
265 x 65 x 1800 mm long	1.00	4.16	3.94	29.28	nr	<b>37.38</b>
Inverted 'T' beams, flange width 495 mm						
section T1; 8 m long, 380 mm deep; mass 1.88t	-	-	-	-	nr	<b>755.00</b>
section T2; 9 m long, 420 mm deep; mass 2.29t	-	-	-	-	nr	<b>905.00</b>
section T3; 11 m long, 535 mm deep; mass 3.02t	-	-	-	-	nr	<b>1062.00</b>
section T4; 12 m long, 575 mm deep; mass 3.54t	-	-	-	-	nr	<b>1180.00</b>
section T5; 13 m long, 615 mm deep; mass 4.08t	-	-	-	-	nr	<b>1219.00</b>
section T6; 13 m long, 655 mm deep; mass 4.33t	-	-	-	-	nr	<b>1219.00</b>
section T7; 12 m long, 695 mm deep; mass 4.95t	-	-	-	-	nr	<b>1416.00</b>
section T8; 15 m long, 735 mm deep; mass 5.60t	-	-	-	-	nr	<b>1534.00</b>
section T9; 16 m long, 775 mm deep; mass 6.28t	-	-	-	-	nr	<b>1652.00</b>
section T10; 18 m long, 815 mm deep; mass 7.43t	-	-	-	-	nr	<b>1849.00</b>
'M' beams, flange width 970 mm						
section M2 ; 17 m long, 720 mm deep; mass 12.95t	-	-	-	-	nr	<b>4012.00</b>
section M3 ; 18 m long, 800 mm deep; mass 15.11t	-	-	-	-	nr	<b>3776.00</b>
section M6 ; 22 m long, 1040 mm deep; mass 20.48t	-	-	-	-	nr	<b>6057.00</b>
section M8 ; 25 m long, 1200 mm deep; mass 23.68t	-	-	-	-	nr	<b>7867.00</b>
'U' beams, base width 970 mm						
section U3 ; 16 m long, 900 mm deep; mass 19.24t	-	-	-	-	nr	<b>6765.00</b>
section U5 ; 20 m long, 1000 mm deep; mass 25.64t	-	-	-	-	nr	<b>8653.00</b>
section U8 ; 24 m long, 1200 mm deep; mass 34.56t	-	-	-	-	nr	<b>11721.00</b>
section U12 ; 30 m long, 1600 mm deep; mass 52.74t	-	-	-	-	nr	<b>16048.00</b>
<b>Precast concrete culverts, cattle creeps and subway units; rebated joints</b>						
Rectangular cross section						
500 mm high x 1000 mm wide	1.00	4.51	4.97	285.00	m	<b>294.48</b>
1000 mm high x 1500 mm wide	1.00	10.04	11.41	465.00	m	<b>486.45</b>
1500 mm high x 1500 mm wide	1.00	18.20	20.48	540.00	m	<b>578.68</b>
2000 mm high x 2750 mm wide	1.00	34.16	32.58	1585.00	m	<b>1651.73</b>
2750 mm high x 3000 mm wide	1.00	45.21	65.41	1750.00	m	<b>1860.61</b>
Extra for units curved on plan to less than 20 m radius	-	-	-	-	m	<b>290.00</b>

## SERIES 1700: STRUCTURAL CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SURFACE FINISH OF CONCRETE - FORMWORK</b>						
<b>Materials</b>						
Formwork materials include for shutter, bracing, ties, support, kentledge and all consumables. These unit costs are based upon those outputs and prices detailed in Civil Engineering - Concrete Formwork but are referenced to The Specification for Highway Works, clause 1708. The following unit rates do not include for formwork outside the payline and are based on an optimum of a minimum 8 uses with 10% per use towards the cost of repairs / replacement of components damaged during disassembly. ADJUST formwork material costs generally depending on the number of uses:						
Nr of Uses	% Adjustment	Inclusion for waste				
1	Add 90 - 170%	7%				
2	Add 50 - 180%	7%				
3	Add 15 - 30%	6%				
6	Add 5 - 10%	5%				
8	No change	5%				
10	Deduct 5 - 7%	5%				
<b>Definitions</b>						
'Class F1' formwork is rough finish 'Class F2' formwork is fair finish 'Class F3' formwork is extra smooth finish						
<b>Formwork Class F1</b>						
Horizontal more than 300 mm wide	0.52	39.36	5.95	6.62	m <sup>2</sup>	<b>51.93</b>
Inclined more than 300 mm wide	0.55	41.63	6.29	9.38	m <sup>2</sup>	<b>57.31</b>
Vertical more than 300 mm wide	0.61	46.17	6.98	9.35	m <sup>2</sup>	<b>62.51</b>
300 mm wide or less at any inclination	0.72	54.50	8.23	9.35	m <sup>2</sup>	<b>72.09</b>
Curved of both girth and width more than 300 mm at any inclination	0.95	71.91	10.87	10.72	m <sup>2</sup>	<b>93.50</b>
Curved of girth or width of 300 mm or less at any inclination	0.72	54.50	8.23	10.72	m <sup>2</sup>	<b>73.45</b>
Domed	1.20	90.83	13.72	13.23	m <sup>2</sup>	<b>117.78</b>
Void former cross-section 100 x 100 mm	0.07	5.30	0.29	3.63	m	<b>9.22</b>
Void former cross-section 250 x 250 mm	0.12	9.08	0.49	8.83	m	<b>18.40</b>
Void former cross-section 500 x 500 mm	0.30	22.71	1.22	17.61	m	<b>41.53</b>
<b>Formwork Class F2</b>						
Horizontal more than 300 mm wide	0.54	40.88	6.18	11.38	m <sup>2</sup>	<b>58.43</b>
Inclined more than 300 mm wide	0.57	43.15	6.52	19.07	m <sup>2</sup>	<b>68.74</b>
Vertical more than 300 mm wide	0.63	47.69	7.21	19.07	m <sup>2</sup>	<b>73.97</b>
300 mm wide or less at any inclination	0.74	56.01	8.46	19.07	m <sup>2</sup>	<b>83.55</b>
Curved of both girth and width more than 300 mm at any inclination	0.98	74.18	11.21	22.92	m <sup>2</sup>	<b>108.31</b>
Curved of girth or width of 300 mm or less at any inclination	0.75	56.77	8.58	22.92	m <sup>2</sup>	<b>88.27</b>
Domed	1.40	105.97	16.01	29.98	m <sup>2</sup>	<b>151.96</b>

## SERIES 1700: STRUCTURAL CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>SURFACE FINISH OF CONCRETE - FORMWORK - cont'd</b>						
<b>Formwork Class F3</b>						
Horizontal more than 300 mm wide	0.56	42.39	6.40	12.99	m <sup>2</sup>	<b>61.78</b>
Inclined more than 300 mm wide	0.59	44.66	6.75	20.68	m <sup>2</sup>	<b>72.09</b>
Vertical more than 300 mm wide	0.65	49.20	7.44	20.68	m <sup>2</sup>	<b>77.32</b>
300 mm wide or less at any inclination	0.76	57.53	8.69	20.68	m <sup>2</sup>	<b>86.90</b>
Curved of both girth and width more than 300 mm at any inclination	0.99	74.94	11.32	24.52	m <sup>2</sup>	<b>110.79</b>
Curved of girth or width of 300 mm or less at any inclination	0.77	58.28	8.81	24.52	m <sup>2</sup>	<b>91.62</b>
Domed	1.45	109.76	16.58	31.58	m <sup>2</sup>	<b>157.92</b>
<b>Formwork ancillaries</b>						
Allowance for additional craneage and rub up where required	0.13	9.84	1.49	0.19	m <sup>2</sup>	<b>11.52</b>
<b>PATTERNED PROFILE FORMWORK</b>						
<b>Patterned Profile Formwork</b>						
Extra over formwork for patterned profile formliners, INSITEX or similar	-	-	-	-	m <sup>2</sup>	<b>34.85</b>
<b>STEEL REINFORCEMENT FOR STRUCTURES</b>						
<b>Stainless steel bars</b>						
Bar reinforcement nominal size 16 mm and under not exceeding 12 m in length	6.74	766.51	78.32	3087.50	t	<b>3932.33</b>
Bar reinforcement nominal size 20 mm and over not exceeding 12 m in length						
20 mm nominal size	4.44	504.94	51.59	2945.00	t	<b>3501.54</b>
25 mm nominal size	4.44	504.94	51.59	2850.00	t	<b>3406.54</b>
32 mm nominal size	4.44	504.94	51.59	2850.00	t	<b>3406.54</b>
ADD to the above for bars						
12 - 13.5 m long	-	-	-	-	t	<b>17.10</b>
13.5 - 15 m long	-	-	-	-	t	<b>17.10</b>
over 15 m long; per 500 mm increment	-	-	-	-	t	<b>3.80</b>
<b>High yield steel bars BS 4449; deformed, Grade 500C</b>						
Bar reinforcement nominal size 16 mm and under not exceeding 12 m in length	6.74	766.51	78.32	490.00	t	<b>1334.83</b>
Bar reinforcement nominal size 20 mm and over not exceeding 12 m in length						
20 mm nominal size	4.44	504.94	51.59	530.00	t	<b>1086.54</b>
25 mm nominal size	4.44	504.94	51.59	530.00	t	<b>1086.54</b>
32 mm nominal size	4.44	504.94	51.59	535.00	t	<b>1091.54</b>
40 mm nominal size	4.44	504.94	51.59	540.00	t	<b>1096.54</b>
ADD to the above for bars						
12 - 13.5 m long	-	-	-	-	t	<b>17.10</b>
13.5 - 15 m long	-	-	-	-	t	<b>17.10</b>
over 15 m long; per 500 mm increment	-	-	-	-	t	<b>3.80</b>
Helical reinforcement nominal size 16 mm and under ne 12 m in length	6.74	766.51	78.32	551.94	t	<b>1396.77</b>

## SERIES 1700: STRUCTURAL CONCRETE

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Helical reinforcement nominal size 20 mm and over						
20 mm nominal size	4.44	504.94	51.59	535.30	t	<b>1091.84</b>
25 mm nominal size	4.44	504.94	51.59	535.30	t	<b>1091.84</b>
32 mm nominal size	4.44	504.94	51.59	540.35	t	<b>1096.89</b>
40 mm nominal size	4.44	504.94	51.59	545.40	t	<b>1101.94</b>
Dowels						
16 mm diameter x 600 mm long	0.10	11.37	1.16	2.01	nr	<b>14.55</b>
20 mm diameter x 600 mm long	0.10	11.37	1.16	2.70	nr	<b>15.24</b>
25 mm diameter x 600 mm long	0.10	11.37	1.16	3.85	nr	<b>16.38</b>
32 mm diameter x 600 mm long	0.10	11.37	1.16	5.92	nr	<b>18.45</b>
<b>Mild steel bars BS 4449; Grade 250</b>						
Bar reinforcement nominal size 16 mm and under ne 12 m in length	6.74	766.51	78.32	535.85	t	<b>1380.68</b>
Bar reinforcement nominal size 20 mm and over; not exceeding 12 m in length						
20 mm nominal size	4.44	504.94	51.59	514.59	t	<b>1071.13</b>
25 mm nominal size	4.44	504.94	51.59	514.59	t	<b>1071.13</b>
32 mm nominal size	4.44	504.94	51.59	520.15	t	<b>1076.69</b>
40 mm nominal size	4.44	504.94	51.59	528.74	t	<b>1085.27</b>
ADD to the above for bars						
12 - 13.5 m long	-	-	-	-	t	<b>17.10</b>
13.5 - 15 m long	-	-	-	-	t	<b>17.10</b>
over 15 m long, per 500 mm increment	-	-	-	-	t	<b>3.80</b>
ADD for cutting, bending, tagging and baling reinforcement on site						
6 mm nominal size	4.87	176.16	56.60	1.43	t	<b>234.19</b>
8 mm nominal size	4.58	165.67	53.22	1.43	t	<b>220.32</b>
10 mm nominal size	3.42	123.71	39.74	1.43	t	<b>164.88</b>
12 mm nominal size	2.55	92.24	29.64	1.43	t	<b>123.31</b>
16 mm nominal size	2.03	73.43	23.59	1.43	t	<b>98.45</b>
20 mm nominal size	1.68	60.77	19.52	1.43	t	<b>81.72</b>
25 mm nominal size	1.68	60.77	19.52	1.43	t	<b>81.72</b>
32 mm nominal size	1.39	50.28	16.16	1.43	t	<b>67.87</b>
40 mm nominal size	1.39	50.28	16.16	1.43	t	<b>67.87</b>
<b>Fabric reinforcement; high yield steel BS 4483</b>						
Fabric reinforcement						
BS ref A98; nominal mass 1.54 kg/m <sup>2</sup>	0.03	3.41	0.35	1.74	m <sup>2</sup>	<b>5.50</b>
BS ref A142; nominal mass 2.22 kg/m <sup>2</sup>	0.03	3.41	0.35	1.79	m <sup>2</sup>	<b>5.56</b>
BS ref A193; nominal mass 3.02 kg/m <sup>2</sup>	0.04	4.55	0.46	2.45	m <sup>2</sup>	<b>7.46</b>
BS ref A252; nominal mass 3.95 kg/m <sup>2</sup>	0.04	4.55	0.46	3.19	m <sup>2</sup>	<b>8.20</b>
BS ref A393; nominal mass 6.16 kg/m <sup>2</sup>	0.07	7.96	0.82	4.99	m <sup>2</sup>	<b>13.77</b>
BS ref B196; nominal mass 3.05 kg/m <sup>2</sup>	0.04	4.55	0.46	2.47	m <sup>2</sup>	<b>7.49</b>
BS ref B283; nominal mass 3.73 kg/m <sup>2</sup>	0.04	4.55	0.46	3.05	m <sup>2</sup>	<b>8.06</b>
BS ref B385; nominal mass 4.53 kg/m <sup>2</sup>	0.05	5.69	0.59	3.67	m <sup>2</sup>	<b>9.94</b>
BS ref B503; nominal mass 5.93 kg/m <sup>2</sup>	0.05	5.69	0.59	4.82	m <sup>2</sup>	<b>11.09</b>
BS ref B785; nominal mass 8.14 kg/m <sup>2</sup>	0.08	9.10	0.93	6.59	m <sup>2</sup>	<b>16.62</b>
BS ref B1131; nominal mass 10.90 kg/m <sup>2</sup>	0.09	10.24	1.05	8.83	m <sup>2</sup>	<b>20.12</b>
BS ref C282; nominal mass 2.61 kg/m <sup>2</sup>	0.03	3.41	0.35	2.13	m <sup>2</sup>	<b>5.89</b>
BS ref C385; nominal mass 3.41 kg/m <sup>2</sup>	0.04	4.55	0.46	2.78	m <sup>2</sup>	<b>7.80</b>
BS ref C503; nominal mass 4.34 kg/m <sup>2</sup>	0.05	5.69	0.59	3.53	m <sup>2</sup>	<b>9.80</b>
BS ref C636; nominal mass 5.55 kg/m <sup>2</sup>	0.05	5.69	0.59	4.52	m <sup>2</sup>	<b>10.79</b>
BS ref C785; nominal mass 6.72 kg/m <sup>2</sup>	0.07	7.96	0.82	5.42	m <sup>2</sup>	<b>14.19</b>
BS ref D49; nominal mass 0.77 kg/m <sup>2</sup>	0.02	2.27	0.23	1.90	m <sup>2</sup>	<b>4.40</b>
BS ref D98; nominal mass 1.54 kg/m <sup>2</sup>	0.02	2.27	0.23	1.90	m <sup>2</sup>	<b>4.40</b>

**SERIES 1800: STEELWORK FOR STRUCTURES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>FABRICATION OF STEELWORK</b>						
<b>Steelwork to BS EN10025; Grade S275</b>						
Fabrication of main members						
rolled sections	-	-	-	-	t	<b>1413.88</b>
plated rolled sections	-	-	-	-	t	<b>3644.88</b>
plated girders	-	-	-	-	t	<b>3038.93</b>
box girders	-	-	-	-	t	<b>1441.60</b>
Fabrication of deck panels						
rolled sections	-	-	-	-	t	<b>2432.99</b>
plated rolled sections	-	-	-	-	t	<b>2221.82</b>
plated girders	-	-	-	-	t	<b>2221.82</b>
Fabrication of subsidiary steelwork						
rolled sections	-	-	-	-	t	<b>2221.82</b>
plated rolled sections	-	-	-	-	t	<b>2221.82</b>
plated girders	-	-	-	-	t	<b>2322.81</b>
<b>ERECTION OF STEELWORK</b>						
Trial erection at the place of fabrication	-	-	-	-	t	<b>320.00</b>
Permanent erection of steelwork; substructure	-	-	-	-	t	<b>250.00</b>
Permanent erection of steelwork; superstructure	-	-	-	-	t	<b>250.00</b>
<b>MISCELLANEOUS METALWORK</b>						
<b>Mild steel</b>						
Ladders						
Cat ladder; 64 x 13 mm bar strings; 19mm rungs at 250mm centres; 450 mm wide with safety hoops	-	-	-	-	m	<b>92.02</b>
Handrails						
Galvanised tubular metal; 76 mm diameter handrail, 48 mm diameter standards at 750 mm centres, 48 mm diameter rail; 1070 mm high overall	-	-	-	-	m	<b>139.96</b>
Metal access cover and frame						
Group 4, ductile iron, single seal 610 x 610 x 100 mm depth; D400	-	-	-	-	nr	<b>190.14</b>
Group 2, ductile iron, double seal single piece cover 600 x 450 mm; B125	-	-	-	-	nr	<b>154.15</b>

## SERIES 1900: PROTECTION OF STEELWORK AGAINST CORROSION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Misc</b>						
<b>Protective painting gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
2 skilled operatives (skill rate 4)	-	26.64	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
Total Gang rate / Hour	£	<b>65.80</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Protective painting</b>						
power tools (protection of steelwork)	-	-	3.21	-	-	-
access scaffolding, trestles and ladders	-	-	1.89	-	-	-
5 t transit van (50% of time)	-	-	3.75	-	-	-
gas oil for ditto	-	-	1.66	-	-	-
Total Gang Rate / Hour	-	£	<b>10.51</b>	-	-	-
<b>RESOURCES - MATERIALS</b>						
<b>Resources - materials</b>						
All coats applied off site except as noted The external environment has been taken as Inland 'B' Exposed.						
<b>PROTECTIVE SYSTEM</b>						
<b>Galvanising to BS EN ISO 1461; apply protective coatings comprising: 1st coat: Mordant T wash; 2nd coat: Zinc rich epoxy primer; 3rd coat: Zinc phosphate, CR/Alkyd Undercoat; 4th coat: MIO CR Undercoat-on site externally; 5th coat: CR coloured finish-on site externally</b>						
To metal parapets and fencing, lighting columns, brackets						
by brush or airless spray to dry film thickness 200 microns	0.20	13.05	2.10	19.74	m <sup>2</sup>	<b>34.88</b>
<b>Blast clean to BS 7079 (surface preparation); apply protective coatings comprising: 1st coat: Zinc Chromate,Red Oxide Blast Primer; 2nd coat: Zinc Phosphate, Epoxy Ester Undercoat; 3rd coat: MIO Undercoat; 4th coat: MIO coloured finish-on site externally</b>						
To subsidiary steelwork, interior finishes						
By brush or airless spray to dry film thickness 175 microns	0.15	9.78	1.58	14.25	m <sup>2</sup>	<b>25.61</b>

## SERIES 1900: PROTECTION OF STEELWORK AGAINST CORROSION

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PROTECTIVE SYSTEM - cont'd</b>						
<b>Blast clean to BS 7079 (surface preparation); apply metal coating of aluminium spray at works; apply protective coatings comprising: 1st coat: Zinc Chromate Etch Primer (2 pack); 2nd coat: Zinc Phosphate, CR/Aalkyd Undercoat; 3rd coat: Zinc Phosphate, CR/alkyd Undercoat; 4th coat: MIO CR Undercoat; 5th coat: CR finish-on site externally</b> To main steel members By brush or airless spray to dry film thickness 250 microns	0.18	11.74	1.89	16.14	m <sup>2</sup>	<b>29.77</b>
<b>Blast clean to BS 7079 (second quality surface preparation); remove all surface defects to BS EN10025; apply protective coatings comprising: 1st coat: Zinc rich primer (2 pack); 2nd coat: Epoxy High Build M10 (2 pack); 3rd coat: Polyurethane Undercoat (2 pack)-on site internally; 4th coat: Finish coat polyurethane (2 pack)-on site externally</b> To internal steel members By brush or airless spray	0.15	9.78	1.58	22.33	m <sup>2</sup>	<b>33.70</b>
<b>ALTERNATIVE SURFACE TREATMENTS</b>						
Galvanising (Hot dip) to BS EN ISO 1461, assuming average depth 20 m <sup>2</sup> per tonne of steel	-	-	-	-	m <sup>2</sup>	<b>14.48</b>
Shot blasting (at works)	-	-	-	-	m <sup>2</sup>	<b>2.91</b>
Grit blasting (at works)	-	-	-	-	m <sup>2</sup>	<b>4.15</b>
Sand blasting (at works)	-	-	-	-	m <sup>2</sup>	<b>6.24</b>
Shot blasting (on site)	-	-	-	-	m <sup>2</sup>	<b>4.08</b>
Grit blasting (on site)	-	-	-	-	m <sup>2</sup>	<b>5.81</b>
Sand blasting (on site)	-	-	-	-	m <sup>2</sup>	<b>8.74</b>



## SERIES 2000: WATERPROOFING FOR STRUCTURES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL</b>						
<b>Notes</b>						
This section is based around the installation of proprietary systems to new/recently completed works as part of major scheme, for minor works/repairs outputs will be many times more. Outputs are also based on use of skilled labour, therefore efficiency is high and wastage low (5-7% only allowed) excepting laps where required.						
<b>RESOURCES - LABOUR</b>						
<b>Asphalting gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
2 unskilled operative (general)	-	24.88	-	-	-	-
Total Gang rate / Hour	£	<b>39.16</b>	-	-	-	-
<b>Damp proofing gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
Total Gang rate / Hour	£	<b>40.04</b>	-	-	-	-
<b>Sprayed/brushed waterproofing gang</b>						
1 ganger/chargehand (skill rate 4) - 30% of time	-	4.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
Total Gang rate / Hour	£	<b>17.60</b>	-	-	-	-
<b>Protective layers - screed gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
Total Gang rate / Hour	£	<b>40.04</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Asphalting</b>						
45 litre portable tar boiler including sprayer (50 % of time)	-	-	0.36	-	-	<b>0.36</b>
2 t dumper (50% of time)	-	-	2.69	-	-	<b>2.69</b>
gas oil for ditto	-	-	0.71	-	-	<b>0.71</b>
Total Gang Rate / Hour	-	-	3.76	-	-	<b>3.76</b>
<b>Damp proofing</b>						
2 t dumper (50% of time)	-	-	2.69	-	-	<b>2.69</b>
gas oil for ditto	-	-	0.71	-	-	<b>0.71</b>
Total Gang Rate / Hour	-	-	3.40	-	-	<b>3.40</b>

## SERIES 2000: WATERPROOFING FOR STRUCTURES

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - PLANT - cont'd</b>						
<b>WATERPROOFING</b>						
Mastic asphalt; BS 6925 Type T 1097; 20 mm thick; two coats						
over 300 mm wide; ne 30° to horizontal	0.33	12.81	1.88	11.07	m <sup>2</sup>	<b>25.77</b>
over 300 mm wide; 30 - 90° to horizontal	0.50	19.41	1.24	11.07	m <sup>2</sup>	<b>31.73</b>
ne 300 mm wide; at any inclination	0.60	23.30	1.24	11.07	m <sup>2</sup>	<b>35.61</b>
to domed surfaces	0.75	29.12	1.24	11.07	m <sup>2</sup>	<b>41.43</b>
'Bituthene 1000'; lapped joints						
over 300 mm wide; ne 30° to horizontal	0.05	1.98	0.17	8.10	m <sup>2</sup>	<b>10.25</b>
over 300 mm wide; 30 - 90° to horizontal	0.06	2.38	0.20	10.33	m <sup>2</sup>	<b>12.91</b>
ne 300 mm wide; at any inclination	0.08	3.18	0.27	10.33	m <sup>2</sup>	<b>13.78</b>
Extra; one coat primer on vertical surfaces	0.03	1.19	0.10	0.01	m <sup>2</sup>	<b>1.30</b>
'Bituthene 4000'; lapped joints						
over 300 mm wide; ne 30° to horizontal	0.05	1.98	0.17	9.63	m <sup>2</sup>	<b>11.78</b>
over 300 mm wide; 30 - 90° to horizontal	0.06	2.38	1.12	12.84	m <sup>2</sup>	<b>16.34</b>
ne 300 mm wide; at any inclination	0.08	3.18	1.29	12.84	m <sup>2</sup>	<b>17.31</b>
'Famguard' (hot applied) with Fam-primer						
over 300 mm wide; ne 30° to horizontal	0.32	12.70	1.09	17.11	m <sup>2</sup>	<b>30.90</b>
over 300 mm wide; 30 - 90° to horizontal	0.35	13.89	1.19	17.44	m <sup>2</sup>	<b>32.52</b>
ne 300 mm wide; at any inclination	0.40	15.88	1.36	20.25	m <sup>2</sup>	<b>37.48</b>
'Famflex' (hot applied) with Fam-primer						
over 300 mm wide; ne 30° to horizontal	0.32	12.70	1.09	13.29	m <sup>2</sup>	<b>27.08</b>
over 300 mm wide; 30 - 90° to horizontal	0.34	13.49	1.16	13.54	m <sup>2</sup>	<b>28.19</b>
ne 300 mm wide; at any inclination	0.38	15.08	1.29	15.73	m <sup>2</sup>	<b>32.11</b>
Two coats of RIW liquid asphaltic composition sprayed or brushed on						
over 300 mm wide; ne 30° to horizontal	0.03	0.52	0.10	3.80	m <sup>2</sup>	<b>4.43</b>
over 300 mm wide; 30 - 90° to horizontal	0.03	0.52	0.10	3.80	m <sup>2</sup>	<b>4.43</b>
ne 300 mm wide; at any inclination	0.04	0.70	0.14	3.80	m <sup>2</sup>	<b>4.64</b>
Two coats of 'Mulseal' sprayed or brushed on any inclination						
	0.07	1.22	0.24	4.21	m <sup>2</sup>	<b>5.67</b>
20 mm thick red tinted sand asphalt layer onto bridge deck						
	0.02	0.79	0.41	10.89	m <sup>2</sup>	<b>12.09</b>
<b>SURFACE IMPREGNATION OF CONCRETE</b>						
<b>Silane waterproofing</b>						
Surface impregnation to plain surfaces						
	-	-	-	-	m <sup>2</sup>	<b>3.76</b>
<b>REMOVAL OF EXISTING WATERPROOFING</b>						
Removal of existing asphalt waterproofing						
over 300 mm wide; ne 30° to horizontal	0.13	5.05	-	-	m <sup>2</sup>	<b>5.05</b>
over 300 mm wide; 30-90° to horizontal	0.18	6.99	-	-	m <sup>2</sup>	<b>6.99</b>
over 300 mm wide; at any inclination	0.20	7.77	-	-	m <sup>2</sup>	<b>7.77</b>
to domed surfaces	0.25	9.71	-	-	m <sup>2</sup>	<b>9.71</b>

## SERIES 2100: BRIDGE BEARINGS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL</b>						
<b>Notes</b>						
Bridge bearings are manufactured and installed to individual specifications. The following guide prices are for different sizes of simple bridge bearings. If requirements are known, then advice ought to be obtained from specialist manufacturers such as CCL.						
<b>RESOURCES - LABOUR</b>						
<b>Misc</b>						
<b>Bridge bearing gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
2 unskilled operatives (general)	-	24.88	-	-	-	-
Total Gang Rate / Hour	£	<b>39.16</b>	-	-	-	-
<b>BEARINGS</b>						
Supply plain rubber bearings (3 m and 5 m lengths)						
150 x 20 mm	0.35	13.59	-	36.47	m	<b>50.06</b>
150 x 25 mm	0.35	13.59	-	46.98	m	<b>60.57</b>
Supply and place in position laminated elastomeric rubber bearing						
250 x 150 x 19 mm	0.25	9.71	-	14.16	nr	<b>23.86</b>
300 x 200 x 19 mm	0.25	9.71	-	21.24	nr	<b>30.95</b>
300 x 200 x 30 mm	0.27	10.48	-	33.98	nr	<b>44.46</b>
300 x 200 x 41 mm	0.27	10.48	-	45.30	nr	<b>55.78</b>
300 x 250 x 41 mm	0.30	11.65	-	56.63	nr	<b>68.27</b>
300 x 250 x 63 mm	0.30	11.65	-	87.77	nr	<b>99.42</b>
400 x 250 x 19 mm	0.32	12.43	-	35.40	nr	<b>47.82</b>
400 x 250 x 52 mm	0.32	12.43	-	96.26	nr	<b>108.69</b>
400 x 300 x 19 mm	0.32	12.43	-	42.47	nr	<b>54.89</b>
600 x 450 x 24 mm	0.35	13.59	-	118.91	nr	<b>132.50</b>
Adhesive fixings to laminated elastomeric rubber bearings						
2 mm thick epoxy adhesive	1.00	38.83	-	51.15	m <sup>2</sup>	<b>89.98</b>
15 mm thick epoxy mortar	1.50	58.24	-	285.85	m <sup>2</sup>	<b>344.09</b>
15 mm thick epoxy pourable grout	2.00	77.66	-	292.58	m <sup>2</sup>	<b>370.24</b>
Supply and install mechanical guides for laminated elastomeric rubber bearings						
500kN SLS design load; FP50 fixed pin Type 1	2.00	77.66	-	472.50	nr	<b>550.16</b>
500kN SLS design load; FP50 fixed pin Type 2	2.00	77.66	-	590.63	nr	<b>668.28</b>
750kN SLS design load; FP75 fixed pin Type 1	2.10	81.54	-	767.81	nr	<b>849.35</b>
750kN SLS design load; FP75 fixed pin Type 2	2.10	81.54	-	885.94	nr	<b>967.48</b>
300kN SLS design load; UG300 Uniguide Type 1	2.00	77.66	-	472.50	nr	<b>550.16</b>
300kN SLS design load; UG300 Uniguide Type 2	2.00	77.66	-	590.63	nr	<b>668.28</b>
Supply and install fixed pot bearings						
355 x 355; PF200	2.00	77.66	-	590.63	nr	<b>668.28</b>
425 x 425; PF300	2.10	81.54	-	649.69	nr	<b>731.23</b>
Supply and install free sliding pot bearings						
445 x 345; PS200	2.10	81.54	-	472.50	nr	<b>554.04</b>
520 x 415; PS300	2.20	85.42	-	708.75	nr	<b>794.17</b>
Supply and install guided sliding pot bearings						
455 x 375; PG200	2.20	85.42	-	763.75	nr	<b>849.17</b>
545 x 435; PG300	2.30	89.31	-	822.50	nr	<b>911.81</b>

**SERIES 2100: BRIDGE BEARINGS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>TESTING BEARINGS</b>						
If there is a requirement for testing bridge bearings prior to their being installed then the tests should be enumerated separately. Specialist advice should be sought once details are known. Compression test for laminated elastomeric bearings generally	-	-	-	-	nr	<b>59.66</b>
Shear test for laminated elastomeric bearings generally	-	-	-	-	nr	<b>77.13</b>
Bond test for elastomeric bearings (Exclusive of cost of bearings as this is a destructive test) generally	-	-	-	-	nr	<b>311.85</b>

## SERIES 2300: BRIDGE EXPANSION JOINTS AND SEALING OF GAPS

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GENERAL</b>						
<b>Notes</b>						
Major movement joints to bridge and viaduct decks are manufactured and installed to individual specifications determined by the type of structure location in the deck, amount of movement to be expected, and many other variables. The following unit rates for other types of movement joints found in structures.						
<b>Resources - labour</b>						
Jointing gang						
1 ganger/chargehand (skill rate 3)	-	15.84	-	-	-	-
1 skilled operative (skill rate 3)	-	14.88	-	-	-	-
1 unskilled operative	-	12.44	-	-	-	-
TOTAL	£	<b>43.16</b>	-	-	-	-
<b>RESOURCES - LABOUR</b>						
<b>Bridge jointing gang</b>						
1 ganger/chargehand (skill rate 4)	-	14.28	-	-	-	-
1 skilled operative (skill rate 4)	-	13.32	-	-	-	-
1 unskilled operative	-	12.44	-	-	-	-
TOTAL	£	<b>40.04</b>	-	-	-	-
<b>SEALING OF GAPS</b>						
Flexcell joint filler board						
10 mm thick	0.10	3.97	-	3.46	m <sup>2</sup>	<b>7.43</b>
19 mm thick	0.16	6.35	-	5.82	m <sup>2</sup>	<b>12.17</b>
25 mm thick	0.16	6.35	-	7.29	m <sup>2</sup>	<b>13.64</b>
Building paper slip joint to abutment toe	0.01	0.44	-	1.12	m <sup>2</sup>	<b>1.55</b>
Bond breaking agent	0.03	0.99	-	4.04	m <sup>2</sup>	<b>5.04</b>
Hot poured rubber bitumen joint sealant						
10 x 20 mm	0.03	1.31	-	0.16	m	<b>1.47</b>
20 x 20 mm	0.04	1.59	-	0.17	m	<b>1.76</b>
25 x 15 mm	0.07	2.58	-	0.17	m	<b>2.75</b>
25 x 25 mm	0.07	2.90	-	0.28	m	<b>3.18</b>
Cold applied polysulphide joint sealant						
20 x 20 mm	0.07	2.58	-	4.58	m	<b>7.16</b>
Gun grade cold applied elastomeric joint sealant						
25 x 25 mm on 3 mm foam strip	0.07	2.58	-	10.09	m	<b>12.67</b>
50 x 25 mm on 3 mm foam strip	0.09	3.57	-	19.39	m	<b>22.96</b>
PVC centre bulb waterstop						
160 mm wide	0.08	3.18	-	6.45	m	<b>9.62</b>
210 mm wide	0.09	3.57	-	9.60	m	<b>13.17</b>
260 mm wide	0.11	4.37	-	15.01	m	<b>19.38</b>
PVC flat dumbbell waterstop						
170 mm wide	0.08	3.18	-	31.32	m	<b>34.50</b>
210 mm wide	0.10	3.97	-	51.14	m	<b>55.11</b>
250 mm wide	0.12	4.76	-	104.34	m	<b>109.10</b>
Dowels, plain or greased						
12 mm mild steel 450 mm long	0.04	1.59	-	1.71	nr	<b>3.30</b>
16 mm mild steel 750 mm long	0.05	1.79	-	3.25	nr	<b>5.03</b>
16 mm mild steel 750 mm long with debonding agent for 375 mm	0.05	2.10	-	3.88	nr	<b>5.98</b>
Dowels, sleeved or capped						
12 mm mild steel 450 mm long with debonding agent for 225 mm and PVC dowel cap	0.05	1.79	-	1.02	nr	<b>2.81</b>

## SERIES 2400: BRICKWORK, BLOCKWORK AND STONEMWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>RESOURCES - LABOUR</b>						
<b>Masonry gang</b>						
1 foreman bricklayer (craftsman)	-	22.32	-	-	-	-
4 bricklayers (craftsman)	-	76.60	-	-	-	-
1 unskilled operative (general)	-	12.44	-	-	-	-
Total Gang Rate / Hour	£	<b>111.36</b>	-	-	-	-
<b>RESOURCES - PLANT</b>						
<b>Masonry</b>						
dumper 2 t (50% of time)	-	-	2.69	-	-	-
gas oil for ditto	-	-	0.71	-	-	-
cement mixer 4/3 (50% of time)	-	-	0.50	-	-	-
petrol for ditto	-	-	0.80	-	-	-
small power tools (masonry)	-	-	1.96	-	-	-
minor scaffolding (masonry)	-	-	1.40	-	-	-
Total Rate / Hour	-	£	<b>8.06</b>	-	-	-
<b>RESOURCES - MATERIALS</b>						
Half brick thick walls are in stretcher bond, thicker than this in English bond (3 stretchers : 1 header) unless otherwise stated. DfT Table 24/1: Mortar Proportions by Volume :-						
Mortar Type	Cement: Lime: sand	Masonry Cement: sand	Cement: sand			
(i)	1.0 to 1/4.3	-	-			
(ii)	1:½:4 to 4½	1:2½ to 3½	1:3 to 4			
(iii)	1:1:5 to 6	1:4½	1:5 to 6			
<b>BRICKWORK</b>						
<b>Common bricks; in stretcher bond; in cement mortar designation (ii)</b>						
Walls						
half brick thick	0.23	24.76	1.84	2.68	m <sup>2</sup>	<b>29.27</b>
one brick thick	0.44	48.00	3.56	5.93	m <sup>2</sup>	<b>57.49</b>
one and a half bricks thick	0.64	69.93	5.19	9.61	m <sup>2</sup>	<b>84.74</b>
two bricks thick	0.83	90.51	6.72	13.12	m <sup>2</sup>	<b>110.35</b>
Walls, curved on plan						
half brick thick	0.30	32.14	2.36	2.68	m <sup>2</sup>	<b>37.18</b>
one brick thick	0.57	61.90	4.59	5.93	m <sup>2</sup>	<b>72.42</b>
one and a half bricks thick	0.82	89.04	6.63	9.61	m <sup>2</sup>	<b>105.29</b>
two bricks thick	1.06	114.89	8.53	13.12	m <sup>2</sup>	<b>136.54</b>
Walls, with a battered face						
half brick thick	0.33	35.73	2.65	2.68	m <sup>2</sup>	<b>41.05</b>
one brick thick	0.63	68.41	5.08	5.93	m <sup>2</sup>	<b>79.42</b>
one and a half bricks thick	0.91	98.49	7.31	9.61	m <sup>2</sup>	<b>115.41</b>
two bricks thick	1.16	126.18	9.36	13.12	m <sup>2</sup>	<b>148.67</b>

**SERIES 2400: BRICKWORK, BLOCKWORK AND STONEMWORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Facework to concrete						
half brick thick	0.25	26.82	1.99	3.43	m <sup>2</sup>	<b>32.24</b>
one brick thick	0.48	51.91	3.85	6.69	m <sup>2</sup>	<b>62.45</b>
one and a half bricks thick	0.69	75.36	5.59	10.37	m <sup>2</sup>	<b>91.33</b>
two bricks thick	0.90	97.51	7.24	13.87	m <sup>2</sup>	<b>118.62</b>
In alteration work						
half brick thick	0.30	32.14	2.39	3.43	m <sup>2</sup>	<b>37.96</b>
one brick thick	0.57	61.90	4.59	6.69	m <sup>2</sup>	<b>73.18</b>
one and a half bricks thick	0.82	89.37	6.63	10.37	m <sup>2</sup>	<b>106.37</b>
two bricks thick	1.06	114.89	8.53	13.87	m <sup>2</sup>	<b>137.28</b>
ADD or DEDUCT to materials costs for variation of £10.00/1000 in PC of common bricks						
half brick thick	-	-	-	-	m <sup>2</sup>	<b>0.66</b>
one brick thick	-	-	-	-	m <sup>2</sup>	<b>1.32</b>
one and a half bricks thick	-	-	-	-	m <sup>2</sup>	<b>1.98</b>
two bricks thick	-	-	-	-	m <sup>2</sup>	<b>2.65</b>
Copings; standard header-on-edge; 215 mm wide x 103 mm high	0.11	11.40	0.85	0.59	m	<b>12.84</b>
ADD or DEDUCT to copings for variation of £1.00/100 in PC of common bricks	-	-	-	-	m	<b>0.14</b>
<b>Class A engineering bricks, perforated; in cement mortar designation (ii)</b>						
Walls						
half brick thick	0.27	29.21	2.17	2.68	m <sup>2</sup>	<b>34.06</b>
one brick thick	0.52	56.47	4.19	5.94	m <sup>2</sup>	<b>66.60</b>
one and a half bricks thick	0.75	81.77	6.07	9.63	m <sup>2</sup>	<b>97.47</b>
two bricks thick	0.97	105.44	7.82	13.15	m <sup>2</sup>	<b>126.41</b>
Walls, curved on plan						
half brick thick	0.37	40.18	2.98	2.68	m <sup>2</sup>	<b>45.84</b>
one brick thick	0.70	76.56	5.68	5.94	m <sup>2</sup>	<b>88.18</b>
one and a half bricks thick	1.01	109.68	8.14	9.63	m <sup>2</sup>	<b>127.45</b>
two bricks thick	1.29	139.87	10.38	13.15	m <sup>2</sup>	<b>163.39</b>
Walls, with a battered face						
half brick thick	0.37	40.18	2.98	2.68	m <sup>2</sup>	<b>45.84</b>
one brick thick	0.70	76.56	5.68	5.94	m <sup>2</sup>	<b>88.18</b>
one and a half bricks thick	1.01	109.68	8.14	9.63	m <sup>2</sup>	<b>127.45</b>
two bricks thick	1.29	139.87	10.38	13.15	m <sup>2</sup>	<b>163.39</b>
Facework to concrete						
half brick thick	0.32	34.21	2.54	3.44	m <sup>2</sup>	<b>40.18</b>
one brick thick	0.60	65.70	4.88	6.70	m <sup>2</sup>	<b>77.27</b>
ADD or DEDUCT to materials costs for variation of £10.00/1000 in PC of engineering bricks						
half brick thick	-	-	-	-	m <sup>2</sup>	<b>0.66</b>
one brick thick	-	-	-	-	m <sup>2</sup>	<b>1.32</b>
one and a half bricks thick	-	-	-	-	m <sup>2</sup>	<b>1.98</b>
two bricks thick	-	-	-	-	m <sup>2</sup>	<b>2.65</b>
Brick coping in standard bricks in headers on edge; 215 mm wide x 103 mm high	0.29	31.49	2.34	2.67	m	<b>36.50</b>
ADD or DEDUCT to copings for variation of £1.00/100 in PC of Class A engineering bricks	-	-	-	-	m	<b>0.14</b>

## SERIES 2400: BRICKWORK, BLOCKWORK AND STONEMWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>BRICKWORK - cont'd</b>						
<b>Class B engineering bricks, perforated; in cement mortar designation (ii)</b>						
Walls						
half brick thick	0.29	31.49	2.34	2.68	m <sup>2</sup>	<b>36.51</b>
one brick thick	0.48	52.67	3.91	5.93	m <sup>2</sup>	<b>62.51</b>
one and a half bricks thick	0.69	75.47	5.60	9.62	m <sup>2</sup>	<b>90.69</b>
two bricks thick	0.91	98.27	7.29	13.12	m <sup>2</sup>	<b>118.69</b>
Walls, curved on plan						
half brick thick	0.42	45.17	3.35	2.68	m <sup>2</sup>	<b>51.20</b>
one brick thick	0.78	84.70	6.29	5.93	m <sup>2</sup>	<b>96.92</b>
one and a half bricks thick	1.04	112.93	8.38	9.62	m <sup>2</sup>	<b>130.93</b>
two bricks thick	1.30	141.17	10.48	13.12	m <sup>2</sup>	<b>164.77</b>
Walls, with battered face						
half brick thick	0.42	45.17	3.35	2.68	m <sup>2</sup>	<b>51.20</b>
one brick thick	0.78	84.70	6.29	5.93	m <sup>2</sup>	<b>96.92</b>
one and a half bricks thick	1.04	112.93	8.38	9.62	m <sup>2</sup>	<b>130.93</b>
two bricks thick	1.30	141.17	10.48	13.12	m <sup>2</sup>	<b>164.77</b>
Facework to concrete						
half brick thick	0.32	34.53	2.56	3.43	m <sup>2</sup>	<b>40.53</b>
one brick thick	0.56	60.81	4.51	6.69	m <sup>2</sup>	<b>72.01</b>
ADD or DEDUCT to materials costs for variation of £10.00/1000 in PC of engineering bricks						
half brick thick	-	-	-	-	m <sup>2</sup>	<b>0.66</b>
one brick thick	-	-	-	-	m <sup>2</sup>	<b>1.32</b>
one and a half bricks thick	-	-	-	-	m <sup>2</sup>	<b>1.98</b>
two bricks thick	-	-	-	-	m <sup>2</sup>	<b>2.65</b>
Brick coping in standard bricks in headers on edge; 215 mm wide x 103 mm high						
	0.13	14.55	1.08	1.13	m	<b>16.76</b>
ADD or DEDUCT to copings for variation of £1.00/100 in PC of Class B engineering bricks						
	-	-	-	-	m	<b>0.14</b>
<b>Facing bricks; in lime mortar designation (ii)</b>						
Walls						
half brick thick	0.34	36.92	2.74	2.70	m <sup>2</sup>	<b>42.36</b>
one brick thick	0.57	62.33	5.62	5.97	m <sup>2</sup>	<b>73.92</b>
one and a half bricks thick	0.83	89.80	6.66	9.67	m <sup>2</sup>	<b>106.14</b>
two bricks thick	1.08	117.28	8.70	13.20	m <sup>2</sup>	<b>139.18</b>
Walls, curved on plan						
half brick thick	0.45	48.87	3.63	2.70	m <sup>2</sup>	<b>55.19</b>
one brick thick	0.84	91.22	6.77	5.97	m <sup>2</sup>	<b>103.96</b>
one and a half bricks thick	1.11	121.08	8.98	9.67	m <sup>2</sup>	<b>139.73</b>
two bricks thick	1.39	150.94	11.20	13.20	m <sup>2</sup>	<b>175.34</b>
Walls, with a battered face						
half brick thick	0.45	48.87	3.63	2.70	m <sup>2</sup>	<b>55.19</b>
one brick thick	0.84	91.22	6.77	5.97	m <sup>2</sup>	<b>103.96</b>
one and a half bricks thick	1.11	121.08	8.98	9.67	m <sup>2</sup>	<b>139.73</b>
two bricks thick	1.39	150.94	11.20	13.20	m <sup>2</sup>	<b>175.34</b>
Facework to concrete						
half brick thick	0.37	39.96	2.85	3.45	m <sup>2</sup>	<b>46.27</b>
one brick thick	0.66	71.67	5.32	6.73	m <sup>2</sup>	<b>83.72</b>
Extra over common brickwork in English bond for facing with facing bricks in lime mortar designation (ii)						
	0.11	12.16	0.90	0.02	m <sup>2</sup>	<b>13.09</b>



## SERIES 2400: BRICKWORK, BLOCKWORK AND STONEMWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
ADD or DEDUCT to materials costs for variation of £10.00/1000 in PC of facing bricks						
half brick thick	-	-	-	-	m <sup>2</sup>	0.66
one brick thick	-	-	-	-	m <sup>2</sup>	1.32
one and a half bricks thick	-	-	-	-	m <sup>2</sup>	1.98
two bricks thick	-	-	-	-	m <sup>2</sup>	2.65
Brick coping in standard bricks in headers on edge; 215 mm wide x 103 mm high	0.13	14.55	1.08	0.65	m	16.28
Flat arches in standard stretchers on end; 103 mm wide x 215 mm high	0.21	22.80	1.69	0.40	m	24.89
Flat arches in bullnose stretchers on end; 103 mm x 215 mm high	0.22	23.89	1.78	0.75	m	26.41
Segmental arches in single ring stretchers on end; 103 mm wide x 215 mm high	0.37	40.18	2.98	0.40	m	43.56
Segmental arches in double ring stretchers on end; 103 mm wide x 440 mm high	0.49	53.21	3.95	0.97	m	58.13
Segmental arches; cut voussoirs 103 mm wide x 215 mm high	0.39	42.35	3.14	0.52	m	46.01
ADD or DEDUCT to copings and arches for variation of £1.00/100 in PC of facing bricks						
header-on-edge	-	-	-	-	m	0.14
stretcher-on-end	-	-	-	-	m	0.14
stretcher-on-end bullnose specials	-	-	-	-	m	0.14
single ring	-	-	-	-	m	0.14
two ring	-	-	-	-	m	0.28
<b>BLOCKWORK AND STONEMWORK</b>						
<b>Lightweight concrete blocks; solid; 3.5 N/mm<sup>2</sup>; in cement-lime mortar</b>						
Walls						
100 mm thick;	0.17	18.89	1.40	8.31	m <sup>2</sup>	28.61
140 mm thick;	0.23	24.43	1.81	10.72	m <sup>2</sup>	36.97
215 mm thick;	0.28	29.86	2.21	25.39	m <sup>2</sup>	57.47
Walls, curved on plan						
100 mm thick;	0.23	25.08	1.86	8.31	m <sup>2</sup>	35.25
140 mm thick;	0.30	32.47	2.41	10.72	m <sup>2</sup>	45.60
215 mm thick;	0.37	39.74	2.95	25.39	m <sup>2</sup>	68.09
Facework to concrete						
100 mm thick;	0.18	19.44	1.44	9.07	m <sup>2</sup>	29.95
140 mm thick;	0.23	25.19	1.87	11.48	m <sup>2</sup>	38.54
215 mm thick;	0.28	30.73	2.28	26.15	m <sup>2</sup>	59.16
In alteration work						
100 mm thick;	0.17	18.89	1.40	8.31	m <sup>2</sup>	28.61
140 mm thick;	0.23	24.43	1.81	10.72	m <sup>2</sup>	36.97
215 mm thick;	0.28	29.86	2.21	25.39	m <sup>2</sup>	57.47
<b>Dense concrete blocks; solid; 3.5 or 7 N/mm<sup>2</sup>; in cement-lime mortar</b>						
Walls						
100 mm thick;	0.17	18.46	1.37	9.27	m <sup>2</sup>	29.10
140 mm thick;	0.20	21.72	1.61	12.93	m <sup>2</sup>	36.26
215 mm thick;	0.24	26.06	1.93	20.24	m <sup>2</sup>	48.23
Walls, curved on plan						
100 mm thick;	0.23	24.54	1.82	9.27	m <sup>2</sup>	35.63
140 mm thick;	0.23	24.54	2.14	12.93	m <sup>2</sup>	39.61
215 mm thick;	0.32	34.64	2.57	19.93	m <sup>2</sup>	57.14

## SERIES 2400: BRICKWORK, BLOCKWORK AND STONEMWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>BLOCKWORK AND STONEMWORK - cont'd</b>						
<b>Dense concrete blocks; solid; 3.5 or 7 N/mm<sup>2</sup>; in cement-lime mortar - cont'd</b>						
Facework to concrete						
100 mm thick;	0.17	19.00	1.41	10.02	m <sup>2</sup>	<b>30.44</b>
140 mm thick;	0.21	22.37	1.66	13.69	m <sup>2</sup>	<b>37.72</b>
215 mm thick;	0.35	38.01	2.34	20.68	m <sup>2</sup>	<b>61.03</b>
In alteration work						
100 mm thick;	0.27	28.89	1.82	9.27	m <sup>2</sup>	<b>39.97</b>
140 mm thick;	0.26	28.23	2.14	12.93	m <sup>2</sup>	<b>43.31</b>
215 mm thick;	0.32	34.64	2.57	19.93	m <sup>2</sup>	<b>57.14</b>
<b>Reconstituted stone; Bradstone 100 bed weathered Cotswold or North Cerney masonry blocks; rough hewn rockfaced blocks; in coloured cement-lime mortar designation (1:2:9) (iii)</b>						
Walls, thickness 100mm						
vertical and straight	0.30	32.58	2.42	54.27	m <sup>2</sup>	<b>89.27</b>
curved on plan	0.39	42.35	3.14	54.27	m <sup>2</sup>	<b>99.76</b>
with a battered face	0.34	37.46	2.78	54.27	m <sup>2</sup>	<b>94.51</b>
in arches	0.57	62.44	4.63	54.27	m <sup>2</sup>	<b>121.34</b>
Facing to concrete; wall ties						
vertical and straight	0.24	25.74	1.91	58.09	m <sup>2</sup>	<b>85.74</b>
curved on plan	0.32	34.21	2.54	58.09	m <sup>2</sup>	<b>94.84</b>
with a battered face	0.36	38.66	2.87	58.09	m <sup>2</sup>	<b>99.62</b>
<b>Reconstituted stone; Bradstone Architectural dressings in weathered Cotswold or North Cerney shades; in coloured cement-lime mortar designation (1:2:9) (iii)</b>						
Copings; twice weathered and throated						
152 x 76 mm ;	0.08	8.69	0.64	17.23	m	<b>26.56</b>
152 x 76 mm; curved on plan;	0.11	11.51	0.85	63.92	m	<b>76.28</b>
305 x 76 mm;	0.10	10.86	0.81	33.66	m	<b>45.33</b>
305 x 76 mm; curved on plan;	0.13	14.44	1.07	82.04	m	<b>97.56</b>
Corbels						
479 x 100 x 215 mm, splayed	0.49	53.21	3.95	91.60	nr	<b>148.76</b>
665 x 100 x 215 mm, splayed	0.55	59.73	4.43	126.29	nr	<b>190.45</b>
Pier caps						
305 x 305 mm	0.09	9.77	0.72	13.39	nr	<b>23.89</b>
381 x 381 mm	0.11	11.95	0.89	18.94	nr	<b>31.78</b>
457 x 457 mm	0.13	14.12	1.05	25.94	nr	<b>41.10</b>
533 x 533 mm	0.15	16.29	1.21	36.10	nr	<b>53.60</b>
Lintels						
100 x 140 mm	0.11	11.95	0.89	28.48	m	<b>41.32</b>
100 x 215 mm	0.16	17.37	1.29	37.59	m	<b>56.26</b>
<b>Natural stone ashlar; Portland Whitbed limestone; in cement-lime mortar designation (iii)</b>						
Walls						
vertical and straight	12.70	1379.11	89.92	2788.83	m <sup>3</sup>	<b>4257.85</b>
curved on plan	19.30	2095.81	155.55	4173.86	m <sup>3</sup>	<b>6425.21</b>
with a battered face	19.30	2095.81	155.55	4173.86	m <sup>3</sup>	<b>6425.21</b>
Facing to concrete; wall ties						
vertical and straight	17.00	1846.05	137.01	2792.86	m <sup>3</sup>	<b>4775.91</b>
curved on plan	25.80	2801.65	207.93	4177.89	m <sup>3</sup>	<b>7187.47</b>
with a battered face	25.80	2801.65	207.93	4177.89	m <sup>3</sup>	<b>7187.47</b>

## SERIES 2400: BRICKWORK, BLOCKWORK AND STONEMWORK

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
Copings; twice weathered and throated						
250 x 150 mm	0.45	48.87	3.63	152.36	m	<b>204.85</b>
250 x 150 mm; curved on plan	0.45	48.87	3.63	182.79	m	<b>235.28</b>
400 x 150 mm	0.49	53.21	3.95	223.96	m	<b>281.12</b>
400 x 150 mm; curved on plan	0.49	53.21	3.95	268.72	m	<b>325.88</b>
Shaped and dressed string courses						
75 mm projection x 150 mm high	0.45	48.87	3.63	120.68	m	<b>173.17</b>
Corbel						
500 x 450 x 300 mm	0.55	59.73	4.43	197.42	nr	<b>261.58</b>
Keystone						
750 x 900 x 300 mm (extreme)	1.30	141.17	10.48	638.51	nr	<b>790.15</b>
<b>Random rubble uncoursed, weighing 2.0 t/m<sup>3</sup> of wall; in cement-lime mortar designation (iii)</b>						
Walls						
vertical and straight	4.17	452.82	33.61	296.45	m <sup>3</sup>	<b>782.88</b>
curved on plan	4.67	507.12	37.64	330.85	m <sup>3</sup>	<b>875.61</b>
with a battered face	4.67	507.12	37.64	330.85	m <sup>3</sup>	<b>875.61</b>
in arches	8.53	926.28	68.74	330.85	m <sup>3</sup>	<b>1325.88</b>
Facework to concrete						
vertical and straight	4.17	452.82	33.61	331.61	m <sup>3</sup>	<b>818.04</b>
curved on plan	4.67	507.12	37.64	331.61	m <sup>3</sup>	<b>876.37</b>
with a battered face	4.67	507.12	37.64	331.61	m <sup>3</sup>	<b>876.37</b>
in arches	8.53	926.28	68.74	331.61	m <sup>3</sup>	<b>1326.64</b>
Copings						
500 x 125 mm	0.49	53.21	3.95	253.14	m	<b>310.30</b>
<b>Squared random rubble uncoursed, weighing 2.0 t/m<sup>3</sup> of wall; in cement-lime mortar designation (iii)</b>						
Walls						
vertical and straight	4.17	452.82	33.61	472.85	m <sup>3</sup>	<b>959.28</b>
curved on plan	4.67	507.12	37.64	472.85	m <sup>3</sup>	<b>1017.61</b>
with a battered face	4.67	507.12	37.64	472.85	m <sup>3</sup>	<b>1017.61</b>
in arches	8.53	926.28	68.74	472.85	m <sup>3</sup>	<b>1467.88</b>
Facework to concrete						
vertical and straight	4.17	452.82	33.61	473.61	m <sup>3</sup>	<b>960.04</b>
curved on plan	4.67	507.12	37.64	473.61	m <sup>3</sup>	<b>1018.36</b>
with a battered face	4.67	507.12	37.64	473.61	m <sup>3</sup>	<b>1018.36</b>
in arches	8.53	926.28	68.74	473.61	m <sup>3</sup>	<b>1468.63</b>
Copings						
500 x 125 mm	0.49	53.21	3.95	253.14	m	<b>310.30</b>
<b>Dry rubble, weighing 2.0 t/m<sup>3</sup> of wall</b>						
Walls						
vertical and straight	3.83	415.90	30.87	344.71	m <sup>3</sup>	<b>791.48</b>
curved on plan	4.33	470.20	34.90	344.71	m <sup>3</sup>	<b>849.80</b>
with a battered face	4.33	470.20	34.90	344.71	m <sup>3</sup>	<b>849.80</b>
Copings formed of rough stones						
275 x 200 mm (average) high	0.45	48.87	3.63	28.30	m	<b>80.79</b>
500 x 200 mm	0.55	59.73	4.43	52.96	m	<b>117.12</b>

**SERIES 2500: SPECIAL STRUCTURES**

Item	Gang hours	Labour £	Plant £	Material £	Unit	<b>Total rate £</b>
<p><b>SPECIAL STRUCTURES DESIGNED BY THE CONTRACTOR</b></p> <p><b>Notes</b>            This section envisages the following types of structure which may be required to be designed by the Contractor based on stipulated performance criteria:</p> <ul style="list-style-type: none"> <li>* Buried structures</li> <li>* Earth retaining structures</li> <li>* Environmental barriers</li> <li>* Underbridges up to 8 m span</li> <li>* Footbridges</li> <li>* Piped culverts</li> <li>* Box culverts</li> <li>* Drainage exceeding 900 mm diameter</li> <li>* Other structures</li> </ul> <p>Naturally, this work cannot be catered for directly in this section and will require the preparation of a sketch solution and approximate quantities to allow pricing using the various other Unit Costs sections as well as the Approximate Estimates section. An allowance must be added to such an estimate to cover the Contractor's design fee(s) and expenses.</p>						

**SERIES 2700: ACCOMMODATION WORKS, WORKS FOR STATUTORY UNDERTAKERS,  
PROVISIONAL SUMS AND PRIME COST ITEMS**

Item	Gang hours	Labour £	Plant £	Material £	Unit	<b>Total rate £</b>
<p><b>ACCOMMODATION WORKS, WORKS FOR STATUTORY UNDERTAKERS, PROVISIONAL SUMS AND PRIME COST ITEMS</b></p> <p><b>GENERAL</b> Cost items in this series will be specific to individual contract agreements and it is felt that inclusion of prices in this publication would not provide useful guidance.</p>						

## SERIES 3000: LANDSCAPING AND ECOLOGY

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>GROUND PREPARATION AND CULTIVATION</b>						
Supply and apply granular cultivation treatments by hand						
35 grammes / m <sup>2</sup>	0.50	12.77	-	33.68	100m <sup>2</sup>	<b>46.45</b>
50 grammes / m <sup>2</sup>	0.65	16.60	-	48.12	100m <sup>2</sup>	<b>64.71</b>
75 grammes / m <sup>2</sup>	0.85	21.71	-	72.17	100m <sup>2</sup>	<b>93.88</b>
100 grammes / m <sup>2</sup>	1.00	25.54	-	96.23	100m <sup>2</sup>	<b>121.77</b>
150 grammes / m <sup>2</sup>	1.20	30.64	-	144.35	100m <sup>2</sup>	<b>174.99</b>
Supply and apply granular cultivation treatments by machine in suitable economically large areas						
100 grammes / m <sup>2</sup>	-	-	4.25	96.23	100m <sup>2</sup>	<b>100.48</b>
ADD to above for: granular treatments per £0.10/kg PC variation +10% selective weedkiller +171% herbicide +567% fertilizer +100% Supply and incorporate cultivation additives into top 150 mm topsoil by hand						
1 m <sup>3</sup> / 10m <sup>2</sup>	20.00	510.72	-	12.34	100m <sup>2</sup>	<b>523.06</b>
1 m <sup>3</sup> / 13m <sup>2</sup>	20.00	510.72	-	9.49	100m <sup>2</sup>	<b>520.21</b>
1 m <sup>3</sup> / 20m <sup>2</sup>	19.00	485.18	-	6.17	100m <sup>2</sup>	<b>491.35</b>
1 m <sup>3</sup> / 40m <sup>2</sup>	17.00	434.11	-	3.08	100m <sup>2</sup>	<b>437.20</b>
Supply and incorporate cultivation additives into top 150 mm topsoil by machine in suitable economically large areas						
1 m <sup>3</sup> / 10m <sup>2</sup>	-	-	156.75	12.34	100m <sup>2</sup>	<b>169.09</b>
1 m <sup>3</sup> / 13m <sup>2</sup>	-	-	144.69	9.49	100m <sup>2</sup>	<b>154.18</b>
1 m <sup>3</sup> / 20m <sup>2</sup>	-	-	128.61	6.17	100m <sup>2</sup>	<b>134.78</b>
1 m <sup>3</sup> / 40m <sup>2</sup>	-	-	118.56	3.08	100m <sup>2</sup>	<b>121.65</b>
ADD to above for cultivation additives per £0.10/m <sup>2</sup> PC variation + 10% compost + 300% manure +166% peat +1800%						
<b>SEEDING AND TURFING</b>						
<b>Selected grass seed ; at the rate of 0.050 kg/m<sup>2</sup> in two operations</b>						
Grass seeding; by conventional sowing						
at 10° or less to the horizontal	0.01	0.26	-	0.40	m <sup>2</sup>	<b>0.65</b>
more than 10° to horizontal	0.02	0.38	-	0.40	m <sup>2</sup>	<b>0.78</b>
<b>Wild Flora mixture BSH ref WF1 combined with Low maintenance conservation grass BSH ref A4 (20%;80%); at the rate of 80 g/m<sup>2</sup></b>						
Wildflower seeding; by conventional sowing						
at 10° or less to the horizontal	0.50	12.77	-	43.04	100 m <sup>2</sup>	<b>55.80</b>
more than 10° to horizontal	0.02	0.38	-	0.40	m <sup>2</sup>	<b>0.78</b>
<b>Hydraulic mulch grass seed</b>						
Grass seeding by hydraulic seeding						
at 10° or less to the horizontal	0.01	0.13	0.09	0.28	m <sup>2</sup>	<b>0.50</b>
at more than 10° to the horizontal	0.01	0.18	0.09	0.28	m <sup>2</sup>	<b>0.55</b>
<b>Imported turf</b>						
Turfing to surfaces						
at 10° or less to the horizontal	0.12	3.06	-	3.06	m <sup>2</sup>	<b>6.12</b>
more than 10 to the horizontal; pegging down	0.17	4.34	-	3.06	m <sup>2</sup>	<b>7.40</b>

**SERIES 3000: LANDSCAPING AND ECOLOGY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PLANTING</b>						
<b>Trees</b>						
The cost of planting semi-mature trees will depend on the size and species, and on the access to the site for tree handling machines. Prices should be obtained for individual trees and planting. Break up subsoil to a depth of 200mm						
in treepit	0.05	1.28	-	-	nr	<b>1.28</b>
Supply and plant tree in prepared pit; backfill with excavated topsoil minimum 600 mm deep						
light standard; in pits	0.25	6.38	-	13.29	nr	<b>19.68</b>
standard tree	0.45	11.49	-	19.93	nr	<b>31.43</b>
selected standard tree	0.75	19.15	-	26.57	nr	<b>45.73</b>
heavy standard tree	0.85	21.71	-	46.51	nr	<b>68.21</b>
extra heavy standard tree	1.50	38.30	-	83.06	nr	<b>121.36</b>
extra for filling with topsoil from spoil heap ne 100 m distant	0.15	3.83	1.02	-	m <sup>3</sup>	<b>4.85</b>
extra for filling with imported topsoil	0.08	2.04	0.54	23.95	m <sup>3</sup>	<b>26.54</b>
extra for incorporating manure or compost into top soil at the rate of 1 m <sup>3</sup> per 5 m <sup>3</sup> +60% Supply tree stake and drive 500 mm into firm ground and trim to approved height, including two tree ties to approved pattern						
one stake; 2.4 m long, 100 mm diameter	0.16	4.09	-	8.55	nr	<b>12.64</b>
one stake; 3.0 m long, 100 mm diameter	0.20	5.11	-	8.69	nr	<b>13.80</b>
two stakes; 2.4 m long, 100 mm diameter	0.24	6.13	-	13.79	nr	<b>19.92</b>
two stakes; 3.0 m long, 100 mm diameter	0.30	7.66	-	17.38	nr	<b>25.04</b>
Supply and fit tree support comprising three collars and wire guys; including pickets						
galvanised steel 50 x 600 mm	1.50	38.30	-	28.89	nr	<b>67.20</b>
hardwood 75 x 600 mm	1.50	38.30	-	29.55	nr	<b>67.86</b>
Supply and fix standard steel tree guard	0.30	7.66	-	24.66	nr	<b>32.32</b>
<b>Hedge plants</b>						
Excavate trench by hand for hedge and deposit soil alongside trench						
300 wide x 300 mm deep	0.10	2.55	-	-	m	<b>2.55</b>
450 wide x 300 mm deep	0.13	3.32	-	-	m	<b>3.32</b>
Excavate trench by machine for hedge and deposit soil alongside trench						
300 wide x 300 mm deep	0.02	0.29	0.37	-	m	<b>0.67</b>
450 wide x 300 mm deep	0.02	0.29	0.37	-	m	<b>0.67</b>
Set out, nick out and excavate trench and break up subsoil to minimum depth of 300 mm						
400 mm minimum deep	0.15	3.83	-	-	m	<b>3.83</b>
Supply and plant hedging plants; backfill with excavated topsoil						
single row plants at 200 mm centres	0.25	6.38	-	5.55	m	<b>11.94</b>
single row plants at 300 mm centres	0.17	4.34	-	3.70	m	<b>8.04</b>
single row plants at 400 mm centres	0.13	3.19	-	2.78	m	<b>5.97</b>
single row plants at 500 mm centres	0.10	2.55	-	2.22	m	<b>4.77</b>
single row plants at 600 mm centres	0.08	2.04	-	1.84	m	<b>3.89</b>
double row plants at 200 mm centres	0.50	12.77	-	11.11	m	<b>23.87</b>
double row plants at 300 mm centres	0.34	8.68	-	7.40	m	<b>16.08</b>
double row plants at 400 mm centres	0.25	6.38	-	5.55	m	<b>11.94</b>
double row plants at 500 mm centres	0.20	5.11	-	4.44	m	<b>9.55</b>
double row plants at 600 mm centres	0.16	4.09	-	3.69	m	<b>7.77</b>
Extra for incorporating manure at 1 m <sup>3</sup> / 30m <sup>3</sup>	0.60	7.46	-	0.28	-	<b>7.75</b>

## SERIES 3000: LANDSCAPING AND ECOLOGY

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>PLANTING - cont'd</b>						
<b>Shrubs</b>						
Form planting hole in previously cultivated area, supply and plant specified shrub and backfill with excavated material						
shrub 300 mm high	0.10	2.55	-	2.60	each	<b>5.15</b>
shrub 600 mm high	0.10	2.55	-	3.74	each	<b>6.29</b>
shrub 900 mm high	0.10	2.55	-	4.47	each	<b>7.03</b>
shrub 1.0 m high and over	0.10	2.55	-	5.97	each	<b>8.52</b>
Supply and fix shrub stake including two ties one stake; 1.5 m long, 75 mm diameter	0.12	3.06	-	5.52	each	<b>8.59</b>
Extra for the above items for planting in prefabricated or in-situ planters +20%						
<b>Herbaceous plants</b>						
Form planting hole in previously cultivated area, supply and plant specified herbaceous plants and backfill with excavated material						
5 plants / m <sup>2</sup>	0.05	1.28	-	9.96	m <sup>2</sup>	<b>11.24</b>
10 plants / m <sup>2</sup>	0.16	4.09	-	19.92	m <sup>2</sup>	<b>24.01</b>
25 plants / m <sup>2</sup>	0.42	10.73	-	49.81	m <sup>2</sup>	<b>60.53</b>
35 plants / m <sup>2</sup>	0.58	14.81	-	69.73	m <sup>2</sup>	<b>84.54</b>
50 plants / m <sup>2</sup>	0.83	21.19	-	99.62	m <sup>2</sup>	<b>120.81</b>
Supply and fix plant support netting on 50 mm diameter stakes 750 mm long driven into the ground at 1.5 m centres						
1.15 m high green extruded plastic mesh, 125 mm square mesh,	0.06	1.53	-	2.13	m <sup>2</sup>	<b>3.66</b>
Extra to the above items for planting in prefabricated or in-situ planters +20%						
Form planting hole in previously cultivated area; supply and plant bulbs and backfill with excavated material						
small	0.01	0.26	-	0.17	each	<b>0.43</b>
medium	0.01	0.26	-	0.28	each	<b>0.53</b>
large	0.01	0.26	-	0.33	each	<b>0.59</b>
Supply and plant bulb in grassed area using bulb planter and backfill with screened topsoil or peat and cut turf plug						
small	0.01	0.26	-	0.17	each	<b>0.43</b>
medium	0.01	0.26	-	0.28	each	<b>0.53</b>
large	0.01	0.26	-	0.33	each	<b>0.59</b>
Extra to the above items for planting in prefabricated or in-situ planters +15%						
<b>MULCHING</b>						
<b>Organic mulching of medium bark mulch to a depth of 50 mm in planting areas to surfaces</b>						
at 10° or less to the horizontal	0.01	0.26	-	1.90	m <sup>2</sup>	<b>2.16</b>
more than 10° to horizontal	0.02	0.38	-	1.90	m <sup>2</sup>	<b>2.29</b>
<b>Organic mulching of timber mulch to a depth of 75 mm in planting areas to surfaces</b>						
at 10° or less to the horizontal	0.02	0.38	-	3.80	m <sup>2</sup>	<b>4.19</b>
more than 10° to horizontal	0.02	0.51	-	3.80	m <sup>2</sup>	<b>4.31</b>



**SERIES 3000: LANDSCAPING AND ECOLOGY**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<b>WEED CONTROL</b>						
Weed and handfork planted areas including removing and dumping weed and debris on site	0.07	1.79	-	-	m <sup>2</sup>	<b>1.79</b>
Supply and apply selective weed killer						
35 grammes / m <sup>2</sup>	0.01	0.13	-	0.13	m <sup>2</sup>	<b>0.26</b>
70 grammes / m <sup>2</sup>	0.01	0.18	-	0.26	m <sup>2</sup>	<b>0.44</b>
100 grammes / m <sup>2</sup>	0.01	0.26	-	0.37	m <sup>2</sup>	<b>0.62</b>
<b>MAINTENANCE OF ESTABLISHED TREES AND SHRUBS</b>						
Initial cut back to shrubs and hedge plants, clear away all cuttings	0.04	1.02	-	-	m	<b>1.02</b>
Protect planted areas with windbreak fencing fixed to stakes 1.5 m x 50 mm diameter at 2.0 m centres and clear away on completion						
1.0 m high	0.06	1.53	-	5.13	m	<b>6.66</b>
Cut out dead and diseased wood, prune, trim and cut to shape; treat wounds with sealant; clear away cuttings						
shrubs ne 1.0 m high	0.20	5.11	-	-	each	<b>5.11</b>
shrubs 1.0 - 2.0 m high	0.30	7.66	-	-	each	<b>7.66</b>
shrubs 2.0 - 3.0 m high	0.40	10.21	-	-	each	<b>10.21</b>
Cut and trim ornamental hedge to specified profile; clear away cuttings						
ornamental hedge 2.0 m high	0.60	15.32	-	-	m	<b>15.32</b>
ornamental hedge 4.0 m high	0.90	22.98	-	-	m	<b>22.98</b>
Trim field hedge to specified height and shape; clear away cuttings						
using flail	0.05	1.28	-	-	m	<b>1.28</b>
using cutting bar	0.07	1.79	-	-	m	<b>1.79</b>
<b>MAINTENANCE ESTABLISHED GRASSED AREAS</b>						
Grass cutting at medium frequency on central reserves	-	-	-	-	100m <sup>2</sup>	<b>6.30</b>

**SERIES 5000: MAINTENANCE PAINTING OF STEELWORK**

Item	Gang hours	Labour £	Plant £	Material £	Unit	Total rate £
<p><b>SURFACE PREPARATION</b></p> <p><b>Surface Preparation</b> Surface preparation to general surfaces by dry blast cleaning to DfT Clause 5003 to remove unsound paint down to sound paint</p>	-	-	-	-	m <sup>2</sup>	<b>9.25</b>
<p><b>PROTECTIVE SYSTEM</b></p> <p><b>Protective System</b> Protective system Type I (M) to DfT Table 50/2 to general surfaces prepared down to sound paint * <b>26.60</b></p>	-	-	-	-	m <sup>2</sup>	

# Land Remediation

## INTRODUCTORY NOTES

*The purpose of this part is to review the general background of ground contamination, the cost implications of current legislation and to consider the various remedial measures and to present helpful guidance on the cost of Land Remediation.*

*The introduction of the Landfill Directive in July 2004 has had a considerable impact on the cost of Remediation works in general and particularly on the practice of Dig and Dump. The number of Landfill sites licensed to accept Hazardous Waste has drastically reduced and inevitably this has led to increased costs.*

*Market forces will determine future increases in cost resulting from the introduction of the Landfill Directive and the cost guidance given within this section will require review in light of these factors.*

*It must be emphasised that the cost advice given is an average and that costs can vary considerably from contract to contract depending on individual Contractors, site conditions, type and extent of contamination, methods of working and various other factors as diverse as difficulty of site access and distance from approved tips.*

We have structured this Unit Cost section to cover as many aspects of Land Remediation works as possible.

**GUIDANCE NOTES****Generally**

Adjustments should be made to the rates shown for time, location, local conditions, site constraints and any other factors likely to affect the costs of a specific scheme.

**Method of Measurement**

Although this part of the book is primarily based on CESMM3, the specific rules have been varied from in cases where it has been felt that an alternative presentation would be of value to the book's main purpose of providing guidance on prices. This is especially so with a number of specialist contractors.

## DEFINITION

### Generally

Contaminated land refers generally to land which contains contaminants in sufficient quantities to harm people, animals, the environment or structures. There is now a statutory definition of 'contaminated land' contained within Part IIA of the Environmental Protection Act.

Contaminants comprise hazardous substances (solids, liquids or gases) that are not naturally occurring in the site. They arise from previous site usage, although sites can be affected by pollutants arising from adjoining sites through the movement of water and air. A contaminated site can similarly pose a risk to surrounding land by offsite migration of contaminants.

Contaminated sites can be sold on, although the new owner would take on the responsibility for the contamination and would obviously take this into account in the offered price.

The extent of remediation works required to address contamination varies dependent on the intended future use of the site – with industrial uses calling for a lower level of work than if the site were intended to be used for residential or agricultural purposes. In a commercial world, expenditure on decontaminating the land would usually need to be balanced against the release of the latent site value – unless of course the contamination contravened statutory limits.

Hazardous contaminants fall into three broad categories:

- Chemical contamination of land or water
- Biological contamination of land or water (e.g. samples containing pathological bacteria potentially harmful to health)
- Contamination of a physical nature (e.g. radioactive material, unsuitable fill materials, flammable gas or combustible material e.g. wood dust)

These can also be listed in the following sub-groups:

<b>Gases</b>	Toxic, flammable and explosive gases e.g. hydrogen cyanide hydrogen sulphide Flammable and explosive gases e.g. methane
<b>Liquids</b>	Flammable liquids and solids Fuels, oils and other hydrocarbons Solvents
<b>Combustible materials</b>	Timber Ash Coal residue
<b>Heavy metals</b>	Arsenic, lead, mercury, cadmium, chromium
<b>Corrosive substances</b>	Acids Alkalis
<b>Toxic substances</b>	Hydrocarbons Inorganic salts
<b>Asbestos</b>	
<b>Substituted aromatic compounds</b>	PCBs Dioxins Furans
<b>Biological agents</b>	Anthrax Tetanus BSE Genetically modified organisms

The following is a brief list of some of the main industrial sectors and their potential contaminants.

<b>Sector</b>	<b>Contaminant type</b>	<b>Example</b>
<b>Gasworks</b>	Coal tar	polyaromatic hydrocarbons (PAH's) phenol
	Cyanide	free / complex
	Sulphur	sulphide / sulphate
	Metals	lead, cadmium, mercury
	Aromatic hydrocarbons	benzene
<b>Iron + Steel works</b>	Metals	copper, nickel, lead
	Acids	sulphuric, hydrochloric
	Mineral oils	-
	Coking works residues	(as for gasworks )
<b>Metal finishing</b>	Metals	cadmium, chromium, copper, nickel, zinc
	Acids	sulphuric, hydrochloric
	Plating salts	cyanide
	Aromatic hydrocarbons	benzene
	Chlorinated hydrocarbons	trichloroethane
<b>Non ferrous metal processing</b>	Metals	Copper, cadmium, lead, zinc
	Impurity metals	antimony, arsenic
	Other wastes	battery cases, acids
<b>Oil refineries</b>	Hydrocarbons	various fractions
	Acids, alkalis	sulphuric, caustic soda
	Lagging, insulation	asbestos
	Spent catalysts	lead, nickel, chromium
	Metals	lead, cadmium, barium
<b>Paints</b>	Alcohols	toluol, xylol
	Chlorinated hydrocarbons	methylene chloride
	Fillers, extenders	silica, titanium dioxide, talc
	Acids, alkalis	sulphuric, caustic soda
	Metals	copper, cadmium, mercury
<b>Petrochemical plants</b>	Reactive monomers	styrene, acrylate, VCM
	Cyanide	toluene di-isocyanate
	Amines	aniline
	Aromatic hydrocarbons	benzene, toluene
	Metals	copper, cadmium, lead, nickel, zinc
	Metals	lead, MTBE
<b>Petrol stations</b>	Aromatic hydrocarbons	benzene
	Octane boosters	lead, MTBE
	Mineral oil	-
	Paint, plastic residues	barium, cadmium, lead
	Metals	zinc, lead
<b>Rubber processing</b>	Sulphur compounds	sulphur, thiocarbonate
	Reactive monomers	isoprene, isobutylene
	Acids	sulphuric, hydrochloric
	Aromatic hydrocarbons	xylene, Toluene
	Metals	copper, nickel, cadmium
<b>Semi-conductors</b>	Metalloids	arsenic, antimony, zinc
	Acids	nitric, hydrofluoric
	Chlorinated hydrocarbons	trichloroethylene
	Alcohols	methanol
	Aromatic hydrocarbons	xylene, toluene
	Acids	hydrochloric
<b>Tanneries</b>	Metals	trivalent chromium
	Salts	chlorides, sulphides

	Solvents	kerosene, white spirit
	Cyanide	methyl isocyanate
	Degreasers	trichloroethylene
<b>Textiles</b>	Dyestuff residues	cadmium, benzidine
	Metals	aluminium, tin, titanium, zinc
	Acids, alkalines	sulphuric, caustic soda
	Salts	sodium hypochlorite
	Chlorinated hydrocarbons	perchloroethylene
	Aromatic hydrocarbons	phenol
	Pesticides	dieldrin, aldrin, endrine
	Dyestuff residues	cadmium, Benzedrine
<b>Wood processing</b>	Coal tar based preservatives	creosote
	Chlorinated hydrocarbons	pentachlorophenol
	Metalloids / metals	arsenic, copper, chromium
<b>Hat making</b>	Mercury	
<b>Tin smelting</b>	Radioactivity	
<b>Vehicle parking areas</b>	Metals	copper, cadmium, lead, nickel, zinc
	Aromatic hydrocarbons	Benzene
	Octane boosters	lead, MTBE
	Mineral oil	-

## BACKGROUND

### Statutory framework

April 2000 saw the introduction of new contaminated land provisions, contained in Part IIA of the Environmental Protection Act 1990. A primary objective of the legislation is to identify and remediate contaminated land.

Under the Act action to remediate land is required only where there are unacceptable actual or potential risks to health or the environment. Sites that have been polluted from previous land use may not need remediating until the land use is changed to a more sensitive end-use. In addition, it may be necessary to take action only where there are appropriate, cost-effective remediation processes that take the use of the site into account.

The Environmental Act 1995 amended the Environment Protection Act 1990 by introducing a new regime for dealing with 'contaminated land' as defined. The regime became operational on 1 April 2000. Local authorities are the main regulators of the new regime although the Environment Agency regulates seriously contaminated sites which are known as "special sites".

The contaminated land regime incorporates statutory guidance on the inspection, definition, remediation, apportionment of liabilities and recovery of costs of remediation. The measures are to be applied in accordance with the following criteria:

- the planning system
- the standard of remediation should relate to the present use
- the costs of remediation should be reasonable in relation to the seriousness of the potential harm
- the proposals should be practical in relation to the availability of remediation technology, impact of site constraints and the effectiveness of the proposed clean-up method.

The contaminated land provisions of the Environmental Protection Act 1990 are only one element of a series of statutory measures dealing with pollution and land remediation that have been introduced. Others include:

- groundwater regulations, including pollution prevention measures
- an integrated prevention and control regime for pollution
- sections of the Water Resources Act 1991, which deals with works notices for site controls, restoration and clean up.

The risks involved in the purchase of potentially contaminated sites are high, particularly considering that a transaction can result in the transfer of liability for historic contamination from the vendor to the purchaser.

The ability to forecast the extent and cost of remedial measures is essential for both parties, so that they can be accurately reflected in the price of the land.

### The EU Landfill Directive

The Landfill (England and Wales) Regulations 2002 came into force on 15 June 2002 followed by Amendments in 2004 and 2005. These new regulations implement the Landfill Directive (Council Directive 1999/31/EC), which aims to prevent, or to reduce as far as possible, the negative environmental effects of landfill. These regulations have had a major impact on waste regulation and the waste management industry in the UK.

The Scottish Executive and the Northern Ireland Assembly will be bringing forward separate legislation to implement the Directive within their regions.

In summary, the Directive requires that:

- Sites are to be classified into one of three categories: hazardous, non-hazardous or inert, according to the type of waste they will receive.
- Higher engineering and operating standards will be followed.
- Biodegradable waste will be progressively diverted away from landfills.



- Certain hazardous and other wastes, including liquids, explosive waste and tyres will be prohibited from landfills.
- Pre-treatment of wastes prior to landfilling will become a requirement.

On 15 July 2004 the co-disposal of hazardous and non-hazardous waste in the same landfill site ended and in July 2005 new waste acceptance criteria (WAC) were introduced which also prevents the disposal of materials contaminated by coal tar.

The effect of this Directive has been to dramatically reduce the hazardous disposal capacity post July 2004, resulting in a **SIGNIFICANT** increase in remediating costs. There are now less than 20 commercial landfills licensed to accept hazardous waste as a direct result of the implementation of the Directive. There are no sites in Scotland or Wales and only limited capacity in the South of England. This has significantly increased travelling distance and cost for disposal to landfill. The increase in operating expenses incurred by the landfill operators has also resulted in higher tipping costs.

All hazardous materials designated for disposal off-site are subject to WAC tests. Samples of these materials are taken from site to laboratories in order to classify the nature of the contaminants. These tests, which cost approximately £200 each, have resulted in increased costs for site investigations and as the results may take up to 3 weeks this can have a detrimental effect on programme.

As from 1 July 2008 the WAC derogations which have allowed oil contaminated wastes to be disposed in landfills with other inert substances were withdrawn. As a result the cost of disposing oil contaminated solids has increased.

There has been a marked slowdown in brownfield development in the UK with higher remediation costs, longer clean-up programmes and a lack of viable treatment options for some wastes.

The UK Government established the Hazardous Waste Forum in December 2002 to bring together key stakeholders to advise on the way forward on the management of hazardous waste.

### **Effect on Disposal Costs**

Although most landfills are reluctant to commit to tipping prices tipping costs have generally stabilised. However, there are significant geographical variances, with landfill tip costs in the North of England typically being less than their counterparts in the Southern regions.

For most projects to remain viable there will be an increasing need to treat soil in-situ by bioremediation, soil washing or other alternative long-term remediation measures. Waste untreatable on-site such as coal tar remains a problem. Development costs and programmes will need to reflect this change in methodology.

### **Types of hazardous waste**

- Sludges, acids and contaminated wastes from the oil and gas industry
- Acids and toxic chemicals from chemical and electronics industries
- Pesticides from the agrochemical industry
- Solvents, dyes and sludges from leather and textile industries
- Hazardous compounds from metal industries
- Oil, oil filters and brake fluids from vehicles and machines
- Mercury-contaminated waste from crematoria
- Explosives from old ammunition, fireworks and airbags
- Lead, nickel, cadmium and mercury from batteries
- Asbestos from the building industry
- Amalgam from dentists
- Veterinary medicines

[Source: Sepa]

Foam insulation materials containing ODP (Ozone Depletant Potential) are also considered as hazardous waste under the EC Regulation 2037/2000.

## INITIAL STUDY

### Approach

Part IIA of the Environmental Protection Act (1990) [EPA], which was introduced by Section 57 of the Environment Act 1995, requires an overall risk-based approach to dealing with contaminated sites, which is consistent with the general good practice approach to managing land subject to contamination.

The regulatory regime set out in Part IIA is based on the following activities:

- identify the problem
- assess the risks
- determine the appropriate remediation requirements
- consider the costs
- establish who should pay
- implementation and remediation

These are examined more fully below:

### Identify the problem

Site investigations comprising desk study research and intrusive investigations are necessary to provide information on the soil conditions and possible contaminants located on the site in order that an assessment of the risks may be carried out. Based on these, it should then be possible to ensure that the most appropriate remedial measures are used. From a purely cost angle, the more complete the study is at this stage, the greater the reliability of the cost estimate.

Initially:

- research previous use(s) of the site by reference to historical maps, local records, interviewing local inhabitants, previous employees etc.
- study geological maps and local records to determine ground strata, water table, underground aquifers, direction of movement of ground water, presence of water extraction wells locally which may be at risk from contamination.
- examine local records to try and determine underground and above ground service routes and whether still live

Ideally such studies should also take in surrounding land as the site may be at risk of contamination from an adjoining site problem.

The aim would be to establish the previous pattern of development of the site. Based on the sites various uses, areas of previous development and likely contaminants may be identifiable. It may well be possible to categorize the site into areas each with possibly differing problems and occurring at differing depths. In all probability, a proportion of even a contaminated site could prove to be trouble free.

Even though a site may have no history of potentially contaminative use, previous owners may have inadvertently created a problem by importing fill materials from a contaminated source.

A site 'conceptual model' should be developed from the desk study research, showing the 'receptors' potentially at risk and the 'pathway' between the contamination source and each receptor.

The next step should be soil sampling of the various areas and laboratory analysis of the materials to determine if the soil contains a contaminant (or contaminants) as well as obtaining an idea of the distribution of the contaminants over the site (in areas as well as depth) and the associated concentrations.

The number of sampling points taken on any given site will largely depend on engineering judgement, economics and time. The use of an accurate and regularly spaced sampling grid allows the site to be categorized into areas of high and low risk (i.e. areas exceeding or falling below the trigger values). It may then be possible to use different remedial measures for the differing areas of concentration.

Consideration should be given to the proposed development. There is little point in carrying out expensive remedial works to a site merely for it to be then subjected to the same use. On the other hand, work is very much called for if the proposed use is for agricultural or recreational purpose or else the contaminants threaten the water regime. If the contaminants are static and not putting development at risk, there may be a strong economic argument for leaving them alone.

Bearing in mind the history of the site, the nature and concentration of the contaminant(s) and the most likely path, it should then be possible to choose an appropriate remedial technique.

### **Assess the risks**

With an understanding of the site geology and of the nature, distribution and magnitude of contaminants within the site, an assessment can then be made of the risk that they pose, which will depend largely on the sensitivity of the site and the future land use.

A qualitative risk assessment used to involve a comparison of the observed contaminant concentrations with screening values, such as the ICRCCL trigger concentrations. A quantitative risk assessment looks at the particular site, the potential of the hazards to migrate and then a calculation of the likely dose of contaminant at the receptor to compare with EEC and other Regulator limits.

It can be difficult to arrive at an adequate definition of the acceptable levels of risk for the particular site, in view of the complications caused by differences in geology on a regional scale and local site variations. Individual site variations can affect chemical and physical properties and substances themselves can interact to increase or even reduce the risk.

Threats to aquifers would force a vigorous approach to treatment.

### **Determine the appropriate remediation requirements**

Consideration should be given to the most appropriate treatment suited to the location and type of contaminant, the end use of the site and the risks.

### **Consider the costs**

The estimate should review the chosen treatment and take into account:

- a careful measurement/estimate of the quantities involved, e.g. the volume(s) of contaminants which may need removal, length and depth of containment walls, size distribution and depth of boreholes for the extraction of contaminated liquids
- site location - a study of the surrounding roads, built-up areas etc. which may restrict access to and from the site for construction vehicles; this could well influence the size of the vehicles used
- appropriate landfill sites / haulage distance - a review of suitable tips which can take the contaminants, checking their rate of accepting such material, which may well be limited by their licence; bear in mind that tipping charges can vary significantly over a period of time but preferential rates can be obtained for a programme of tipping. Large quantities of material may force a proportion being disposed of not just at the closest, but also at the more distant tips as well – if time is not at a premium, it may well prove cheaper to extend the length of the programme.
- the location / haulage distance of sites of suitable fill materials
- a review of any set time scales and a calculation of a practical contract period, perhaps taking into account any requirements for phased hand over of parts of the site.

- an assessment of the implications of the contaminants on the site establishment – protective clothing and footwear and shower and messing facilities for personnel, wheel wash facilities for vehicles and the careful disposal of contaminated wash water etc.

It is essential that the estimate is a practical all-embracing exercise to help ensure that a realistic budget is set for the project. Once the work commences on site, it cannot be halted even if costs overrun the anticipated budget.

If it does not prove possible to survey the site fully, part or all of the estimate could be at risk and the client should be made aware of the potential risk.

### **Cost minimisation**

Apart from careful measurement and rate evaluation, there are a number of methods of helping to minimise costs, such as:

- On-site testing to reduce off site volumes  
To help ensure that low risk materials are not removed unnecessarily
- Correct classification of waste  
To help ensure that the contaminant incurs the lowest tipping charge
- Use of clean site rubble as far as possible for fill
- Use of existing contaminated solids for the stabilisation of contaminated liquids/sludges.  
The removal of such a mixture by lorry may be much cheaper than removing liquid by tanker.
- Ensure the fill and rate of compaction are suitable for the end use  
To avoid future cost.
- Encapsulation of non-mobile contaminants  
Cheaper than removing from site or treating.
- Back-hauling of fill materials

Where possible, organising the truck taking the material to the tip to return with the fill materials, avoiding the cost of travelling empty.

### **Establish who should pay**

Liability for the costs of remediation rests with either the party that “caused or knowingly permitted” contamination, or with the current owners or occupiers of the land.

Apportionment of liability, where shared, is determined by the local authority. Although owners or occupiers become liable only if the polluter cannot be identified, the liability for contamination is commonly passed on when land is sold.

If neither the polluter nor owner can be found, the clean-up is funded from public resources.

### **Implementation and remediation**

Tenders should be sought on clear documentation with the ability for the subsequent work to be remeasured and revalued.

There should be a stringent site monitoring system implemented. This should include monitoring the effectiveness of operations (especially in the case of remedial operations other than dig and dump) as well as checking the chemical profile of all imported fill materials to avoid the obvious.

Approvals involve both the Environment Agency and the local authority Environmental Health Officer / Contaminated Land Officer.

A Health and Safety file handed to the site owner at completion should cover all the checking procedures in detail. Arrange for suitable warranties, which would be required by any future purchaser of the site.

## LAND REMEDIATION TECHNIQUES

There are two principal approaches to remediation - dealing with the contamination in situ or off site. The selection of the approach will be influenced by factors such as: initial and long term cost, timeframe for remediation, types of contamination present, depth and distribution of contamination, the existing and planned topography, adjacent land uses, patterns of surface drainage, the location of existing on-site services, depth of excavation necessary for foundations and below-ground services, environmental impact and safety, prospects for future changes in land use and long-term monitoring and maintenance of in situ treatment.

On most sites, contamination can be restricted to the top couple of metres, although gasholder foundations for example can go down 8 or 10 metres. Underground structures can interfere with the normal water regime and trap water pockets.

There could be a problem if contaminants get into fissures in bedrock.

### In situ techniques

A range of in situ techniques is available for dealing with contaminants, including:

- Clean cover - a layer of clean soil is used to segregate contamination from receptor. This technique is best suited to sites with widely dispersed contamination. Costs will vary according to the need for barrier layers to prevent migration of the contaminant.
- On-site encapsulation - the physical containment of contaminants using barriers such as slurry trench cut-off walls. The cost of on-site encapsulation varies in relation to the type and extent of barriers required, the costs of which range from £50/m<sup>2</sup> to more than £175/m<sup>2</sup>.

There are also in situ techniques for treating more specific contaminants, including:

- Bio-remediation - for removal of oily, organic contaminants through natural digestion by micro-organisms. Most bio-remediation is ex-situ, i.e. it is dug out and then treated on site in bio-piles. The process can be slow, perhaps taking as much as one to three years depending upon the scale of the problem, but is particularly effective for the long-term improvement of a site, prior to a change of use.
- Soil washing - involving the separation of a contaminated soil fraction or oily residue through a washing process. This also involves the excavation of the material for washing ex-situ. The de-watered contaminant still requires disposal to landfill. In order to be cost effective, 70 - 90% of soil mass needs to be recovered. It will involve constructing a hard area for the washing, intercepting the now-contaminated water and taking it away in tankers.
- Vacuum extraction - involving the extraction of volatile organic compounds (e.g. benzene) from soil and groundwater by vacuum.
- Thermal treatment - the incineration of contaminated soils on site. The uncontaminated soil residue can be recycled. By-products of incineration can create air pollution and exhaust air treatment may be necessary.
- Stabilisation - cement or lime, is used to physically or chemically bound oily or metal contaminants to prevent leaching or migration. Stabilisation can be used in both in situ and off-site locations.
- Aeration - if the ground contamination is highly volatile, e.g. fuel oils, then the ground can be ploughed and rotovated to allow the substance to vaporize.
- Air sparging - the injection of contaminant-free air into the sub-surface enabling a phase transfer of hydrocarbons from a dissolved state to a vapour phase.
- Chemical oxidation - the injection of reactive chemical oxidants directly into the soil for the rapid destruction of contaminants.
- Pumping - to remove liquid contaminants from boreholes or excavations. Contaminated water can be pumped into holding tanks and allowed to settle; testing may well prove it to be suitable for discharging into the foul sewer subject to payment of a discharge fee to the local authority of 35p to 65p per m<sup>3</sup>. It may be necessary to process the water through an approved water treatment system to render it suitable for discharge.

**Off-site techniques**

Removal for landfill disposal has, historically, been the most common and cost-effective approach to remediation in the UK, providing a broad spectrum solution by dealing with all contaminants. As discussed above, the implementation of the Landfill Directive will result in other techniques becoming more competitive and enjoy a wider usage. Removal to Landfill is suited to sites where sources of contamination can be easily identified and it is local to an approved Landfill site.

If used in combination with material-handling techniques such as soil washing, the volume of material disposed at landfill sites can be significantly reduced. The disadvantages of the technique include the fact that the contamination is not destroyed, there are risks of pollution during excavation and transfer; road haulage may also cause a local nuisance.

Soil treatment centres are now beginning to be established. These use a combination of treatment technologies to maximise the potential recovery of soils and aggregates and render them suitable for disposal to the landfill. The technologies include:

- Physico-chemical treatment – a method which uses the difference in grain size and density of the materials to separate the different fractions by means of screens, hydrocyclones and upstream classification
- Bioremediation – the aerobic biodegradation of contaminants by naturally occurring micro-organisms
- Stabilisation/solidification – a cement stabilisation unit capable of immobilising persistent leachable components.

## COST CONSIDERATIONS

### Cost drivers

Cost drivers relate to the selected remediation technique, site conditions and the size and location of a project. The wide variation of indicative costs of land remediation techniques shown below is largely because of differing site conditions.

### Indicative costs of land remediation techniques for 2009 (excluding General Items, testing, landfill tax and backfilling)

Remediation technique	Unit	Rate (£/unit)
Removal – non-hazardous	disposed material (m <sup>3</sup> )	50 – 80
Removal – hazardous	disposed material (m <sup>3</sup> )	75 – 200
Note: excluding any pre-treatment of material		
Clean cover	surface area of site (m <sup>2</sup> )	25 – 50
On-site encapsulation	encapsulated material (m <sup>3</sup> )	30 – 95
Bio-remediation	treated material (tonne)	15 – 50
Soil washing	treated material (tonne)	50 – 80
Thermal treatment	treated material (tonne)	300 – 1,000

Many other on-site techniques deal with the removal of the contaminant from the soil particles and not the wholesale treatment of bulk volumes. Costs for these alternative techniques are very much Engineer designed and site specific.

Factors that need to be considered include:

- waste classification of the material
- underground obstructions, pockets of contamination and live services
- ground water flows and the requirement for barriers to prevent the migration of contaminants
- health and safety requirements and environmental protection measures
- location, ownership and land use of adjoining sites
- distance from landfill tips, capacity of the tip to accept contaminated materials, and transport restrictions
- the cost of diesel fuel, currently approximately £1.05 per litre (at April 2009 prices)

Other project related variables include size, access to disposal sites and tipping charges; the interaction of these factors can have a substantial impact on overall unit rates.

The tables below set out the costs of remediation using *dig-and-dump* methods for different sizes of project, differentiated by the disposal of non-hazardous and hazardous material. Variation in site establishment and disposal cost accounts for 60 - 70% of the range in cost.

**Variation in the costs of land remediation by removal: Non-hazardous Waste**

Item	Disposal Volume (less than 3000 m <sup>3</sup> ) (£/m <sup>3</sup> )	Disposal Volume (3000 - 10 000 m <sup>3</sup> ) (£/m <sup>3</sup> )	Disposal Volume (more than 10 000 m <sup>3</sup> ) (£/m <sup>3</sup> )
General items and site organisation costs	55 - 90	25 - 40	7 - 20
Site investigation and testing	5 - 12	2 - 7	2 - 6
Excavation and backfill	18 - 35	12 - 25	10 - 20
Disposal costs (including tipping charges but not landfill tax)	20 - 35	20 - 35	20 - 35
Haulage	15 - 35	15 - 35	15 - 35
<b>Total (£/m<sup>3</sup>)</b>	<b>113 - 207</b>	<b>74 - 142</b>	<b>54 - 116</b>
<i>Allowance for site abnormals</i>	<i>0 - 10 +</i>	<i>0 - 15 +</i>	<i>0 - 10 +</i>

**Variation in the costs of land remediation by removal: Hazardous Waste**

Item	Disposal Volume (less than 3000 m <sup>3</sup> ) (£/m <sup>3</sup> )	Disposal Volume (3000 - 10 000 m <sup>3</sup> ) (£/m <sup>3</sup> )	Disposal Volume (more than 10 000 m <sup>3</sup> ) (£/m <sup>3</sup> )
General items and site organisation costs	55 - 90	25 - 40	7 - 20
Site investigation and testing	10 - 18	5 - 12	5 - 12
Excavation and backfill	18 - 35	12 - 25	10 - 20
Disposal costs (including tipping charges but not landfill tax)	80 - 170	80 - 170	80 - 170
Haulage	25 - 120	25 - 120	25 - 120
<b>Total (£/m<sup>3</sup>)</b>	<b>188 - 433</b>	<b>147 - 367</b>	<b>127 - 342</b>
<i>Allowance for site abnormals</i>	<i>0 - 10 +</i>	<i>0 - 15 +</i>	<i>0 - 10 +</i>

The strict Health and Safety requirements of remediation works can produce quite high site organisation costs as a % of the overall project cost (see the table above). A high proportion of these costs are fixed and, as a result, the unit costs of site organisation increase disproportionately on smaller projects.

Haulage costs are largely determined by the distances to a licensed tip. Current average haulage rates, based on a return journey range from £1.65 to £3.00 per mile. Short journeys to tips, which involve proportionally longer standing times, typically incur higher mileage rates, up to £8.50 per mile.

A further source of cost variation relates to tipping charges. The table below summarises indicative tipping charges for 2009, exclusive of landfill tax:

**Typical 2009 tipping charges (excluding landfill tax)**

Waste classification	Charges (£/tonne)
Non-hazardous wastes	10 - 25
Hazardous wastes	25 - 85
Contaminated liquid	40 - 75
Contaminated sludge	55 - 200



Tipping charges fluctuate in relation to the grades of material a tip can accept at any point in time. This fluctuation is a further source of cost risk. Furthermore, tipping charges in the North of England are generally less than in the rest of the country.

Prices at licensed tips can vary by as much as 50%. In addition, landfill tips generally charge a tip administration fee of approximately £25 per load, equivalent to £1.25 per tonne. This charge does not apply to non-hazardous wastes.

## Cost Studies

### Site study 1

A recently completed project involving site remedial work to a former gas works site by the dig and dump approach (1,000m<sup>3</sup> sent to hazardous landfill) analyses as follows (the Class references are from CESMM3):

Class A	General Items	23 %
Class B	Ground Investigation	8 %
Class C	Geotechnical Services	0 %
Class D	Demolition and Site Clearance	1 %
Class E	Earthworks	
	- Excavation	4 %
	- Haulage	21 %
	- Disposal	31 %
	- Backfilling	9 %
Class F-X	(A number of minor work classes)	3 %
-	Provisional Sums	0 %
-	Abnormal Costs	0 %
		<u>100 %</u>

### Site study 2

A recently completed project involving site remedial work to a former gas works site by the dig and dump and soil washing approach (1,500m<sup>3</sup> sent to hazardous landfill) analyses as follows (the Class references are from CESMM3):

Class A	General Items	19 %
Class B	Ground Investigation	6 %
Class C	Geotechnical Services (alternative technique)	40 %
Class D	Demolition and Site Clearance	3 %
Class E	Earthworks	
	- Excavation	5 %
	- Haulage	5 %
	- Disposal	12 %
	- Backfilling	4 %
Class F-X	(A number of minor work classes)	0 %
-	Provisional Sums	5 %
-	Abnormal Costs	1 %
		<u>100 %</u>

### Site study 3

A recently completed project involving site remedial work to a former gas works site by the dig and dump and soil washing/bioremediation approach (5,000m<sup>3</sup> sent to hazardous landfill) analyses as follows (the Class references are from CESMM3):

Class A	General Items	14 %
Class B	Ground Investigation	5 %
Class C	Geotechnical Services (alternative technique)	34 %
Class D	Demolition and Site Clearance	5 %
Class E	Earthworks	
	- Excavation	6 %
	- Haulage	7 %
	- Disposal	15 %
	- Backfilling	5 %
Class F-X	(A number of minor work classes)	2 %
-	Provisional Sums	6 %
-	Abnormal Costs	1 %
		<u>100 %</u>

#### Class A General Items

Remedial works contracts generally show a high level of preliminaries, perhaps around the 30-40% mark for relatively small projects, mainly due to the high costs of Health and Safety and temporary works when dealing with contamination. The tables below demonstrate the spread of costs on three site studies included as examples. Over and above the normal site establishment costs included within Part 4 Class A; a number of the following items may need to be included.

- Protective clothing and footwear / site safety inductions
- Hygiene / Decontamination Unit
- Occupational health checks (office staff as well as site labour)
- Bath wheel wash facility
- Weighbridge facility with auto ticketing
- Scaffold gantry for safe covering of wagons
- Steel storage tanks for contaminated liquids
- Temporary fencing between clean and dirty areas and around excavations
- Administration connected with special waste taxes, licenses, etc.
- Portable on-site laboratory
- Dust suppression
- Odour suppression
- Vibration monitoring

#### Class B Ground Investigation

A further 3 - 9% can be spent on carrying out the site testing and validation sampling. There is a direct connection between a client spending more money on adequate site investigations and reducing the risk of there being something unforeseen and untoward on the site. This section covers items such as trial pits and trenches, light cable percussion boreholes, laboratory testing which are carried out as part of the remediation contract to prove the ground has been cleaned to an acceptable standard. Indicative costs for testing can be found in Part 4 Class B. Long term ground water monitoring may also be required.

### **Class C Geotechnical Services**

As part of the remediation strategy it may be deemed necessary by the site engineer to use diaphragm walls, ground anchorages, ground consolidation techniques, grout holes, etc. Indicative costs are included within Part 4 Class C.

### **Class D Demolition and Site Clearance**

The costs associated with this section are site dependant and can found in Part 4 Class D.

### **Class E Excavation**

Excavation and backfilling costs can be found within Part 4 Class E. As part of the remediation strategy contaminated material may be deemed acceptable as backfill by mixing with inert material. Costs for the rotovation of material within stockpiles are approximately £1.00/m<sup>3</sup>. Use of clean material to stabilise contaminated sludges/liquids to allow transportation off site will vary depending on the ratio. As a guide, mixing on a 1:1 ratio will cost approximately £4/m<sup>3</sup>. Costs for crushing and screening excavated material are usually expected to be around £6/m<sup>3</sup> and £2/m<sup>3</sup> respectively.

Haulage costs are largely determined by the distances to a licensed tip. A frequently used haulage vehicle will be a 19 tonne payload articulated vehicle, costing say £560 per day including driver and fuel. The cost per load naturally reflects the difficulty of the route. An average 75 miles round trip, with 5 trips being carried out per day would cost £112 per load, or £1.50 per mile. For short distances, the cost per mile could rise to £8.50, reflecting the greater number of trips and hence a greater amount of time in loading and dumping. The haulage cost per m<sup>3</sup> of the disposed material naturally depends on its density. Disposal costs need to be established with the nearest licensed landfill site as they vary depending on the locality and waste classification. On top of this must be included the Special Waste Regulation Charge and consideration as to whether landfill tax is applicable.

## **THE LANDFILL TAX**

### **The Tax**

The Landfill Tax came into operation on 1 October 1996. It is currently levied on operators of licensed landfill sites at the following rates with effect from 1 April 2009:

£2.50 per tonne	Inactive or inert wastes. Included are soil, stones, brick, plain and reinforced concrete, plaster and glass (refer to the table below for a fuller list),
£40.00 per tonne	All other taxable wastes. Included are timber, paint and other organic wastes generally found in demolition work, builders skips etc.

From 1 April 2010 the rate for "all other taxable wastes" will be increased to £48 per tonne.

The government stated in the 2009 Budget that the standard rate of tax will increase by £8 per tonne in subsequent years to a rate of £72 per tonne by 2013. The lower rate for "inactive or inert wastes" will be frozen at £2.50 per tonne to 2010/11.

Mixtures containing wastes not classified as inactive or inert will not qualify for the lower rate of tax unless the amount of non-qualifying material is small and there is no potential for pollution. Water can be ignored and the weight discounted.

Following the introduction of new Waste Acceptance Criteria from July 2005, certain wastes are not accepted by licensed landfills. These include high concentration coal tars.

**Waste liable at the lower rate**

<b>Group</b>	<b>Description of material</b>	<b>Conditions</b>	
1	Rocks and soils	Naturally occurring	Rocks and soils includes clay, sand, gravel, sandstone, limestone, crushed stone, china clay, construction stone, stone from the demolition of buildings or structures, slate, topsoil, peat, silt and dredgings  Glass includes fritted enamel, but excludes glass fibre and glass reinforced plastics.
2	Ceramic or concrete materials		Ceramics includes bricks, bricks and mortar, tiles, clay ware, pottery, china and refractories  Concrete includes reinforced concrete, concrete blocks, breeze blocks and aircrete blocks, but excludes concrete plant washings
3	Minerals	Processed or prepared, not used	Moulding sands excludes sands containing organic binders Clays includes moulding clays and clay absorbents, including Fuller's earth and bentonite  Man-made mineral fibres includes glass fibres, but excludes glass-reinforced plastic and asbestos  Silica, mica and mineral abrasives
4	Furnace slags		Vitrified wastes and residues from thermal processing of minerals where, in either case, the residue is both fused and insoluble slag from waste incineration
5	Ash		Comprises only bottom ash and fly ash from wood, coal or Waste combustion Excludes fly ash from municipal, clinical, and hazardous waste incinerators and sewage sludge incinerators
6	Low activity inorganic compound		Comprises only titanium dioxide, calcium carbonate, magnesium carbonate, magnesium oxide, magnesium hydroxide, iron oxide, ferric hydroxide, aluminium oxide, aluminium hydroxide & zirconium dioxide
7	Calcium sulphate	Disposed of either at a site not licensed to take putrescible waste or in a containment cell which takes only calcium sulphate	Includes gypsum and calcium sulphate based plasters, but excludes plasterboard
8	Calcium hydroxide and brine	Deposited in brine cavity	
9	Water	Containing other qualifying material in suspension	

**Volume to weight conversion factors (for estimating purposes)**

To convert inactive or inert waste (i.e. largely water insoluble and non or very slowly biodegradable: e.g. sand, subsoil, concrete, bricks, mineral fibres, fibreglass etc.), multiply the measured volume in cubic metres by 1.9 to calculate the weight in tonnes.

**Calculating the weight of waste**

There are two options:

- If licensed sites have a weighbridge, tax will be levied on the actual weight of waste.
- If licensed sites do not have a weighbridge, tax will be levied on the permitted weight of the lorry based on an alternative method of calculation based on volume to weight factors for various categories of waste.

**Effect on prices**

The tax is paid by Landfill site operators only. Tipping charges reflect this additional cost.

Apart from the possible incidence of Landfill Tax, the cost of disposal will generally comprise the haulage cost plus a tipping charge which will vary according to the toxicity of the material.

**Exemptions**

The following disposals are exempt from Landfill Tax:

- dredgings which arise from the maintenance of inland waterways and harbours,
- naturally occurring materials arising from mining or quarrying operations,
- inert waste used to restore landfill sites and to fill working and old quarries where a planning condition or obligation is in existence.

However, in the March 2008 Budget the Treasury announced that Landfill Tax Exemption will be phased out by 1 April 2012. Effectively, no new applications for Landfill Tax Exemption are now accepted.



# Unit Costs (Ancillary Building Works)

## INTRODUCTORY NOTES

*This part enables the user to include within the estimate for Ancillary Building Works which may be associated with a Civil Engineering project but, because of the diversity which can occur on the specification for these works cannot be priced as accurately as unit cost items.*

*Additionally, as such works form only a minor percentage of an overall Civil Engineering budget, then the need for such accuracy is not as critical. Therefore the rates given within this Part 7 are based upon an average range for each item to allow the user discretionary use based upon more detailed knowledge of the specific project. Should however more detailed pricing information be required then reference should be made to the latest edition of:*

***SPON'S ARCHITECTS' AND BUILDERS' PRICE BOOK***

***SPON'S EXTERNAL WORKS AND LANDSCAPE PRICE BOOK***

***SPON'S MECHANICAL AND ELECTRICAL SERVICES PRICE BOOK***

*Also included in this Part are items which allow the user to prepare order of cost estimates for various areas of Civil Engineering Works more accurately than by using Part 12: Approximate Estimates but without the necessity to complete a full cost estimate.*

*Adjustments should be made to the rates shown to allow for time, location, local conditions, site constraints and any other factors likely to affect the cost of the specific project.*





## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUBSTRUCTURE</b>			
<b>Trench fill foundations</b>			
Machine excavation, disposal, plain insitu concrete 21 N/mm <sup>2</sup> - 20mm aggregate (1:2:4) trench fill, 300mm high brickwork in cement mortar (1:3), pitch polymer damp proof course with common bricks: width and depth of concrete 600mm x 1200mm			
half brick wall	m	86.18	to 105.33
one brick wall	m	98.29	to 120.13
cavity wall	m	100.27	to 122.55
width and depth of concrete 750mm x 1200mm			
half brick wall	m	102.25	to 131.09
one brick wall	m	117.27	to 143.33
cavity wall	m	117.27	to 143.33
<b>Strip foundations</b>			
Excavate trench, partial backfill, partial disposal, earthwork support (risk item), compact base of trench, plain in-situ concrete 21 N/mm <sup>2</sup> - 20 mm aggregate (1:2:4) 250 mm thick, formwork, common brickwork in cement mortar (1:3), pitch polymer damp proof course; one brick thick, 600mm foundation, and english bond hand excavation, depth of wall:			
600 mm	m	87.23	to 106.61
900 mm	m	107.25	to 131.09
1200 mm	m	138.34	to 169.08
1500 mm	m	163.39	to 199.69
machine excavation, depth of wall:			
600 mm	m	87.23	to 106.61
900 mm	m	107.25	to 131.09
1200 mm	m	138.34	to 169.08
1500 mm	m	163.39	to 199.69
cavity, 750 mm foundation and stretcher bond Hand excavation, depth of wall:			
600 mm	m	87.23	to 106.61
900 mm	m	107.25	to 131.09
1200 mm	m	138.34	to 169.08
1500 mm	m	163.39	to 199.69
machine excavation, depth of wall:			
600 mm	m	76.16	to 93.08
900 mm	m	102.25	to 124.97
1200 mm	m	127.77	to 149.45
1500 mm	m	143.35	to 175.21
extra over for three courses of facing bricks	m	3.01	to 3.67
<b>Column bases</b>			
Excavate pit in firm ground, partial backfill, partial disposal, earth work support, compact base of pit, plain in-situ concrete 21 N/mm <sup>2</sup> - 20 mm aggregate (1:2:4), formwork			
depth of pit - 1200mm			
hand excavation, base size:			
600 x 600 x 300 mm	nr	66.14	to 80.84
900 x 900 x 450 mm	nr	135.32	to 165.39
1200 x 1200 x 450 mm	nr	208.44	to 254.76
1500 x 1500 x 600 mm	nr	375.91	to 459.45
machine excavation, base size:			
600 x 600 x 300 mm	nr	52.17	to 63.77
900 x 900 x 450 mm	nr	114.24	to 139.62
1200 x 1200 x 450 mm	nr	167.46	to 204.68
1500 x 1500 x 600 mm	nr	312.80	to 382.31

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUBSTRUCTURE - cont'd</b>			
<b>Column bases - cont'd</b>			
depth of pit - 1800mm			
hand excavation, base size:			
600 x 600 x 300 mm	nr	84.20	to 102.91
900 x 900 x 450 mm	nr	157.32	to 192.28
1200 x 1200 x 450 mm	nr	261.68	to 319.83
1500 x 1500 x 600 mm	nr	438.10	to 535.46
machine excavation, base size:			
600 x 600 x 300 mm	nr	65.22	to 79.72
900 x 900 x 450 mm	nr	124.25	to 151.87
1200 x 1200 x 450 mm	nr	188.42	to 230.29
1500 x 1500 x 600 mm	nr	340.87	to 416.61
Excavate pit in firm ground by machine, partial backfill, partial disposal, earth work support, compact base of pit, plain in-situ concrete 21 N/mm <sup>2</sup> - 20 mm aggregate (1:2:4), formwork			
depth of pit - 1200mm			
reinforcement at 50 kg/m <sup>3</sup> concrete, base size:			
1750 x 1750 x 500 mm	nr	354.44	to 433.20
2000 x 2000 x 500 mm	nr	437.45	to 534.66
2200 x 2200 x 600 mm	nr	646.94	to 790.70
2400 x 2400 x 600 mm	nr	751.03	to 917.93
reinforcement at 75 kg/m <sup>3</sup> concrete, base size			
1750 x 1750 x 500 mm	nr	375.52	to 458.96
2000 x 2000 x 500 mm	nr	470.39	to 574.92
2200 x 2200 x 600 mm	nr	678.56	to 829.36
2400 x 2400 x 600 mm	nr	794.51	to 971.07
depth of pit - 1800mm			
reinforcement at 50 kg/m <sup>3</sup> concrete, base size:			
1750 x 1750 x 500 mm	nr	396.59	to 484.73
2000 x 2000 x 500 mm	nr	491.46	to 600.68
2200 x 2200 x 600 mm	nr	710.19	to 868.01
2400 x 2400 x 600 mm	nr	814.28	to 995.23
reinforcement at 75 kg/m <sup>3</sup> concrete, base size			
1750 x 1750 x 500 mm	nr	416.36	to 508.88
2000 x 2000 x 500 mm	nr	521.77	to 637.71
2200 x 2200 x 600 mm	nr	729.95	to 892.17
2400 x 2400 x 600 mm	nr	855.13	to 1045.15
<b>Pile caps</b>			
Excavate pit in firm ground by machine, partial backfill, partial disposal, earthwork support, compact base of pit, cut off top of pile and prepare reinforcement, reinforced insitu concrete 26 N/mm <sup>2</sup> - 20 mm aggregate(1:2:4), formwork			
depth of pit - 1500mm			
reinforcement at 50 kg/m <sup>3</sup> concrete, cap size			
900 x 900 x 1400 mm, one pile	nr	335.35	to 407.43
2700 x 900 x 1400 mm, two piles	nr	834.04	to 1019.38
*2700 x 2475 x 1400 mm, three piles	nr	1513.93	to 1850.35
2700 x 2700 x 1400 mm, four piles	nr	1930.28	to 2359.24
3700 x 2700 x 1400 mm, six piles	nr	2608.85	to 3188.59
reinforcement at 75 kg/m <sup>3</sup> concrete, cap size			
900 x 900 x 1400 mm, one pile	nr	335.35	to 407.43
2700 x 900 x 1400 mm, two piles	nr	834.04	to 1019.38
*2700 x 2475 x 1400 mm, three piles	nr	1533.69	to 1874.51
2700 x 2700 x 1400 mm, four piles	nr	2084.45	to 2547.66
3700 x 2700 x 1400 mm, six piles	nr	2760.37	to 3373.79

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
depth of pit - 2100mm reinforcement at 50 kg/m <sup>3</sup> concrete, cap size			
900 x 900 x 1400 mm, one pile	nr	354.44	to 433.20
2700 x 900 x 1400 mm, two piles	nr	855.13	to 1045.15
*2700 x 2475 x 1400 mm, three piles	nr	1565.31	to 1913.15
2700 x 2700 x 1400 mm, four piles	nr	1996.16	to 2439.76
3700 x 2700 x 1400 mm, six piles	nr	2760.37	to 3373.79
reinforcement at 75 kg/m <sup>3</sup> concrete, cap size			
900 x 900 x 1400 mm, one pile	nr	353.12	to 431.59
2700 x 900 x 1400 mm, two piles	nr	885.43	to 1082.19
*2700 x 2475 x 1400 mm, three piles	nr	1666.76	to 2037.16
2700 x 2700 x 1400 mm, four piles	nr	2109.47	to 2578.25
3700 x 2700 x 1400 mm, six piles	nr	2923.76	to 3573.48
* = triangular on plan, overall size given			
additional cost of alternative strength concrete			
30N/mm <sup>2</sup>	m <sup>3</sup>	1.45	to 1.77
40N/mm <sup>2</sup>	m <sup>3</sup>	3.56	to 4.35
<b>Strip or base foundations</b>			
Foundations in good ground; reinforced concrete bed; for one storey development			
shallow foundations per m <sup>2</sup> ground floor plan area	m <sup>2</sup>	69.10	to 92.96
deep foundations per m <sup>2</sup> ground floor plan area	m <sup>2</sup>	115.80	to 138.64
Foundations in good ground; reinforced concrete bed; for two storey development			
shallow foundations per m <sup>2</sup> ground floor plan area	m <sup>2</sup>	80.81	to 126.93
deep foundations per m <sup>2</sup> ground floor plan area	m <sup>2</sup>	126.93	to 197.64
Extra for each additional storey	m <sup>2</sup>	27.82	to 32.35
<b>Raft foundations</b>			
Raft on poor ground for development			
one storey per m <sup>2</sup> ground floor plan area	m <sup>2</sup>	92.96	to 161.48
two storey per m <sup>2</sup> ground floor plan area	m <sup>2</sup>	149.77	to 161.48
Extra for each additional storey	m <sup>2</sup>	27.82	to 32.35
<b>Piled foundations</b>			
Foundations in poor ground; reinforced concrete slab; for one storey commercial development per m <sup>2</sup> ground floor plan area			
short bore piles to columns only	m <sup>2</sup>	115.80	to 174.80
short bore piles	m <sup>2</sup>	149.77	to 197.64
fully piled	m <sup>2</sup>	194.64	to 277.28
Alternative concrete mixes in lieu of 21.00N/m <sup>2</sup> - 20 mm aggregate (1:2:4); per m <sup>2</sup> ground floor plan area			
25 N/mm <sup>2</sup>	m <sup>2</sup>	0.59	to 0.86
30 N/mm <sup>2</sup>	m <sup>2</sup>	0.82	to 1.23
40 N/mm <sup>2</sup>	m <sup>2</sup>	1.45	to 2.14

**ANCILLARY BUILDING WORKS**

Item	Unit	Range £	
<b>SUBSTRUCTURE - cont'd</b>			
<b>Ground slabs</b>			
(per m <sup>2</sup> ground floor area)			
Mechanical excavation to reduce levels, disposal, level and compact, hardcore bed blinded with sand, 1200 gauge polythene damp proff membrane, concrete 21.00N/mm <sup>2</sup> - 20 mm aggregate (1:2:4) ground slab, tamped bed 200mm thick concrete slab; thickness of hardcore bed			
150 mm	m <sup>2</sup>	<b>42.17</b>	to <b>51.54</b>
175 mm	m <sup>2</sup>	<b>44.14</b>	to <b>53.94</b>
200 mm	m <sup>2</sup>	<b>44.14</b>	to <b>53.94</b>
300mm thick concrete slab; thickness of hardcore bed			
150 mm	m <sup>2</sup>	<b>50.07</b>	to <b>61.19</b>
175 mm	m <sup>2</sup>	<b>52.17</b>	to <b>63.77</b>
200 mm	m <sup>2</sup>	<b>52.17</b>	to <b>63.77</b>
450mm thick concrete slab; thickness of hardcore bed			
150 mm	m <sup>2</sup>	<b>65.22</b>	to <b>79.72</b>
175 mm	m <sup>2</sup>	<b>67.19</b>	to <b>82.13</b>
200 mm	m <sup>2</sup>	<b>67.19</b>	to <b>82.13</b>
Add to the foregoing prices for fabric reinforcement BS 4483, lapped; per m <sup>2</sup> ground floor plan area			
A142 (2.22 kg/m <sup>2</sup> ); 1 layer	m <sup>2</sup>	<b>4.21</b>	to <b>5.15</b>
A142 (2.22 kg/m <sup>2</sup> ); 2 layers	m <sup>2</sup>	<b>6.19</b>	to <b>7.57</b>
A193 (3.02 kg/m <sup>2</sup> ); 1 layer	m <sup>2</sup>	<b>4.21</b>	to <b>5.15</b>
A193 (3.02 kg/m <sup>2</sup> ); 2 layers	m <sup>2</sup>	<b>7.25</b>	to <b>8.86</b>
A252 (3.95 kg/m <sup>2</sup> ); 1 layer	m <sup>2</sup>	<b>5.27</b>	to <b>6.45</b>
A252 (3.95 kg/m <sup>2</sup> ); 2 layers	m <sup>2</sup>	<b>8.43</b>	to <b>10.31</b>
A393 (6.16 kg/m <sup>2</sup> ); 1 layer	m <sup>2</sup>	<b>6.19</b>	to <b>7.57</b>
A393 (6.16 kg/m <sup>2</sup> ); 2 layers	m <sup>2</sup>	<b>12.38</b>	to <b>15.14</b>
High yield bent bar reinforcement BS 4449 ; per m <sup>2</sup> ground floor plan area at a rate of			
25 kg/m <sup>2</sup>	m <sup>2</sup>	<b>5.27</b>	to <b>6.45</b>
50 kg/m <sup>2</sup>	m <sup>2</sup>	<b>9.49</b>	to <b>11.59</b>
75 kg/m <sup>2</sup>	m <sup>2</sup>	<b>14.63</b>	to <b>17.88</b>
100 kg/m <sup>2</sup>	m <sup>2</sup>	<b>18.85</b>	to <b>23.03</b>
<b>Other foundations/alternative slabs/extras</b>			
Reinforced concrete bed including excavation and hardcore; per m <sup>2</sup> ground floor plan area			
150 mm thick	m <sup>2</sup>	<b>41.72</b>	to <b>53.44</b>
200 mm thick	m <sup>2</sup>	<b>55.63</b>	to <b>71.88</b>
300 mm thick	m <sup>2</sup>	<b>69.10</b>	to <b>97.50</b>
Extra per m <sup>2</sup> ground floor plan area for			
sound reducing quil in screed	m <sup>2</sup>	<b>4.39</b>	to <b>7.76</b>
50 mm inslutaion under slab and at edge	m <sup>2</sup>	<b>7.17</b>	to <b>10.54</b>
75 mm inslutaion under slab and at edge	m <sup>2</sup>	<b>8.93</b>	to <b>13.32</b>
suspended precast concrete slabs in lieu of in-situ slab	m <sup>2</sup>	<b>18.89</b>	to <b>24.01</b>

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE</b>			
<b>FRAME AND UPPER FLOORS</b>			
Reinforced in-situ concrete columns at 30 N/mm <sup>2</sup> ; bar reinforcement at 200 kg/m <sup>3</sup> ; basic formwork (assumed four uses) ; column size			
225 x 225 mm	m	48.75	to 59.59
300 x 300 mm	m	68.52	to 83.74
300 x 450 mm	m	94.87	to 115.95
300 x 600 mm	m	115.95	to 141.71
450 x 450 mm	m	122.54	to 149.77
In-situ concrete casing to steel column at 30 N/mm <sup>2</sup> , basic framework (assumed four uses), column size			
225 x 225 mm	m	46.12	to 56.36
300 x 300 mm	m	64.57	to 78.91
300 x 450 mm	m	85.64	to 104.68
300 x 600 mm	m	102.77	to 125.61
450 x 450 mm	m	104.09	to 127.23
450 x 600 mm	m	129.12	to 157.82
450 x 900 mm	m	175.24	to 214.18
Reinforced in-situ concrete isolated beams at 30 N/mm <sup>2</sup> ; bar reinforcement at 200 kg/m <sup>3</sup> basic formwork (assumed four uses); beam size			
225 x 450 mm	m	85.64	to 104.68
225 x 600 mm	m	106.72	to 130.44
300 x 600 mm	m	122.54	to 149.77
300 x 900 mm	m	173.93	to 212.58
300 x 1200 mm	m	202.01	to 246.91
450 x 600 mm	m	156.80	to 191.64
450 x 900 mm	m	218.72	to 267.32
450 x 1200 mm	m	278.01	to 339.79
600 x 600 mm	m	195.00	to 238.34
600 x 900 mm	m	262.21	to 320.47
600 x 1200 mm	m	335.99	to 406.55
In-situ concrete casing to steel attached beams at 30 N/mm <sup>2</sup> ; basic formwork (assumed four uses) ; beam size			
225 x 450 mm	m	77.74	to 95.02
225 x 600 mm	m	98.82	to 120.78
300 x 600 mm	m	112.00	to 136.88
300 x 900 mm	m	154.16	to 188.42
300 x 1200 mm	m	195.00	to 238.34
450 x 600 mm	m	135.71	to 165.87
450 x 900 mm	m	188.42	to 230.29
450 x 1200 mm	m	237.17	to 289.87
600 x 600 mm	m	165.65	to 206.13
600 x 900 mm	m	222.68	to 272.16
600 x 1200 mm	m	278.01	to 339.79
Extra smooth finish formwork; all categories	m	5.86	to 16.84
<b>Softwood joisted floor; no frame</b>			
Joisted floor; no frame; 22 mm chipboard t & g flooring; herring bone strutting; no coverings or finishes ; per m <sup>2</sup> of upper floor area			
150 x 50 mm joists	m <sup>2</sup>	32.21	to 38.06
175 x 50 mm joists	m <sup>2</sup>	36.60	to 43.92
200 x 50 mm joists	m <sup>2</sup>	38.06	to 43.92
225 x 50 mm joists	m <sup>2</sup>	40.99	to 45.38
250 x 50 mm joists	m <sup>2</sup>	43.92	to 48.31
275 x 50 mm joists	m <sup>2</sup>	48.31	to 54.17

### ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>FRAME AND UPPER FLOORS - cont'd</b>			
<b>Softwood joisted floor; no frame - cont'd</b>			
Softwood joisted floor; average depth; plasterboard; skim; emulsion; vinyl flooring and painted softwood skirtings ; per m <sup>2</sup> of upper floor area	m <sup>2</sup>	76.13 to	98.09
Joisted floor; no frame; 22 mm chipboard t & g flooring; herring bone strutting; no coverings or finishes ; per m <sup>2</sup> of upper floor area			
150 x 50 mm joists	m <sup>2</sup>	32.21 to	38.06
175 x 50 mm joists	m <sup>2</sup>	36.60 to	43.92
200 x 50 mm joists	m <sup>2</sup>	38.06 to	43.92
225 x 50 mm joists	m <sup>2</sup>	40.99 to	45.38
250 x 50 mm joists	m <sup>2</sup>	43.92 to	48.31
275 x 50 mm joists	m <sup>2</sup>	48.31 to	54.17
Softwood joisted floor; average depth; plasterboard; skim; emulsion; vinyl flooring and painted softwood skirtings ; per m <sup>2</sup> of upper floor area			
<b>Reinforced concrete floors; no frame</b>			
Suspended slab; no coverings or finishes; per m <sup>2</sup> of upper floor area			
2.75 m span; 8.00 KN/m <sup>2</sup> loading	m <sup>2</sup>	62.95 to	74.66
3.35 m span; 8.00 KN/m <sup>2</sup> loading	m <sup>2</sup>	71.74 to	84.91
4.25 m span; 8.00 KN/m <sup>2</sup> loading	m <sup>2</sup>	89.30 to	105.41
Suspended slab; no coverings or finishes; per m <sup>2</sup> of upper floor area			
150 mm thick	m <sup>2</sup>	84.91 to	122.98
225 mm Thick	m <sup>2</sup>	133.22 to	150.79
<b>Reinforced concrete floors and frame</b>			
Suspended slab; average depth; no coverings or finishes ; per m <sup>2</sup> of upper floor area			
up to six storeys	m <sup>2</sup>	162.50 to	218.14
Wide span suspended slab with frame; per m <sup>2</sup> of upper floor area			
up to six storeys	m <sup>2</sup>	183.00 to	225.46
<b>Reinforced concrete floors; steel frame</b>			
Suspended slab; average depth; 'Holorib' permanent steel shuttering; protected steel frame; no coverings or finishes; per m <sup>2</sup> of upper floor area			
up to six storeys	m <sup>2</sup>	218.14 to	267.91
Extra for spans 7.5 to 15 m	m <sup>2</sup>	24.89 to	67.34
Suspended slab; average depth; prtected steel frame; no coverings or finishes; per m <sup>2</sup> of upper floor area			
up to six storeys	m <sup>2</sup>	207.89 to	278.16
Suspended slab; 75 mm screed; no coverings or finishes ; per m <sup>2</sup> of upper floor area			
3 m span; 8.50 KN/m <sup>2</sup> loading	m <sup>2</sup>	67.34 to	77.59
6 m span; 8.50 KN/m <sup>2</sup> loading	m <sup>2</sup>	71.74 to	81.98
7.5 m span; 8.50 KN/m <sup>2</sup> loading	m <sup>2</sup>	74.66 to	84.91
3 m span; 12.50 KN/m <sup>2</sup> loading	m <sup>2</sup>	80.52 to	89.30
6 m span; 12.50 KN/m <sup>2</sup> loading	m <sup>2</sup>	65.88 to	95.16
<b>Precast concrete floors; reinforced concrete frame</b>			
Suspended slab; average depth; no coverings or finishes ; per m <sup>2</sup> of upper floor area	m <sup>2</sup>	106.87 to	140.54

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>Precast concrete floors; steel frame</b>			
Suspended slabs; average depth; protected steel frame; no coverings or finishes; per m <sup>2</sup> of upper floor area up to six storeys	m <sup>2</sup>	193.25 to	247.42
Extra per m <sup>2</sup> of upper floor area for wrought formwork	m <sup>2</sup>	4.54 to	5.42
sound reducing quilt in screed	m <sup>2</sup>	4.83 to	8.64
insulation to avoid cold bridging	m <sup>2</sup>	8.64 to	11.86
<b>ROOF</b>			
<b>Softwood flat roofs</b>			
Roof joists; average depth; 25 mm softwood boarding; PVC rainwater goods; plasterboard; skim and emulsion ; per m <sup>2</sup> of roof plan area	m <sup>2</sup>	102.48 to	128.83
three layer felt and chippings	m <sup>2</sup>	98.09 to	142.01
two coat asphalt and chippings			
<b>Softwood trussed pitched roofs</b>			
Structure only comprising 100 x 38 mm Fink trusses @ 600 mm centres (measured on plan) ; per m <sup>2</sup> of roof plan area			
30° pitch	m <sup>2</sup>	24.89 to	29.28
35° pitch	m <sup>2</sup>	26.35 to	29.28
40° pitch	m <sup>2</sup>	27.82 to	33.67
Fink roof trusses; narrow span; 100 mm insulation; PVC rainwater goods; plasterboard; skim and emulsion per m <sup>2</sup> or roof plan area			
concrete interlocking tile coverings	m <sup>2</sup>	105.41 to	142.01
clay pantile coverings	m <sup>2</sup>	114.19 to	150.79
composition slate coverings	m <sup>2</sup>	120.05 to	156.65
plain clay tile coverings	m <sup>2</sup>	142.01 to	180.07
natural slate coverings	m <sup>2</sup>	150.79 to	188.86
reconstructed stone coverings	m <sup>2</sup>	122.98 to	196.18
Monopitch roof trusses; 100 mm insulation; PVC rainwater goods; platerboard; skim and emulsion ; per m <sup>2</sup> of roof plan area			
concrete interlocking tile coverings	m <sup>2</sup>	127.37 to	150.79
clay pantile coverings	m <sup>2</sup>	124.44 to	156.65
composition slate coverings	m <sup>2</sup>	131.76 to	166.90
plain clay tile coverings	m <sup>2</sup>	150.79 to	191.78
natural slate coverings	m <sup>2</sup>	156.65 to	196.18
reconstructed stone coverings	m <sup>2</sup>	128.83 to	204.96
<b>Steel trussed pitched roofs</b>			
Steel roof trusses and beams; thermal and accoustic insulations; per m <sup>2</sup> of roof plan area			
aluminium profiled composite cladding	m <sup>2</sup>	272.30 to	323.54
Steel roof and glulam beams; thermal and accoustic insulation; per m <sup>2</sup> of roof plan area			
aluminium profiled composite cladding	m <sup>2</sup>	272.30 to	360.14

### ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>ROOF - cont'd</b>			
<b>Concrete flat roofs</b>			
Structure only comprising reinforced concrete suspended slab; no coverings or finishes ; per m <sup>2</sup> of roof plan area			
3.65 m span; 8.00 KN/m <sup>2</sup> loading	m <sup>2</sup>	67.34	70.27
4.25 m span; 8.00 KN/m <sup>2</sup> loading	m <sup>2</sup>	80.52	84.91
Precast concrete suspended slab; average depth; 100 mm insulation; PVC rainwater goods; per m <sup>2</sup> of roof plan area			
two coat asphalt coverings and chippings	m <sup>2</sup>	122.98	171.29
Reinforced concrete or waffle suspended slabs; average depth; 100 mm insulation; PVC rainwater goods; per m <sup>2</sup> of roof plan area			
two coat asphalt coverings and chippings	m <sup>2</sup>	133.22	175.68
Reinforced concrete suspended slabs; on 'Holorib' permanent steel shuttering; average depth; 100 mm insulation; PVC rainwater goods; per m <sup>2</sup> of roof area			
two coat asphalt coverings and chippings	m <sup>2</sup>	124.44	149.33
<b>Flat roof decking and finishes</b>			
Woodwool roof decking; per m <sup>2</sup> of roof plan area			
50 mm thick; two coat asphalt coverings to BS 6925 and chippings	m <sup>2</sup>	55.63	70.27
Galvanised steel roof decking; 100 mm insulation; three layer felt roofing and chippings ; per m <sup>2</sup> of roof plan area			
0.7 mm thick; 3.74 m span	m <sup>2</sup>	61.49	76.13
0.7 mm thick; 5.13 m span	m <sup>2</sup>	62.95	79.06
Aluminium roof decking; 100 mm insulation; three layer felt roofing and chippings ; per m <sup>2</sup> of roof plan area			
0.9 mm thick; 2.34 m span	m <sup>2</sup>	71.74	87.84
Metal decking; 100 mm insulation; on wood/steel open lattice beams; per m <sup>2</sup> of roof plan area			
three layer felt roofing and chippings	m <sup>2</sup>	106.87	131.76
two layer higher performance felt roofing and chippings	m <sup>2</sup>	111.26	133.22
<b>Roof claddings</b>			
Non-asbestos profiled cladding; per roof plan area			
'profile 3'; natural	m <sup>2</sup>	18.45	22.84
'profile 6'; natural	m <sup>2</sup>	20.50	25.03
'profile 6'; natural; insulated; inner lining panel	m <sup>2</sup>	22.84	25.03
Extra for colours	m <sup>2</sup>	2.05	2.64
Non-asbestos profiled cladding on steel purlins; per m <sup>2</sup> of roof plan area			
Insulated	m <sup>2</sup>	36.16	45.68
Insulated; with 10% translucent sheets	m <sup>2</sup>	40.70	47.87
Insulated; plasterboard inner lining on metal tees	m <sup>2</sup>	59.00	69.10
PVF2 coated galvanised steel profiled cladding on steel purlins; per m <sup>2</sup> of roof plan area			
cladding only; 0.72mm thick	m <sup>2</sup>	25.03	36.16
Insulated	m <sup>2</sup>	44.07	65.73
Insulated; plasterboard inner lining on metal tees	m <sup>2</sup>	65.73	93.55
Insulated; plasterboard inner lining on metal tees; with 1% fire vents	m <sup>2</sup>	76.86	115.80
Insulated; plasterboard inner lining on metal tees; with 2.5% fire vents	m <sup>2</sup>	95.75	133.66
Insulated; coloured inner lining panel	m <sup>2</sup>	67.93	95.75
Insulated; coloured inner lining panel; with 1% fire vents	m <sup>2</sup>	76.86	106.87
Insulated; coloured inner lining panel; with 2.5% fire vents	m <sup>2</sup>	95.75	124.73
Insulated; sandwich panel	m <sup>2</sup>	142.59	249.59



## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>Rooflights/patent glazing and glazed roofs</b>			
Rooflights			
standard pvc	m <sup>2</sup>	159.58	to 285.48
feature/ventilating	m <sup>2</sup>	285.48	to 524.11
Patent glazing; including flashings			
Standard aluminium georgian wired; single glazed	m <sup>2</sup>	204.96	to 285.48
Standard aluminium georgian wired; double glazed	m <sup>2</sup>	238.63	to 329.40
<b>Comparitive over/underlays</b>			
Roofing felt; unreinforced			
sloping (measured on face)	m <sup>2</sup>	1.83	to 2.39
Roofing felt; reinforced			
sloping (measured on face)	m <sup>2</sup>	2.27	to 2.61
sloping (measured on plan) 20° pitch	m <sup>2</sup>	2.61	to 3.29
sloping (measured on plan) 30° pitch	m <sup>2</sup>	2.85	to 3.67
sloping (measured on plan) 40° pitch	m <sup>2</sup>	3.67	to 4.11
Building paper; per m <sup>2</sup> of roof plan area	m <sup>2</sup>	1.58	to 3.29
Vapour barrier; per m <sup>2</sup> of roof plan area	m <sup>2</sup>	2.39	to 7.13
Insulation quilt; laid over ceiling joists ; per m <sup>2</sup> of roof plan area			
100 mm thick	m <sup>2</sup>	5.34	to 5.68
150 mm thick	m <sup>2</sup>	7.35	to 8.24
200 mm thick	m <sup>2</sup>	9.79	to 10.69
Wood fibre insulation boards; impregnated; density 220 - 350 kg/m <sup>3</sup> ; per m <sup>2</sup> of roof plan area			
12.7 mm thick	m <sup>2</sup>	6.57	to 9.14
Limestone ballast; per m <sup>2</sup> of roof plan area	m <sup>2</sup>	7.17	to 12.30
Polyurethane insulation boards; density 32 kg/m <sup>3</sup> ; per m <sup>2</sup> of roof plan area			
30 mm thick	m <sup>2</sup>	10.25	to 12.30
50 mm thick	m <sup>2</sup>	12.30	to 12.74
Glass fibre insulation boards; density 120 - 130 kg/m <sup>2</sup> ; per m <sup>2</sup> of roof plan area			
60 mm thick	m <sup>2</sup>	18.89	to 22.84
Extruded polystyrene foam boards; per m <sup>2</sup> of roof plan area			
50 mm thick	m <sup>2</sup>	17.86	to 20.50
50 mm thick; with cement topping	m <sup>2</sup>	28.99	to 32.79
75 mm thick	m <sup>2</sup>	23.42	to 26.21
Screeds to receive roof coverings; per m <sup>2</sup> of roof plan area			
50mm cement and sand screed	m <sup>2</sup>	11.86	to 13.32
60 mm (av.) 'isocrete K' screed; density 500 kg/m <sup>3</sup>	m <sup>2</sup>	12.74	to 13.76
75 mm lightweight bituminous screed and vapour barrier	m <sup>2</sup>	19.91	to 22.84
100 mm lightweight bituminous screed and vapour barrier	m <sup>2</sup>	24.45	to 27.23
50 mm Woodwool slabs; unreinforced			
Sloping (measured on face)	m <sup>2</sup>	10.25	to 13.91
Sloping (measured on plan); 20° pitch	m <sup>2</sup>	11.27	to 15.37
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	12.44	to 16.84
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	15.37	to 20.86
50 mm Woodwool slabs; unreinforced; on and including steel purlins at 600 mm centres	m <sup>2</sup>	12.74	to 16.40
25 mm 'Tanalised' softwood boarding			
Sloping (measured on face)	m <sup>2</sup>	17.42	to 19.91
Sloping (measured on plan); 20° pitch	m <sup>2</sup>	18.89	to 21.67
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	22.84	to 26.21
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	27.23	to 29.57
18 mm External quality plywood boarding			
Sloping (measured on face)	m <sup>2</sup>	22.11	to 26.79
Sloping (measured on plan); 20° pitch	m <sup>2</sup>	24.45	to 28.40
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	29.57	to 35.14
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	35.14	to 39.53

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>ROOF - cont'd</b>			
<b>Comparative tiling and slating finishes/perimeter treatments (including underfelt, battening, eaves courses and ridges)</b>			
Concrete troughed interlocking tiles; 413 x 300 mm; 75 mm lap			
Sloping (measured on face)	m <sup>2</sup>	21.08	to 26.21
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	27.23	to 32.79
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	32.79	to 36.16
Concrete troughed interlocking slates; 430 x 330 mm; 75 mm lap			
Sloping (measured on face)	m <sup>2</sup>	22.11	to 26.79
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	24.01	to 33.38
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	32.79	to 36.75
Concrete bold roll interlocking tiles; 418 x 332 mm; 75 mm lap			
Sloping (measured on face)	m <sup>2</sup>	21.08	to 26.21
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	27.82	to 32.79
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	31.18	to 35.58
Natural red pantiles; 337 x 241 mm; 76 mm head and 38 mm side laps			
Sloping (measured on face)	m <sup>2</sup>	35.14	to 42.90
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	45.68	to 53.44
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	51.83	to 59.00
Blue composition (non asbestos) slates; 600 x 300 mm; 75 mm lap			
Sloping (measured on face)	m <sup>2</sup>	36.16	to 44.51
Sloping to mansard (measured on face)	m <sup>2</sup>	51.24	to 59.00
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	47.87	to 60.17
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	54.02	to 87.99
Concrete plain tiles; 267 x 165 mm; 64 mm lap			
Sloping (measured on face)	m <sup>2</sup>	42.16	to 50.80
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	52.26	to 63.61
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	63.10	to 78.91
Machine made clay plain tiles; 267 x 165 mm; 64 mm lap			
Sloping (measured on face)	m <sup>2</sup>	55.19	to 65.15
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	68.52	to 81.84
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	83.01	to 97.94
Welsh natural slates; 510 x 255 mm; 76 mm lap			
Sloping (measured on face)	m <sup>2</sup>	61.20	to 79.64
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	79.64	to 95.75
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	93.55	to 102.48
Reconstructed stone slates; random lengths; 80 mm lap			
Sloping (measured on face)	m <sup>2</sup>	38.36	to 72.47
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	47.87	to 93.55
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	56.80	to 106.87
Verges to sloping roofs; 200 x 25 mm painted softwood bargeboard; measured perimeter length			
6 mm 'Masterboard' soffit lining 150 mm wide	m	19.91	to 24.01
19 x 150 mm painted softwood soffit	m	24.01	to 26.79
Eaves to sloping roofs; 200 x 25 mm painted softwood fascia; 6 mm 'Masterboard' soffit lining 225 mm wide; measured perimeter length			
100 mm PVC gutter	m	27.23	to 36.75
150 mm PVC gutter	m	34.55	to 44.51
100 mm cast iron gutter; decorated	m	43.48	to 51.83
150 mm cast iron gutter; decorated	m	52.85	to 61.20

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
Eaves to sloping roofs; 200 x 25 mm painted softwood fascia; 19 x 225 mm painted softwood soffit; measured perimeter length			
100 mm PVC gutter	m	32.79	to 41.14
150 mm PVC gutter	m	40.70	to 49.04
100 mm cast iron gutter; decorated	m	49.04	to 55.63
150 mm cast iron gutter; decorated	m	57.39	to 66.32
Rainwater pipes; fixed to backgrounds; including offsets and shoe measured length of pipes			
68 mm PVC	m	9.52	to 13.62
110 mm PVC	m	14.20	to 31.62
75 mm cast iron; decorated	m	34.55	to 41.14
100 mm cast iron; decorated	m	40.70	to 49.04
Ridges measured length of ridge			
concrete half round tiles	m	19.32	to 24.01
machine-made clay half round tiles	m	24.01	to 28.40
Hips; including mitring roof tiles measured length of hip			
concrete half round tiles	m	25.03	to 32.79
machine-made clay half round tiles	m	35.58	to 40.11
<b>Comparative cladding finishes (including underfelt, labours etc.)</b>			
0.91 mm Aluminium roofing; commercial grade flat	m <sup>2</sup>	55.63	to 62.95
0.91 mm Aluminium roofing; commercial grade ; fixed to boarding (included)			
Sloping (measured on face)	m <sup>2</sup>	58.56	to 68.81
Sloping (measured on plan); 20° pitch	m <sup>2</sup>	65.88	to 76.13
Sloping (measured on plan); 30° pitch	m <sup>2</sup>	79.06	to 90.77
Sloping (measured on plan); 40° pitch	m <sup>2</sup>	93.70	to 102.48
<b>Comparative waterproof finishes/perimeter treatments</b>			
Liquid applied coatings			
solar reflected paint	m <sup>2</sup>	2.05	to 3.66
solar applied bitumen	m <sup>2</sup>	8.20	to 13.32
solar applied co-polymer	m <sup>2</sup>	9.66	to 14.79
solar applied polyurethane	m <sup>2</sup>	15.96	to 21.67
20 mm Two coat asphalt roofing; laid flat; on felt underlay to BS 6925	m <sup>2</sup>	16.98	to 22.11
to BS 6577	m <sup>2</sup>	24.01	to 29.57
Extra for			
Solar reflective paint	m <sup>2</sup>	2.78	to 3.95
limestone chipping finish	m <sup>2</sup>	3.51	to 9.08
grp tiles in hot bitumen	m <sup>2</sup>	38.36	to 47.87
20 mm Two coat reinforced asphaltic compound; laid flat; on felt underlay to BS 6577			
three layer glass fibre roofing	m <sup>2</sup>	22.84	to 28.40
three layer asbestos based roofing	m <sup>2</sup>	28.40	to 32.79
Extra for granite chipping finish	m <sup>2</sup>	3.51	to 8.93
Built-up self-finished asbestos based bitumen felt roofing; laid sloping			
two layer roofing (measured on face)	m <sup>2</sup>	30.60	to 36.75
two layer roofing (measured on plan); 40° pitch	m <sup>2</sup>	46.85	to 51.24
three layer roofing (measured on face)	m <sup>2</sup>	40.70	to 49.04
three layer roofing (measured on plan); 20° pitch	m <sup>2</sup>	61.20	to 67.93
three layer roofing (measured on plan); 30° pitch	m <sup>2</sup>	63.54	to 70.13
Elastomeric single ply roofing; laid flat			
EDPM membrane; laid loose	m <sup>2</sup>	26.79	to 30.60
Butyl rubber membrane; laid loose	m <sup>2</sup>	26.79	to 30.60
Extra for ballast	m <sup>2</sup>	8.20	to 13.32

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>ROOF - cont'd</b>			
<b>Comparative waterproof finishes/perimeter treatments - cont'd</b>			
Thermoplastic single ply roofing; laid flat			
laid loose	m <sup>2</sup>	25.62	to 30.60
mechanically fixed	m <sup>2</sup>	32.79	to 38.36
fully adhered	m <sup>2</sup>	36.16	to 41.14
CPE membrane; laid loose	m <sup>2</sup>	29.57	to 36.16
CSPG membrane; fully adhered	m <sup>2</sup>	29.57	to 36.16
PIB membrane; laid loose	m <sup>2</sup>	33.96	to 41.14
Extra for ballast	m <sup>2</sup>	8.20	to 13.32
High performance built-up felt roofing; laid flat			
three layer 'Ruberglas 120 GP' felt roofing; granite chipping finish	m <sup>2</sup>	36.16	to 39.53
'Andersons' three layer self-finish polyester based bitumen felt roofing	m <sup>2</sup>	36.16	to 41.14
High performance built-up felt roofing; laid flat			
three layer polyester based modified bitumen felt roofing	m <sup>2</sup>	37.33	to 41.14
three layer 'Ruberfort HP 350' felt roofing; granite chipping finish	m <sup>2</sup>	45.68	to 51.24
three layer 'Hyload 150E' elastomeric roofing; granite chipping finish	m <sup>2</sup>	45.68	to 51.24
three layer 'Polybit 350' elastomeric roofing; granite chipping finish	m <sup>2</sup>	47.87	to 53.44
Torch on roofing; laid flat			
three layer polyester-based modified bitumen roofing	m <sup>2</sup>	32.79	to 38.94
two layer polymeric isotropic roofing	m <sup>2</sup>	32.79	to 38.94
Extra granite chipping finish	m <sup>2</sup>	3.07	to 8.20
Edges to flat felt roofs; softwood splayed fillet; 280 x 25 mm painted softwood fascia; no gutter			
aluminium edge trim	m	38.36	to 41.14
Edges to flat roofs; code 4 lead drip dresser into gutter; 230 x 25 mm painted softwood fascia			
100 mm PVC gutter	m	36.16	to 47.87
150 mm PVC gutter	m	45.68	to 54.61
100 mm cast iron gutter; decorated	m	54.61	to 67.96
150 mm cast iron gutter; decorated	m	67.93	to 81.84
<b>STAIRS</b>			
<b>Timber construction</b>			
Softwood staircase; softwood balustrades and hardwood handrail; plasterboard; skim and emulsion to soffit			
2.6 m rise; standard; straight flight	nr	816.91	to 1238.54
2.6 m rise; standard; top three treads winding	nr	999.91	to 1374.70
2.6 m rise; standard; dogleg	nr	1147.78	to 1455.22
<b>Reinforced concrete construction</b>			
Escape staircase; granolithic finish; mild steel balustrades and handrails			
3 m rise; dogleg	nr	4266.10	to 5457.79
Plus or minus for each 300 mm variation in storey height	nr	414.31	to 534.36
Staircase; terrazzo finish; mild steel balustrades and handrails; plastered soffit; balustrades and staircase soffit decorated			
3 m rise; dogleg	nr	8520.48	to 10681.34
Plus or minus for each 300 mm variation in storey height	nr	857.90	to 1068.72

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>Metal construction</b>			
Steel access/fire ladder			
3 m high	nr	645.62	to 901.82
4 m high; expoxide finished	nr	901.82	to 1547.45
Light duty metal staircase; galvanised finish; perforated treads; no risers; balustrades and handrails; decorated			
3 m rise; straight; 760 mm wide	nr	3173.95	to 3864.96
Plus or minus for each 300 mm variation in storey height	nr	319.15	to 389.42
Heavy duty cast iron staircase; perforated treads; no risers; balustrades and handrails; decorated			
3 m rise; straight; 760 mm wide	nr	5001.02	to 6593.86
Plus or minus for each 300 mm variation in storey height	nr	499.22	to 657.34
Galvanised steel catwalk; nylon coated balustrading			
450 mm wide	nr	351.36	to 443.59
Finishes to treads and risers			
PVC floor tiles including screeds	storey	857.90	to 1203.41
granolithic	storey	1302.96	to 1481.57
heavy duty carpet	storey	1815.36	to 2272.13
terrazzo	storey	3642.43	to 4766.78
<b>Comparative finishes/balustrading</b>			
Wall handrails			
PVC mild steel rail on brackets	storey	341.11	to 546.07
hardwood handrail on brackets	storey	931.10	to 1547.45
stainless steel handrail on brackets	storey	2983.63	to 5902.85
Balustrading and handrails			
mild steel balustrading and PVC covered handrails	storey	1068.72	to 1370.30
mild steel balustrading and hardwood handrails	storey	1926.62	to 2728.90
stainless steel balustrading and handrails	storey	8186.69	to 9912.74
stainless steel and glass balustrading	storey	7173.60	to 18155.06
<b>EXTERNAL WALLS</b>			
<b>Brick/block walling</b>			
Dense aggregate block walls			
100 mm thick	m <sup>2</sup>	22.84	to 26.21
140 mm thick	m <sup>2</sup>	32.79	to 39.53
Common brick solid walls			
half brick thick	m <sup>2</sup>	35.14	to 42.31
one brick thick	m <sup>2</sup>	63.54	to 72.47
one and a half brick thick	m <sup>2</sup>	91.35	to 104.68
Add or deduct for each variation of £10.00/1000 in pc value			
half brick thick	m <sup>2</sup>	1.02	to 1.61
one brick thick	m <sup>2</sup>	2.05	to 2.49
one and a half brick thick	m <sup>2</sup>	3.07	to 3.81
Extra for fair face one side	m <sup>2</sup>	2.05	to 2.78
Engineering brick walls; class B			
half brick thick	m <sup>2</sup>	42.90	to 51.24
one brick thick	m <sup>2</sup>	81.84	to 93.55
Facing brick walls; machine-made facings			
half brick thick; pointed one side	m <sup>2</sup>	63.54	to 72.47
half brick thick; built against concrete	m <sup>2</sup>	67.93	to 76.86
one brick thick; pointed both sides	m <sup>2</sup>	124.73	to 144.79
Add or deduct for each variation of £10.00/1000 in pc value			
half brick thick	m <sup>2</sup>	1.02	to 1.61
one brick thick	m <sup>2</sup>	2.05	to 2.34

### ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>EXTERNAL WALLS - cont'd</b>			
<b>Brick/block walling - cont'd</b>			
Composite solid walls; facing brick on outside; and common brick on outside one brick thick; pointed one side	m <sup>2</sup>	99.55	114.19
Extra for weather pointing as a separate operation	m <sup>2</sup>	5.42	8.93
one and a half brick thick; pointed one side	m <sup>2</sup>	124.44	146.40
Composite cavity wall; block outer skin; 50 mm insulation; lightweight block inner skin			
outer block rendered	m <sup>2</sup>	48.00	64.00
Extra for			
heavyweight block inner skin	m <sup>2</sup>	1.46	2.78
fair face one side	m <sup>2</sup>	2.78	7.17
75 mm cavity insulation	m <sup>2</sup>	3.37	8.20
100 mm cavity insulation	m <sup>2</sup>	3.95	4.83
plaster and emulsion	m <sup>2</sup>	5.71	6.59
outer block rendered; no insulation; inner skin insulating	m <sup>2</sup>	7.17	8.20
outer block roughcast	m <sup>2</sup>	5.71	9.08
coloured masonry outer block	m <sup>2</sup>	7.17	14.64
Composite cavity wall; facing brick outer skin; 50 mm insulation; common brick inner skin; fair face on inside			
machine-made facings	m <sup>2</sup>	106.87	124.44
Composite cavity wall; facing brick outer skin; 50 mm insulation; common brick inner skin; plaster and emulsion			
machine-made facings	m <sup>2</sup>	115.66	136.15
Composite cavity wall; coloured masonry block; outer and inner skins; fair faced both sides	m <sup>2</sup>	127.37	180.07
<b>Reinforced concrete walling</b>			
In-situ reinforced concrete 25.5 N/m <sup>3</sup> ; 13 kg/m <sup>2</sup> reinforcement; formwork both sides			
150 mm thick	m <sup>2</sup>	111.26	136.15
225 mm thick	m <sup>2</sup>	136.15	150.79
<b>Wall claddings</b>			
Non-asbestos profiled cladding			
'profile 3'; natural	m <sup>2</sup>	24.01	27.23
'profile 3'; coloured	m <sup>2</sup>	26.21	29.57
'profile 6'; natural	m <sup>2</sup>	26.21	29.57
'profile 6'; coloured	m <sup>2</sup>	27.23	30.60
insulated; inner lining of plasterboard	m <sup>2</sup>	46.85	59.00
'profile 6'; natural; insulated; inner lining panel	m <sup>2</sup>	46.85	59.00
insulated; with 2.8 m high inner skin; emulsion	m <sup>2</sup>	40.70	46.85
insulated; with 2.8 m high inner skin; plasterboard lining on metal tees; emulsion	m <sup>2</sup>	55.63	65.73
PVF2 coated galvanised steel profiled cladding			
0.60 mm thick; 'profile 20B'; corrugations verticle	m <sup>2</sup>	32.79	40.70
0.60 mm thick; 'profile 30'; corrugations verticle	m <sup>2</sup>	32.76	40.70
0.60 mm thick; 'profile TOP 40'; corrugations verticle	m <sup>2</sup>	30.60	38.36
0.60 mm thick; 'profile 60B'; corrugations verticle	m <sup>2</sup>	38.36	47.87
0.60 mm thick; 'profile 30'; corrugations horizontal	m <sup>2</sup>	33.96	43.48
0.60 mm thick; 'profile 60B'; corrugations horizontal	m <sup>2</sup>	38.36	49.04
Extra for			
80 mm insulation and 0.4 mm thick coated inner lining sheet	m <sup>2</sup>	18.45	19.32

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
PVF2 coated galvanised steel profiled cladding on steel rails			
2.8 m high insulating block inner skin; plasterboard lining on metal tees; emulsion	m <sup>2</sup>	67.34	to 81.98
2.8 m high insulated block inner skin; plasterboard lining on metal tees; emulsion	m <sup>2</sup>	76.13	to 98.09
insulated; coloured inner lining panel	m <sup>2</sup>	76.13	to 98.09
insulated; full-height insulating block inner skin; plaster and emulsion	m <sup>2</sup>	95.16	to 128.83
insulated; metal sandwich panel system	m <sup>2</sup>	193.25	to 295.73
<b>Other cladding systems</b>			
vitreous enamelled insulated steel sandwich panel system; with non-asbestos fibre insulating board on inner face	m <sup>2</sup>	184.46	to 226.92
Formalux sandwich panel system; with coloured lining tray; on steel cladding rails	m <sup>2</sup>	216.67	to 260.59
aluminium over-cladding on system rain screen	m <sup>2</sup>	272.30	to 307.44
natural stone cladding on full-height insulating block inner skin; plaster and emulsion	m <sup>2</sup>	519.72	to 701.26
<b>Curtain/glazed walling</b>			
Single galzed polyester powder coated aluminium curtain walling economical; including part-height block back-up wall; plaster and emulsion	m <sup>2</sup>	409.92	to 585.60
Extra over single 6 mm float glass for			
double glazing unit with two 6 mm float glass skins	m <sup>2</sup>	43.92	to 55.63
double glazing unit with one 6 mm 'Antisun' skin and one 6 mm float glass skin	m <sup>2</sup>	84.91	to 109.80
look-a-like' non-vision spandrel panels	m <sup>2</sup>	55.63	to 81.98
10% opening lights	m <sup>2</sup>	13.18	to 29.28
economical; including infill panels	m <sup>2</sup>	392.35	to 468.48
Extra for			
50 mm insulation	m <sup>2</sup>	23.42	to 26.35
anodised finish in lieu of polyester powder coating	m <sup>2</sup>	27.82	to 96.62
bronze anodising in lieu of polyester powder coating	m <sup>2</sup>	55.63	to 137.62
good quality	m <sup>2</sup>	641.23	to 746.64
good quality; 35% opening lights	m <sup>2</sup>	805.20	to 936.96
Extra over single 6 mm float glass for double glazing unit with low 'E' and tinted glass	m <sup>2</sup>	83.45	to 109.80
High quality structural glazing to entrance elevation	m <sup>2</sup>	876.86	to 1383.48
Patent glazing systems; excluding opening lights and flashings			
7 mm georgian wired cast glass, aluminium alloy bars spanning up to 3 m at 600 - 625 mm spacing	m <sup>2</sup>	131.76	to 161.04
6.4 mm laminated safety glass polyester powder coated aluminium capped glazing bars spanning up to 3 m at 600 - 625 mm spacing	m <sup>2</sup>	409.92	to 483.12
<b>Comparative external finishes</b>			
Comparative concrete wall finishes			
wrought formwork one side including rubbing down	m <sup>2</sup>	3.81	to 7.61
shotblasting to expose aggregate	m <sup>2</sup>	4.83	to 9.66
bush hammering to expose aggregate	m <sup>2</sup>	15.52	to 21.37
two coats 'Sandex Matt' cement paint	m <sup>2</sup>	9.08	to 12.74
cement and sand plain face rendering	m <sup>2</sup>	15.96	to 24.01
three-coat Tyrolean rendering; including backing	m <sup>2</sup>	38.80	to 45.68
Mineralite' decorative rendering; including backing	m <sup>2</sup>	76.86	to 89.16

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>WINDOWS AND EXTERNAL DOORS</b>			
<b>Softwood windows and external doors</b>			
Standard windows; painted			
single glazed	m <sup>2</sup>	238.63	to 341.11
double glazed	m <sup>2</sup>	307.44	to 434.81
Standard external softwood doors and hardwood frames; doors painted; including ironmongery			
solid flush door	nr	500.69	to 1158.02
heavy duty solid flush door; single leaf	nr	756.86	to 1158.02
heavy duty solid flush door; double leaf	nr	1336.63	to 1904.66
Extra for emergency fire exit door	nr	285.48	to 445.06
<b>Steel windows and external doors</b>			
Standard windows			
single glazed; galvanised; painted	m <sup>2</sup>	248.88	to 351.36
single glazed; powder-coated	m <sup>2</sup>	260.59	to 363.07
double glazed; galvanised; painted	m <sup>2</sup>	329.40	to 421.63
double glazed; powder coated	m <sup>2</sup>	329.40	to 445.06
<b>Steel roller shutters</b>			
Shutters; galvanised			
manual	m <sup>2</sup>	248.88	to 351.36
electric	m <sup>2</sup>	307.44	to 468.48
manual; insulated	m <sup>2</sup>	421.63	to 534.36
electric; insulated	m <sup>2</sup>	490.44	to 645.62
electric; insulated; fire-resistant	m <sup>2</sup>	1191.70	to 1481.57
<b>Hardwood windows and external doors</b>			
Standard windows; stained or UPVC coated			
single glazed	m <sup>2</sup>	363.07	to 568.03
double glazed	m <sup>2</sup>	468.48	to 712.97
<b>Pvc-U windows and external doors</b>			
Purpose-made windows			
double glazed	m <sup>2</sup>	679.30	to 913.54
<b>Aluminium windows and external doors</b>			
Standard windows; anodised finish			
single glazed; horizontal sliding sash	m <sup>2</sup>	329.40	to 398.21
single glazed; vertical sliding sash	m <sup>2</sup>	512.40	to 611.95
single glazed; casement; in hardwood sub-frame	m <sup>2</sup>	385.03	to 512.40
double glazed; vertical sliding sash	m <sup>2</sup>	568.03	to 657.34
double glazed; casement; in hardwood sub-frame	m <sup>2</sup>	468.48	to 623.66
Purpose-made entrance screens and doors			
double glazed	m <sup>2</sup>	913.54	to 1481.57



## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>Stainless steel entrance screens and doors</b>			
Purpose-made screen; double glazed with manual doors	m <sup>2</sup>	1481.57	to 2228.21
with automatic doors	m <sup>2</sup>	1837.32	to 2617.63
<b>Shop fronts, shutters and grilles</b>			
Shutters and grilles per meter of plan length	m	734.93	to 1481.57
Grilles or shutters	m	13023.96	to 1860.74
Fire shutters; power-operated	m		
<b>INTERNAL WALLS, PARTITIONS AND DOORS</b>			
<b>Timber or metal stud partitions and doors</b>			
Softwood stud and plasterboard partitions			
100 mm partition; skim and emulsioned both sides	m <sup>2</sup>	57.97	to 65.73
150 mm partition as party wall; skim and emulsioned both sides	m <sup>2</sup>	69.10	to 81.84
Metal stud and plasterboard partitions			
170 mm partition; one hour; taped joints; emulsioned both sides	m <sup>2</sup>	58.56	to 71.74
200 mm partition; two hour; taped joints; emulsioned both sides	m <sup>2</sup>	81.98	to 90.77
Metal stud and plasterboard partitions; emulsioned both sides; softwood doors and frames; painted			
170 mm partition	m <sup>2</sup>	76.13	to 105.41
200 mm partition; insulated	m <sup>2</sup>	105.41	to 127.37
Stud or plasterboard partitions; softwood doors and frames; painted partition; plastered and emulsioned both sides	m <sup>2</sup>	95.16	to 124.44
Stud or plasterboard partitions; hardwood doors and frames; painted partition; plastered and emulsioned both sides	m <sup>2</sup>	124.44	to 156.65
<b>Brick/block partitions and doors</b>			
Autoclaved aerated/lightweight block partitions			
75 mm thick	m <sup>2</sup>	18.74	to 22.25
100 mm thick	m <sup>2</sup>	25.03	to 30.01
130 mm thick; insulating	m <sup>2</sup>	30.60	to 33.96
150 mm thick	m <sup>2</sup>	33.96	to 36.16
190 mm thick	m <sup>2</sup>	40.70	to 46.85
Extra for			
fair face both sides	m <sup>2</sup>	3.37	to 6.59
curved work	%	10.00	to 20.00
average thickness; fair face both sides	m <sup>2</sup>	32.79	to 40.70
average thickness; fair face and emulsioned both sides	m <sup>2</sup>	38.36	to 49.04
average thickness; plastered and emulsioned both sides	m <sup>2</sup>	59.00	to 70.13
Dense aggregate block partitions			
average thickness; fair face both sides	m <sup>2</sup>	38.36	to 46.85
average thickness; fair face and emulsioned both sides	m <sup>2</sup>	44.51	to 53.44
average thickness; plastered and emulsioned both sides	m <sup>2</sup>	65.73	to 74.66
Common brick partitions;			
half brick thick	m <sup>2</sup>	35.14	to 38.36
half brick thick; fair face both sides	m <sup>2</sup>	38.36	to 46.85
half brick thick; fair face and emulsioned both sides	m <sup>2</sup>	44.51	to 53.44
half brick thick; plastered and emulsioned both sides	m <sup>2</sup>	63.54	to 81.84
one brick thick	m <sup>2</sup>	65.73	to 74.66
one brick thick; fair face both sides	m <sup>2</sup>	70.13	to 81.84
one brick thick; fair face and emulsioned both sides	m <sup>2</sup>	76.86	to 88.57
one brick thick; plastered and emulsioned both sides	m <sup>2</sup>	95.75	to 113.61

**ANCILLARY BUILDING WORKS**

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>INTERNAL WALLS, PARTITIONS AND DOORS - cont'd</b>			
<b>Brick/block partitions and doors - cont'd</b>			
Block partitions; softwood doors and frames; painted partition	m <sup>2</sup>	54.61	to 72.47
partition; fair face both sides	m <sup>2</sup>	56.80	to 76.86
partition; fair face and emulsioned both sides	m <sup>2</sup>	65.73	to 84.03
partition; plastered and emulsioned both sides	m <sup>2</sup>	86.38	to 109.21
Block partitions; hardwood doors and frames partition	m <sup>2</sup>	81.98	to 105.41
partition; platered and emulsioned both sides	m <sup>2</sup>	111.26	to 140.54
<b>Reinforced concrete walls</b>			
Walls			
150 mm thick	m <sup>2</sup>	114.19	to 136.15
150 mm thick; plastered and emulsioned both sides	m <sup>2</sup>	151.52	to 182.71
<b>Special partitioning and doors</b>			
Demountable partitioning; hardwood doors			
medium quality; vinyl-faced	m <sup>2</sup>	140.54	to 183.00
high quality; vinyl-faced	m <sup>2</sup>	184.46	to 259.13
Aluminium internal patent glazing			
single glazed	m <sup>2</sup>	124.44	to 171.29
double glazed	m <sup>2</sup>	212.28	to 263.52
Demountable steel partitioning and doors			
medium quality	m <sup>2</sup>	226.92	to 285.48
high quality	m <sup>2</sup>	285.48	to 351.36
Demountable fire partitions			
enamelled steel; half hour	m <sup>2</sup>	364.54	to 828.62
stainless steel; half hour	m <sup>2</sup>	1033.58	to 1307.35
Soundproof partitions; hardwood doors			
luxury veneered	m <sup>2</sup>	260.59	to 431.88
<b>WC/Changing cubicles</b>			
W/C cubicles cost per cubicle	nr	363.07	to 806.66
<b>INTERNAL DOORS</b>			
<b>Comparative doors/door linings/frames</b>			
Standard softwood doors and frames; including ironmongery and painting			
flush; hollow core	nr	272.30	to 341.11
flush; hollow core; hardwood faced	nr	272.30	to 363.07
flush; solid core			
single leaf	nr	319.15	to 409.92
double leaf	nr	465.55	to 626.59
flush; solid core; hardwood faced			
four panel door	nr	373.32	to 431.88
nr	nr	465.55	to 568.03
Purpose-made softwood doors and hardwood frames; including ironmongery; painting and polishing flush; solid core; heavy duty			
single leaf	nr	784.70	to 919.39
double leaf	nr	1067.26	to 1362.98

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
flush; solid core; heavy duty; plastic laminate faced			
single leaf	nr	953.06	to 1080.43
double leaf	nr	1319.06	to 1477.18
Purpose-made softwood fire doors and hardwood frames; including ironmongery; painting and polishing flush; one hour fire resisting			
single leaf	nr	1033.58	to 1158.02
double leaf	nr	1319.06	to 1466.93
flush; one hour fire resisting; plastic laminated faced			
single leaf	nr	1282.46	to 1408.37
double leaf	nr	1648.46	to 1781.69
purpose-made softwood doors and pressed steel frames; flush; half hour fire check; plastic laminate faced	nr	1191.70	to 1431.79
<b>Perimeter treatments</b>			
Precast concrete lintels; in block walls			
75 mm wide	m	10.98	to 23.86
100 mm wide	m	13.62	to 29.57
Precast concrete lintels; in brick walls			
half brick thick	m	13.62	to 29.57
one brick thick	m	20.94	to 47.87
Purpose-made softwood architraves; painted; including grounds 25 x 50 mm; to both sides of openings			
726 x 2040 mm opening	nr	106.87	to 115.66
826 x 2040 mm opening	nr	109.80	to 118.58
<b>WALL FINISHES</b>			
Dry plasterboard lining, taped joints; for direct decoration			
9.5 mm Gyproc Wallboard	m <sup>2</sup>	9.52	to 14.79
Extra for insulating grade	m <sup>2</sup>	0.73	to 0.88
Extra for insulating grade; plastic faced	m <sup>2</sup>	2.34	to 2.78
12.5 mm Gyproc Wallboard (half-hour fire-resisting)	m <sup>2</sup>	11.42	to 16.54
Extra for insulating grade	m <sup>2</sup>	0.73	to 1.02
Extra for insulating grade; plastic faced	m <sup>2</sup>	2.05	to 2.34
two layers of 12.5 mm Gyproc Wallboard (one hour fire-resisting)	m <sup>2</sup>	20.50	to 26.21
9 mm Supalux (half-hour fire-resisting)	m <sup>2</sup>	20.50	to 26.21
Dry plasterboard lining, taped joints; for direct decoration; fixed to wall on dabs			
9.5 mm Gyproc Wallboard	m <sup>2</sup>	11.42	to 16.54
Dry plasterboard lining, taped joints; for direct decoration; including metal tees			
9.5 mm Gyproc Wallboard	m <sup>2</sup>	25.03	to 28.99
12.5 mm Gyproc Wallboard	m <sup>2</sup>	26.21	to 30.60
Dry lining/sheet panelling; including battens; plugged to wall			
6.4 mm hardboard	m <sup>2</sup>	12.44	to 14.79
9.5 mm Gyproc Wallboard	m <sup>2</sup>	18.30	to 25.03
6 mm birch faced plywood	m <sup>2</sup>	19.32	to 24.01
6 mm WAM plywood	m <sup>2</sup>	24.01	to 29.57
15 mm chipboard	m <sup>2</sup>	183.73	to 20.50
15 mm melamine faced chipboard	m <sup>2</sup>	30.60	to 40.11
13.2 mm 'Formica' faced chipboard	m <sup>2</sup>	41.72	to 65.73
In situ wall finishes			
Extra over common brickwork for fair face and pointing both sides	m <sup>2</sup>	3.95	to 5.71

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>WALL FINISHES - cont'd</b>			
Comparative finishes			
one mist and two coats emulsion	m <sup>2</sup>	3.22	to 4.83
multi-coloured gloss paint	m <sup>2</sup>	5.71	to 7.32
two coats of lightweight plaster	m <sup>2</sup>	13.62	to 14.79
9.5 mm Gyproc Wallboard and skim coat	m <sup>2</sup>	13.62	to 18.45
12.5 mm Gyproc Wallboard and skim coat	m <sup>2</sup>	15.37	to 20.50
two coats of 'Thistle' plaster	m <sup>2</sup>	14.20	to 19.32
plaster and emulsion	m <sup>2</sup>	13.62	to 22.25
Extra for gloss paint in lieu of emulsion	m <sup>2</sup>	2.49	to 2.93
two coat render and emulsion	m <sup>2</sup>	24.01	to 33.96
Ceramic wall tiles; including backing			
economical	m <sup>2</sup>	26.21	to 50.07
medium quality	m <sup>2</sup>	50.07	to 88.57
high quality; to toilet blocks; kitchens and first aid rooms	m <sup>2</sup>	81.84	to 104.68
<b>Decorations</b>			
Emulsion			
two coats	m <sup>2</sup>	2.34	to 2.93
one mist and two coats	m <sup>2</sup>	2.93	to 3.95
Artex plastic compound			
one coat; textured	m <sup>2</sup>	3.81	to 5.12
Wall paper	m <sup>2</sup>	5.12	to 8.93
Gloss			
primer and two coats	m <sup>2</sup>	4.39	to 6.00
primer and three coats	m <sup>2</sup>	6.00	to 7.47
Comparative steel/metalwork finishes			
primer only	m <sup>2</sup>	0.88	to 1.76
grit blast and one coat zinc chromate primer	m <sup>2</sup>	1.90	to 2.93
touch up primer and one coat of two pack epoxy zinc phosphate	m <sup>2</sup>	2.64	to 3.37
primer gloss three coats	m <sup>2</sup>	6.00	to 7.32
sprayed mineral fibre; one hour	m <sup>2</sup>	11.42	to 17.57
sprayed mineral fibre; two hour	m <sup>2</sup>	19.03	to 22.84
sprayed vermiculite cement; one hour	m <sup>2</sup>	12.88	to 19.18
sprayed vermiculite cement; two hour	m <sup>2</sup>	15.52	to 22.84
intumescent coating with decorative top seal; half hour	m <sup>2</sup>	20.64	to 22.84
intumescent coating with decorative top seal; one hour	m <sup>2</sup>	32.79	to 40.11
Comparative woodwork finishes			
primer only	m <sup>2</sup>	1.61	to 1.76
two coats gloss; touch up primer	m <sup>2</sup>	3.37	to 3.81
three coats gloss; touch up primer	m <sup>2</sup>	4.39	to 5.71
primer and two coat gloss	m <sup>2</sup>	5.12	to 6.00
primer and three coat gloss	m <sup>2</sup>	6.73	to 7.32
polyurethane lacquer two coats	m <sup>2</sup>	3.37	to 4.10
polyurethane lacquer three coats	m <sup>2</sup>	5.12	to 6.00
flame-retardent pain three coats	m <sup>2</sup>	7.61	to 9.66

**ANCILLARY BUILDING WORKS**

Item	Unit	Range £	
<b>FLOOR FINISHES</b>			
Chipboard flooring; t & g joints			
18 mm thick	m <sup>2</sup>	<b>10.25</b> to	<b>12.44</b>
22 mm thick	m <sup>2</sup>	<b>12.44</b> to	<b>14.79</b>
Wrought softwood flooring			
25 mm thick; butt joints; cleaned off and polished	m <sup>2</sup>	<b>26.21</b> to	<b>30.60</b>
25 mm thick; t & g joints; cleaned off and polished	m <sup>2</sup>	<b>28.40</b> to	<b>35.14</b>
Extra over concrete floor for			
power floating	m <sup>2</sup>	<b>3.95</b> to	<b>11.42</b>
power floating; surface hardener	m <sup>2</sup>	<b>8.64</b> to	<b>16.54</b>
Latex cement screeds			
3 mm thick; one coat	m <sup>2</sup>	<b>5.71</b> to	<b>6.59</b>
5 mm thick; two coat	m <sup>2</sup>	<b>7.61</b> to	<b>8.64</b>
Rubber latex non-slip solution and epox sealant	m <sup>2</sup>	<b>9.66</b> to	<b>22.84</b>
Cement and sand (1:3) screeds			
25 mm thick	m <sup>2</sup>	<b>11.42</b> to	<b>12.44</b>
50 mm thick	m <sup>2</sup>	<b>13.62</b> to	<b>15.96</b>
75 mm thick	m <sup>2</sup>	<b>19.32</b> to	<b>21.67</b>
Cement and sand (1:3) paving			
32 mm thick	m <sup>2</sup>	<b>9.66</b> to	<b>13.76</b>
32 mm thick; surface hardener	m <sup>2</sup>	<b>11.42</b> to	<b>19.32</b>
Screed only (for subsequent finish)	m <sup>2</sup>	<b>14.79</b> to	<b>22.84</b>
Screed only (for subsequent finish); allowance for skirtings	m <sup>2</sup>	<b>18.15</b> to	<b>26.21</b>
Mastic asphalt paving			
20 mm thick; BS 6925; black	m <sup>2</sup>	<b>22.84</b> to	<b>28.40</b>
20 mm thick; BS 6925; red	m <sup>2</sup>	<b>27.23</b> to	<b>32.79</b>
Granolithic			
20 mm thick	m <sup>2</sup>	<b>12.44</b> to	<b>20.35</b>
25 mm thick	m <sup>2</sup>	<b>16.98</b> to	<b>22.84</b>
25 mm thick; including screed	m <sup>2</sup>	<b>28.40</b> to	<b>32.79</b>
38 mm thick; including screed	m <sup>2</sup>	<b>40.11</b> to	<b>47.87</b>
Synthanite; on and including building paper			
25 mm thick	m <sup>2</sup>	<b>26.21</b> to	<b>32.79</b>
50 mm thick	m <sup>2</sup>	<b>36.16</b> to	<b>44.51</b>
75 mm thick	m <sup>2</sup>	<b>44.51</b> to	<b>53.44</b>
Acrylic polymer floor finish			
10 mm thick	m <sup>2</sup>	<b>26.21</b> to	<b>32.79</b>
Epoxy floor finish			
1.5 - 2 mm thick	m <sup>2</sup>	<b>26.21</b> to	<b>36.16</b>
5 - 6 mm thick	m <sup>2</sup>	<b>53.44</b> to	<b>62.37</b>
Polyester resin floor finish			
5 - 9 mm thick	m <sup>2</sup>	<b>60.17</b> to	<b>70.13</b>
Quarry tile flooring			
150 x 150 x 12.5 mm thick; red	m <sup>2</sup>	<b>32.79</b> to	<b>37.33</b>
150 x 150 x 12.5 mm thick; brown	m <sup>2</sup>	<b>39.53</b> to	<b>46.85</b>
200 x 200 x 19 mm thick; brown	m <sup>2</sup>	<b>49.04</b> to	<b>55.63</b>
average tiling	m <sup>2</sup>	<b>32.79</b> to	<b>55.63</b>
tiling; including screed	m <sup>2</sup>	<b>46.85</b> to	<b>72.47</b>
tiling; including screed and allowance for skirtings	m <sup>2</sup>	<b>62.37</b> to	<b>88.57</b>
Glazed ceramic tile flooring			
150 x 150 x 12 mm thick; black	m <sup>2</sup>	<b>39.53</b> to	<b>49.04</b>
150 x 150 x 12 mm thick; antislip	m <sup>2</sup>	<b>49.04</b> to	<b>51.24</b>
fully vitrified	m <sup>2</sup>	<b>51.24</b> to	<b>72.47</b>
fully vitrified; including screed	m <sup>2</sup>	<b>61.20</b> to	<b>92.96</b>
fully vitrified; including screed and allowance for skirtings	m <sup>2</sup>	<b>70.13</b> to	<b>111.41</b>
Composition block flooring			
174 x 57 mm blocks	m <sup>2</sup>	<b>81.84</b> to	<b>90.77</b>

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>FLOOR FINISHES - cont'd</b>			
Vinyl tile flooring			
2 mm thick; semi-flexible tiles	m <sup>2</sup>	10.25	to 14.79
2 mm thick; fully flexible tiles	m <sup>2</sup>	9.66	to 13.76
2.5 mm thick; semi-flexible tiles	m <sup>2</sup>	12.44	to 16.54
tiling; including screed	m <sup>2</sup>	26.21	to 32.79
tiling; including screed and allowance for skirtings	m <sup>2</sup>	28.40	to 38.36
tiling; antistatic	m <sup>2</sup>	47.87	to 54.61
tiling; antistatic; including screed	m <sup>2</sup>	59.00	to 72.91
Vinyl sheet flooring; heavy duty			
2 mm thick	m <sup>2</sup>	18.15	to 20.35
2.5 mm thick	m <sup>2</sup>	18.15	to 22.84
3 mm thick; needle felt backed	m <sup>2</sup>	12.44	to 16.54
3 mm thick; foam backed	m <sup>2</sup>	18.15	to 22.84
Sheeting; including screed and allowances for skirtings			
'Altro' safety flooring	m <sup>2</sup>	33.96	to 41.14
2 mm thick; Marine T20	m <sup>2</sup>	26.21	to 32.79
2.5 mm thick; Classic D25	m <sup>2</sup>	32.79	to 38.36
3.5 mm thick; stonghold flooring	m <sup>2</sup>	41.14	to 47.87
flooring; including screed	m <sup>2</sup>	26.21	to 49.04
flooring; including screed	m <sup>2</sup>	38.36	to 65.73
Rubber tile flooring; smooth; ribbed or studded tiles			
2.5 mm thick	m <sup>2</sup>	32.79	to 38.36
5 mm thick	m <sup>2</sup>	38.36	to 44.51
5 mm thick; including screed	m <sup>2</sup>	51.68	to 65.73
Carpet tiles/Underlay			
Underlay	m <sup>2</sup>	5.71	to 7.91
nylon needlepunch (stick down)	m <sup>2</sup>	14.79	to 18.15
80% animal hair; 20% wool cord	m <sup>2</sup>	26.21	to 29.57
100% wool	m <sup>2</sup>	36.16	to 44.51
80% wool; 20% nylon antistatic	m <sup>2</sup>	38.36	to 53.44
economical; including screed and allowance for skirtings	m <sup>2</sup>	39.53	to 44.51
good quality	m <sup>2</sup>	36.16	to 53.44
good quality; including screed	m <sup>2</sup>	49.04	to 65.73
good quality; including screed and allowance for skirtings	m <sup>2</sup>	54.61	to 72.47
Access floors; excluding finish 600 x 600 mm chipboard panels; faced both sides with galvanised steel sheet; on adjustable steel/aluminium pedestals; cavity height 100 - 300 mm high			
light grade duty	m <sup>2</sup>	53.44	to 63.54
medium grade duty	m <sup>2</sup>	61.20	to 71.30
heavy grade duty	m <sup>2</sup>	76.86	to 96.92
extra heavy grade duty	m <sup>2</sup>	86.38	to 96.92
600 x 600 mm chipboard panels; faced both sides with galvanised steel sheet; on adjustable steel/aluminium pedestals; cavity height 300 - 600 mm high			
medium grade duty	m <sup>2</sup>	70.27	to 79.06
heavy grade duty	m <sup>2</sup>	79.06	to 98.09
extra heavy grade duty	m <sup>2</sup>	87.84	to 98.09
Common floor coverings bonded to access floor panels			
heavy-duty fully flexible vinyl to BS 3261, type A	m <sup>2</sup>	9.66	to 27.23
anti-static grade sheet PVC to BS 3261	m <sup>2</sup>	17.57	to 27.23
Comparative skirtings			
25 x 75 mm softwood skirting; painted; including grounds	m	10.83	to 14.20
12.5 x 150 mm Quarry tile skirting; including backing	m	15.96	to 21.08
13 x 75 mm granolithic skirting; including backing	m	22.84	to 28.40
Entrance matting in aluminium-framed matwell			
	m <sup>2</sup>	385.03	to 568.03

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>CEILING FINISHES</b>			
<b>Plastered ceilings</b>			
Plaster to soffits			
lightweight plaster	m <sup>2</sup>	11.42	to 15.37
plaster and emulsion	m <sup>2</sup>	14.79	to 22.84
Extra for gloss paint in lieu of emulsion	m <sup>2</sup>	2.49	to 2.93
Plasterboard to soffits			
9.5 mm Gyproc lath and skim coat	m <sup>2</sup>	15.37	to 19.32
9.5 mm Gyproc insulating lath and skim coat	m <sup>2</sup>	16.54	to 19.32
plasterboard, skim and emulsion	m <sup>2</sup>	17.57	to 24.01
Extra for gloss paint in lieu of emulsion	m <sup>2</sup>	2.49	to 2.93
plasterboard and artex	m <sup>2</sup>	11.42	to 16.54
plasterboard, artex and emulsion	m <sup>2</sup>	15.37	to 20.50
plaster and emulsion; including metal lathing	m <sup>2</sup>	25.03	to 36.16
Other board finishes; with fire-resisting properties; excluding decoration			
12.5 Gyproc Fireline; half hour	m <sup>2</sup>	12.44	to 16.54
6 mm Supalux; half hour	m <sup>2</sup>	16.54	to 19.32
two layers of 12.5 mm Gyproc Wallboard; half hour	m <sup>2</sup>	18.30	to 22.25
two layers of 12.5 mm Gyproc Fireline; one hour	m <sup>2</sup>	21.08	to 26.21
9 mm Supalux; one hour; on fillets	m <sup>2</sup>	24.01	to 29.57
Specialist plasters; to soffits			
sprayed accoustic plaster; self finished	m <sup>2</sup>	32.79	to 45.68
rendering; 'Tyrolean' finish	m <sup>2</sup>	33.96	to 49.04
Other ceiling finishes			
50 mm wood wool slabs as permanent lining	m <sup>2</sup>	15.37	to 19.32
12 mm Pine tongued and grooved boardings	m <sup>2</sup>	20.50	to 25.03
16 mm Softwood tongued and grooved boardings	m <sup>2</sup>	25.03	to 29.57
<b>Suspended and integrated ceilings</b>			
Suspended ceilings			
economical; exposed grid	m <sup>2</sup>	26.21	to 35.14
jointless; plasterboard	m <sup>2</sup>	32.79	to 41.14
semi- concealed grid	m <sup>2</sup>	35.14	to 44.51
medium quality; 'Minatone'; concealed grid	m <sup>2</sup>	38.36	to 52.41
high quality; 'Travertone'; concealed grid	m <sup>2</sup>	44.07	to 56.80
metal linear strip; 'Dampa'/'Luxalon'	m <sup>2</sup>	48.31	to 61.49
metal tray	m <sup>2</sup>	49.78	to 65.88
egg-crate	m <sup>2</sup>	54.17	to 115.66
open grid; 'Formalux'/'Dimension'	m <sup>2</sup>	99.55	to 122.98
Integrated ceilings			
coffered; with steel services	m <sup>2</sup>	114.19	to 188.86
<b>FITTINGS AND FURNISHINGS</b>			
Comparative wrought softwood shelving			
25 x 225 mm; including black japanned brackets	m	14.05	to 16.25
25 mm thick slatted shelving; including bearers	m <sup>2</sup>	54.61	to 64.56
25 mm thick cross-tongued shelving; including bearers	m <sup>2</sup>	73.49	to 81.84
Allowances per gross floor area for: reception desk, shelves and cupboards for general areas			
economical	m <sup>2</sup>	4.54	to 10.25
medium quality	m <sup>2</sup>	8.20	to 16.25
high quality	m <sup>2</sup>	13.03	to 25.03
Extra for			
high quality finishes to reception areas	m <sup>2</sup>	8.20	to 11.86
full kitchen equipment	m <sup>2</sup>	11.86	to 14.20

### ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SUPERSTRUCTURE - cont'd</b>			
<b>FITTINGS AND FURNISHINGS - cont'd</b>			
furniture and fittings to general office areas			
economical	m <sup>2</sup>	9.66	to 13.03
medium quality	m <sup>2</sup>	13.03	to 20.50
high quality	m <sup>2</sup>	22.84	to 33.53
General fittings and equipment internal planting	m <sup>2</sup>	26.21	to 33.53
signs, notice-boards, shelving, fixed seating, curtains and blinds	m <sup>2</sup>	14.20	to 16.25
<b>SANITARY AND DISPOSAL INSTALLATIONS</b>			
Note: Material prices vary considerably, the following composite rates are based on average prices for mid priced fittings.			
Lavatory basins; vitreous china; chromium plated taps, waste, chain and plug, cantilever brackets	nr	216.67	to 284.02
Low level WC's; vitreous china pan and cistern; black plastic seat; low pressure ball valve; plastic flush pipe; fixing brackets			
on ground floor	nr	204.96	to 250.34
one of a range; on upper floors	nr	398.21	to 468.48
Bowl type wall urinal; white glazed vitreous china flushing cistern; chromium plated flush pipes and spreaders; fixing brackets			
white	nr	181.54	to 250.34
Shower tray; glazed fireclay; chromium plated waste, chain and plug, riser pipe, rose and mixing valve			
white	nr	534.36	to 657.34
Sink; glazed fireclay; chromium plated waste, chain and plug; fixing brackets			
white	nr	272.30	to 704.18
Sink; stainless steel; chromium plated waste, chain and self coloured plug			
single drainer	nr	234.97	to 295.29
double drainer	nr	272.30	to 341.11
Soil waste stacks; 3.15 m storey height; branch and connection to drain			
110 mm PVC	nr	363.07	to 409.92
Extra for additional floors	nr	181.54	to 216.67
100 mm cast iron; decorated	nr	734.93	to 780.31
Extra for additional floors	nr	363.07	to 409.92
Industrial buildings - Allowance per m <sup>2</sup> of floor area			
minimum provision	m <sup>2</sup>	11.86	to 16.54
high provision	m <sup>2</sup>	16.54	to 25.03
Hot and cold water installations - Allowance per m <sup>2</sup> of floor area			
Complete installations	m <sup>2</sup>	8.20	to 34.11
<b>SERVICE INSTALLATIONS</b>			
<b>HEATING, AIR-CONDITIONING AND VENTILATING INSTALLATIONS</b>			
Gas or oil-fired radiator heating gas-fired hot water service and central heating for			
three radiators	nr	2728.90	to 3864.96
extra for additional radiator	nr	307.44	to 431.88
LPHW radiator system - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	72.47	to 100.28
Ventilation systems Local ventilation to			
WC's	nr	272.89	to 363.07
toilet areas - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	4.98	to 12.30
Air extract system - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	45.68	to 61.20
Air supply and extract system - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	65.73	to 100.28
Heating and ventilation - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	72.47	to 91.35
Warm air heating and ventilation - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	136.15	to 174.22



**ANCILLARY BUILDING WORKS**

Item	Unit	Range £	
Comfort cooling systems Stand-alone air-conditioning unit systems air supply and extract - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	<b>169.82</b>	to <b>250.34</b>
Air-conditioning systems fully air-conditioning with dust and humidity control - Allowance per m <sup>2</sup> of floor area	m <sup>2</sup>	<b>204.96</b>	to <b>341.11</b>
<b>ELECTRICAL INSTALLATIONS</b>			
<b>Based upon gross internal area serviced</b>			
Mains and sub-mains switchgear and distribution mains intake only	m <sup>2</sup>	<b>2.05</b>	to <b>4.10</b>
mains switchgear only	m <sup>2</sup>	<b>3.22</b>	to <b>10.83</b>
Mains and sub-mains distribution to floors only	m <sup>2</sup>	<b>6.30</b>	to <b>11.86</b>
to floors; including small power and supplies to equipment	m <sup>2</sup>	<b>18.15</b>	to <b>21.67</b>
to floors; including lighting and power and supplies to equipment	m <sup>2</sup>	<b>11.86</b>	to <b>28.40</b>
Lighting installation general lighting; including luminaries	m <sup>2</sup>	<b>31.77</b>	to <b>54.61</b>
emergency lighting	m <sup>2</sup>	<b>11.86</b>	to <b>18.15</b>
standby generators only	m <sup>2</sup>	<b>3.22</b>	to <b>13.03</b>
Lighting and power installations to buildings plant area	m <sup>2</sup>	<b>56.80</b>	to <b>91.35</b>
plant are; high provision	m <sup>2</sup>	<b>81.84</b>	to <b>106.87</b>
office area	m <sup>2</sup>	<b>122.54</b>	to <b>146.99</b>
office area; high provision	m <sup>2</sup>	<b>163.68</b>	to <b>196.03</b>
<b>Comparative fittings/rates per each point</b>			
Fittings; excluding lamps or light fittings lighting point; PVC cables	nr	<b>64.56</b>	to <b>72.47</b>
lighting point; PVC cables in screwed conduits	nr	<b>138.06</b>	to <b>216.09</b>
lighting point; MICC cables	nr	<b>118.00</b>	to <b>183.73</b>
Switch socket outlet; PVC cables single	nr	<b>67.34</b>	to <b>76.13</b>
double	nr	<b>81.98</b>	to <b>93.70</b>
Switch socket outlet; PVC cables in screwed conduit single	nr	<b>106.87</b>	to <b>114.19</b>
double	nr	<b>111.26</b>	to <b>124.44</b>
<b>Based upon gross internal area serviced</b>			
Fittings; excluding lamps or light fittings Switch socket outlet; MICC cables single	nr	<b>106.87</b>	to <b>114.19</b>
double	nr	<b>114.19</b>	to <b>127.37</b>
Immersion heater point (excluding heater)	nr	<b>99.55</b>	to <b>114.19</b>
Cooker point; including control unit	nr	<b>141.86</b>	to <b>226.92</b>
<b>GAS INSTALLATION</b>			
Connection charge	nr	<b>734.93</b>	to <b>935.50</b>

**ANCILLARY BUILDING WORKS**

Item	Unit	Range £	
<b>SERVICE INSTALLATIONS - cont'd</b>			
<b>LIFT AND CONVEYOR INSTALLATIONS</b>			
Goods lifts			
hoist	nr	9690.00	to 34520.00
Electric heavy duty goods lifts			
500 kg; 2 - 3 levels	nr	3750.00	to 51680.00
1000 kg; 2 - 3 levels	nr	47670.00	to 64825.00
1500 kg; 3 levels	nr	112500.00	to 134000.00
2000 kg; 2 levels	nr	112500.00	to 134100.00
2000 kg; 3 levels	nr	134100.00	to 155700.00
3000 kg; 2 levels	nr	121000.00	to 144800.00
3000 kg; 3 levels	nr	151000.00	to 178430.00
Oil hydraulic heavy duty goods lifts			
500 kg; 3 levels	nr	112500.00	to 134100.00
1000 kg; 3 levels	nr	118500.00	to 140340.00
2000 kg; 3 levels	nr	138100.00	to 159500.00
Dock levellers			
dock levellers	nr	11850.00	to 28400.00
dock levellers and canopy	nr	17050.00	to 39200.00
<b>PROTECTIVE, COMMUNICATION AND SPECIAL INSTALLATIONS</b>			
Based upon gross internal area serviced			
Fire fighting/protective installations			
smoke detectors, alarms and controls	m <sup>2</sup>	4.10	to 10.25
hosereels, dry risers and extinguishers	m <sup>2</sup>	6.35	to 15.25
Sprinkler installations			
single level sprinkler systems, alarms and smoke detectors; low hazard	m <sup>2</sup>	15.04	to 22.84
single level sprinkler systems, alarms and smoke detectors; ordinary hazard	m <sup>2</sup>	21.61	to 30.07
double level sprinkler systems, alarms and smoke detectors; high hazard	m <sup>2</sup>	32.30	to 41.21
Lightning protection	m <sup>2</sup>	0.81	to 3.19
Security/communication installations			
security alarm system	m <sup>2</sup>	2.27	to 3.29
telephone system	m <sup>2</sup>	1.24	to 2.72
public address, television ariel and clocks	m <sup>2</sup>	3.19	to 5.46
closed-circuit television and public address system	m <sup>2</sup>	5.01	to 6.02
<b>BUILDERS' WORK IN CONNECTION WITH SERVICES</b>			
General builders work to			
mains supplies; lighting and power to landlords areas	m <sup>2</sup>	2.34	to 6.59
central heating and electrical installation	m <sup>2</sup>	4.68	to 17.42
central heating; electrical and lift installations	m <sup>2</sup>	6.73	to 19.32
air-conditioning	m <sup>2</sup>	17.28	to 26.79
air-conditioning and electrical installation	m <sup>2</sup>	19.32	to 28.40
air-conditioning; electrical and lift installations	m <sup>2</sup>	21.67	to 31.77
General builders work; including allowance for plant rooms; to			
central heating and electrical installations	m <sup>2</sup>	30.60	to 38.65
central heating, electrical and lift installations	m <sup>2</sup>	38.65	to 47.87
air-conditioning	m <sup>2</sup>	54.61	to 63.54
air-conditioning and electrical installation	m <sup>2</sup>	70.13	to 76.86
air-conditioning; electrical and lift installations	m <sup>2</sup>	86.38	to 86.38

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SITE WORK</b>			
<b>LANDSCAPING AND EXTERNAL WORKS</b>			
<b>Seeded and planted areas</b>			
Plant supply, planting, maintenance and 12 months guarantee seeded areas	m <sup>2</sup>	4.10	to 8.24
turfed areas	m <sup>2</sup>	5.34	to 10.69
Planted areas (per m <sup>2</sup> of surface area)			
Herbaceous plants	m <sup>2</sup>	4.57	to 6.12
climbing plants	m <sup>2</sup>	6.12	to 10.69
general planting	m <sup>2</sup>	13.70	to 27.85
woodland	m <sup>2</sup>	20.72	to 41.43
shrubbed planting	m <sup>2</sup>	27.29	to 76.29
dense planting	m <sup>2</sup>	34.08	to 67.94
shrubbed area including allowances for small trees	m <sup>2</sup>	40.99	to 95.79
Trees			
advanced nursery stock trees (12 - 20 cm girth)	tree	168.36	to 204.96
semi-mature trees; 5 - 8 m high - coniferous	tree	546.07	to 1374.70
semi-mature trees; 5 - 8 m high - deciduous	tree	828.62	to 2272.13
<b>Paved areas</b>			
Precast concrete paving slabs			
50 mm thick	m <sup>2</sup>	11.86	to 25.03
50 mm thick 'Textitone' slabs	m <sup>2</sup>	16.98	to 23.42
slabs on sub-base; including excavation	m <sup>2</sup>	27.23	to 38.94
Precast concrete block paviers			
65 mm 'Keyblock' grey paving	m <sup>2</sup>	22.84	to 28.40
65 mm 'Mount Sorrel' grey paving	m <sup>2</sup>	22.84	to 27.23
65 mm 'Intersett' paving	m <sup>2</sup>	24.01	to 28.40
60 mm 'Pedesta' paving	m <sup>2</sup>	17.28	to 28.40
paviers on sub-base; including excavations	m <sup>2</sup>	32.79	to 46.85
Brick paviers; 229 x 114 x 38 mm paving bricks			
laid flat	m <sup>2</sup>	37.33	to 46.85
laid to herring-bone pattern	m <sup>2</sup>	61.20	to 67.93
paviers on sub-base; including excavation	m <sup>2</sup>	70.24	to 81.84
Granite setts			
200 x 100 x 100 mm setts	m <sup>2</sup>	95.75	to 104.68
setts on sub-base; including excavation	m <sup>2</sup>	115.80	to 124.73
York stone slab paving			
paving on sub-base; including excavation	m <sup>2</sup>	124.73	to 148.16
Cobblestone paving			
50 - 75 mm	m <sup>2</sup>	70.13	to 86.38
cobblestones on sub-base; including excavation	m <sup>2</sup>	81.84	to 106.87
<b>Car parking alternatives</b>			
Surface level parking; including lighting and drainage			
tarmacadam on sub-base	car	1298.57	to 1786.08
concrete interlocking blocks	car	1461.07	to 1948.58
Grasscrete precast concrete units filled with top soil and grass seed	car	794.95	to 1087.75
At ground level with deck or building over	car	6662.66	to 7709.42
Garages etc			
single car park	nr	872.54	to 1370.30
single; traditional construction; in a block	nr	2725.97	to 3894.24
single; traditional construction; pitched roof	nr	2690.83	to 7952.45
double; traditional construction; pitched roof	nr	8909.90	to 11414.81

## ANCILLARY BUILDING WORKS

Item	Unit	Range £	
<b>SITE WORK - cont'd</b>			
<b>LANDSCAPING AND EXTERNAL WORKS - cont'd</b>			
<b>External furniture</b>			
Guard rails and parking bollards etc.			
open metal post and rail fencing 1 m high	m	152.26	to 177.14
galvanised steel post and rail fencing 2 m high	m	169.82	to 222.53
steel guard rails and vehicle barriers	m	54.17	to 81.98
Parking bollards			
precast concrete	nr	122.98	to 144.94
steel	nr	197.64	to 260.59
cast iron	nr	231.31	to 319.15
Vehicle control barrier; manual pole	nr	1068.72	to 1147.78
Galvanised steel cycle stand	nr	45.38	to 58.56
Galvanised steel flag staff	nr	1203.41	to 1525.49
Benches - hardwood and precast concrete	nr	225.46	to 307.44
Litter bins			
precast concrete	nr	225.46	to 260.59
hardwood slatted	nr	90.77	to 122.98
cast iron	nr	386.50	to 467.67
large aluminium	nr	679.30	to 821.95
Bus stops	nr	409.92	to 496.00
Bus stops incl basic shelter	nr	947.21	to 1146.12
Pillar box	nr	341.11	to 412.74
Telephone box	nr	3740.00	to 4500.00
<b>Fencing and screen walls</b>			
Chain link fencing; plastic coated			
1.2 m high	m	18.89	to 22.84
1.8 m high	m	27.23	to 30.60
Timber fencing			
1.2 m high chestnut pale fencing	m	21.23	to 25.03
1.8 m high close-boarded fencing	m	54.61	to 67.93
Screen walls; one brick thick; including foundations etc			
1.8 m high facing brick screen wall	m	272.30	to 341.11
1.8 m high coloured masonry block boundary wall	m	305.98	to 385.03
<b>DRAINAGE</b>			
Overall £ /m <sup>2</sup> allowances based on gross areas			
sire drainage (per m <sup>2</sup> of paved areas)	m <sup>2</sup>	8.20	to 21.08
building drainage (per m <sup>2</sup> of gross floor area)	m <sup>2</sup>	8.20	to 18.45
drainage work beyond the boundary of the site and final connection	nr	1820.00	to 1250.00
<b>EXTERNAL SERVICES</b>			
Service runs laid in trenches including excavation Water main			
75 mm uPVC main in 225 mm ductile iron pipe as duct	m	56.80	to 68.73
Electric main 600/1000 volt cables. Two core 25 mm cable including			
100 mm clayware duct	m	37.33	to 45.17
Gas main			
150 mm ductile or cast iron gas pipe	m	56.80	to 6.73
Telephone			
British Telecom installation in 100 mm uPVC duct	m	22.84	to 27.64
External lighting (per m <sup>2</sup> of lighted area)	m <sup>2</sup>	2.78	to 4.39

# Oncosts and Profit

## INTRODUCTORY NOTES

*In Part 1 of this book, it is stressed that the cost information given in Parts 2 to 7 leads to a cost estimate that requires further adjustment before it is submitted as a tender. This part deals with those adjustments and includes a worked example of a Tender Summary.*

## RISK / OPPORTUNITY

The factors to be taken into account when gauging the possibility of the Estimator's prediction of cost being inadequate or excessive are given in Part 2. Clearly it is considered in parallel with profit and it is not possible to give any indicative guidance on the level of adjustment that might result. For the purpose of a preliminary estimate, it is suggested that no adjustment is made to the costs generated by the other parts of this book.

At the same time as making a general appraisal of risk/opportunity, management will look at major quantities and may suggest amendments to the unit rates proposed.

## HEAD OFFICE OVERHEADS

An addition needs to be made to the net estimate to cover all costs incurred in operating the central services provided by head office. Apart from general management and accountancy, this will normally include the departments dealing with:

- estimating
- planning and design
- purchasing
- surveying
- insurance
- wages and bonus
- site safety.

The appropriate addition varies with the extent of services provided centrally, rather than on site, and with size of organisation, but a range of 4% to 8% on turnover would cover most circumstances.

Some organisations would include finance costs with head office overheads, as a general charge to the company, but for the purposes of this book finance costs are treated separately (see below).

## PROFIT

Obviously, the level of profit is governed by the degree of competition applicable to the job - which is in turn a function of the industry's current workload. Again, the appropriate addition is highly variable, but for the purposes of a preliminary estimate an addition of 2% to 5% onto nett turnover is suggested.

### FINANCE COSTS ASSESSMENT OF CONTRACT INVESTMENT

The following procedure may be followed to give an indication of the average amount of capital investment required to finance the contract. It must be emphasised that this method will not give an accurate investment as this can only be done by preparing a detailed cash flow related to the programme for the contract. The example is based on the same theoretical contract used for the worked example in Part 2 and should be read in conjunction with the Tender Summary that follows.

The average monthly income must first be assessed. This is done by deducting from the Tender total the contingency items and those items for which immediate payment is necessary.

Tender total (excluding finance charges)	£	£ 10,396,313
Deduct		
Subcontractors	2,000,000	
Prime cost sums	100,000	
Employer's contingencies	245,500	2,345,500
Amount to be financed	£	8,050,813

The average monthly income is this sum (£8,050,813) divided by the contract period (12 months), that is, £670,901.

The average contract investment may now be calculated as follows :

	£	£
Plant and equipment to be purchased		90,000
Non time related		
Contractor	240,000	
Employer	8,000	
Other services, charges and fees	NIL	
Subtotal £	248,000	
Take 50% as an average [1]		124,000
Stores and unfixed materials on site		20,000
Work done but not paid for		
2½ months at £670,901 (see table above) [2]	1,677,253	
Less retention at 5% [3]	83,863	1,593,390
Retention (5% with limit of 3%)		
Average retention [4] 3% of £ 8,050,813 (see table above)		241,524
Subtotal	£	2,068,914
Deduct		
Advance payment by client	NIL	
Bill loading [5]	180,000	
Creditors (suppliers)	500,000	680,000
Average contract investment	£	1,388,914

The interest charges that must be added to the Tender price (or absorbed from profit if capital needs to be borrowed) are therefore:

£ 1,388,914 x say 6.0% x 1 year

= say £ 83,335

**Notes**

- [1] These non time related oncosts and services are incurred as lump sums during the contract and, therefore, only 50% of such costs are taken for investment purposes.
- [2] This period depends on the terms of payment set out in the contract.
- [3] Retention is deducted as full retention is taken into account later.
- [4] Average retention will depend on the retention condition set out in the contract, taking into account any partial completion dates.
- [5] The contractor assesses here any financial advantage he may obtain by varying his items.



**VALUE ADDED TAX**

All of the figures quoted in this book exclude value added tax, which the conditions of contract normally make the subject of a separate invoicing procedure between the contractor and the employer.

Value Added Tax will be chargeable at the standard rate, currently 15%, on supplies of services in the course of:

1. The construction of a nondomestic building
2. The construction or demolition of a civil engineering work
3. The demolition of any building, and
4. The approved alteration of a nondomestic protected building

**TENDER SUMMARY**

This summary sets out a suggested method of collecting together the various costs and other items and sums which, together, make up the total Tender sum for the example contract.

	£	£
Preliminaries and General Items (from Part 2)		
Contractor's site oncosts time related	909,935	
Contractor's site oncosts non time related	238,502	
Employer's requirements time related	145,300	
Employer's requirements non time related	7,700	
Other services, charges and fees	NIL	
Temporary works not included in unit costs	123,920	
Plant not included in unit costs	<u>210,693</u>	1,636,050
Estimated net cost of measured work, priced at unit costs		<u>5,280,000</u>
	£	6,916,050
Allowance for fixed price contract		
6% on labour (assumed to be £1,400,000)	84,000	
4% on materials (assumed to be £2,500 000)	100,000	
4% on plant (assumed to be £400,000)	16,000	
5% on staff, overheads etc. (assumed to be £600,000)	<u>30,000</u>	230,000
Subcontractors (net)		2,000,000
Prime cost sums		100,000
Adjustments made at Management Appraisal		
price adjustments, add say	75,000	
risk evaluation, add say	<u>50,000</u>	125,000
	£	9,246,050
Head office overheads and profit at 6 %		554,763
Finance costs (from previous page)		83,335
Provisional Sums		175,000
Dayworks Bill		<u>175,000</u>
	£	10,234,148
Employer's contingencies		245,500
<b>TENDER TOTAL</b>	<b>£</b>	<b>10,479,648</b>



# Costs and Tender Prices Indices

*The purpose of this part is to present historic changes in Civil Engineering costs and tender prices. It gives published and constructed indices and diagrammatic comparisons between building and Civil Engineering costs and tender prices and the retail price index, and will provide a basis for updating historical cost or tender price information.*

## INTRODUCTORY NOTES

It is important to distinguish between costs and tender prices; Civil Engineering costs are the costs incurred by a Contractor in the course of his business; Civil Engineering tender prices are the prices for which a Contractor undertakes work. Tender prices will be based on Contractor's costs but will also take into account market considerations such as the availability of labour and materials and the prevailing workload for Civil Engineering Contractors. This can mean that in a period when work is scarce tender prices may fall as costs are rising while when there is plenty of work prices will tend to increase at a faster rate than costs. This section comprises published Civil Engineering cost and tender indices, a constructed Civil Engineering cost index and comparisons of these with building cost and tender indices and with the retail price index.

## PRICE ADJUSTMENT FORMULAE INDICES

From 1 April, BCIS has taken on responsibility for the Industry's Formulae Price Adjustment Indices from BERR.

The indices were originally introduced in the 1970s to reduce the time and effort in allowing for fluctuations in labour and materials in contracts with a Variation of Price clause.

Used in conjunction with the formulae price adjustment method of adjusting building and civil and specialist engineering contracts to allow for changes in the cost of labour, plant and materials. They are familiarly known as NEDO Indices, Baxter Indices or Osborne Indices and are widely used primarily on variation of price contracts.

BCIS calls them the Price Adjustment Formulae Indices (PAFI) but will recognise them by any of their previous aliases.

<b>Index</b>	<b>1970 Series Title</b>	<b>Index</b>	<b>1990 Series Title</b>
1	Labour and supervision in Civil Engineering	1	Labour and supervision
2	Plant and road vehicles: provision and maintenance	2	Plant and road vehicles
3	Aggregates	3	Aggregates
4	Bricks and clay products	4	Bricks and clay products
5	Cements	5	Cements
6	Cast iron products	6	Ready mixed concrete
7	Coated roadstone for road pavement & bituminous products	7	Cast and spun iron products
8	DERV fuel	8	Plastic products
9	Gas oil fuel	9	Coated macadam and bituminous products
10	Timber	10	DERV fuel
11A	Steel for reinforcement	11	Gas oil fuel
11B	Metal sections	12	Timber
12	Fabricated structural steel	13	Steel for reinforcement
13	Labour and supervision in fabricating and erecting steelwork	14	Metal sections
		15	Sheet steel piling

Price Adjustment Formulae for Construction Contracts  
Monthly Bulletin of Indices are published by BCIS

Quarterly values of price adjustment formula 1970 Series. Base: 1970 = 100 (except for index 11A which has a base date of July 1976).

Year	Q	1	2	3	4	5	6	7	9	10	11a
2000	1	1097	891	1399	1485	1107	1578	2220	1988	830	283
	2	1108	895	1400	1488	1092	1578	2283	2111	828	283
	3	1154	907	1405	1504	1086	1578	2276	2592	824	295
	4	1151	907	1389	1495	1068	1583	2277	2610	821	295
2001	1	1151	908	1408	1526	1079	1665	2363	2108	812	281
	2	1160	910	1419	1537	1099	1645	2414	2324	794	289
	3	1211	924	1422	1573	1091	1675	2429	2195	786	289
	4	1211	924	1423	1570	1080	1699	2429	1771	833	289
2002	1	1211	924	1437	1603	1119	1710	2440	1907	839	289
	2	1237	924	1702	1632	1127	1703	2702	1909	851	303
	3	1319	933	1676	1631	1120	1703	2813	2087	882	380
	4	1319	958	1620	1664	1114	1758	2744	2116	867	353
2003	1	1319	959	1668	1699	1134	1758	2824	2639	879	351
	2	1325	965	1729	1715	1123	1758	2935	2113	901	360
	3	1405	989	1729	1706	1117	1738	2816	2142	915	361
	4	1405	994	1642	1720	1117	1738	2819	2250	926	361
2004	1	1406	999	1697	1787	1116	1769	2906	2268	999	437
	2	1415	1006	1882	1754	1122	1777	2927	2510	1068	551
	3	1506	1038	1667	1780	1133	1777	2929	2952	1033	546
	4	1506	1042	1650	1783	1133	1820	2853	2872	975	540
2005	1	1507	1057	1657	1873	1171	1826	3022	3291	977	508
	2	1523	1063	1705	1919	1238	1815	3079	3573	986	459
	3	1639	1105	1661	1889	1234	1820	3081	4179	988	446
	4	1639	1106	1619	1909	1243	1839	3140	3868	1020	461
2006	1	1639	1112	1659	1962	1329	1854	3292	4044	1009	474
	2	1648	1114	1689	1970	1328	1853	3346	4465	1014	521
	3	1696	1128	1656	2000	1326	1916	3527	4332	1056	592
	4	1696	1130	1614	2013	1350	1947	3500	3437	1076	594
2007	1	1696	1131	1709	2034	1395	1967	3623	3982	1100	605
	2	1710	1137	1667	2028	1404	1890	3610	4359	1156	635
	3	1768	1158	1651	2084	1416	1919	3546	4638	1194	629
	4	1768	1159	1656	2013	1408	1944	3646	5440	1190	593
2008	1	1768	1174	1735	2099	1552	1938	4051	6305	1168	647
	2	1770	1184	1890	2066	1549	2021	4280	2331	1133	830
	3	1868	1218	1832	1987	1591	2165	4318	2163	1131	879
	4	1868	1230	1780	2032	1589	2265	4369	1803	1187	703
2009*	1	1869*	1248*	1817*	2225*	1719*	2311*	4321	1722*	1158*	667*

\* Provisional

Note: The indices shown are for the third month of each quarter

### A CONSTRUCTED COST INDEX BASED ON THE PRICE ADJUSTMENT FORMULA INDICES

Although the above indices are prepared and published in order to provide a common basis for calculating reimbursement of increased costs during the course of a contract, they also present time series of cost indices for the main components of Civil Engineering work. They can therefore be used as the basis of an index for Civil Engineering work. The method used here is to construct a composite index by allocating weightings to each of the 10 indices, the weightings being established from an analysis of actual projects. The composite index is calculated by applying these weightings to the appropriate price adjustment formula indices and totalling the results; this index is again presented with a base date of 1970.

Constructed Civil Engineering Cost Index base: 1970 = 100

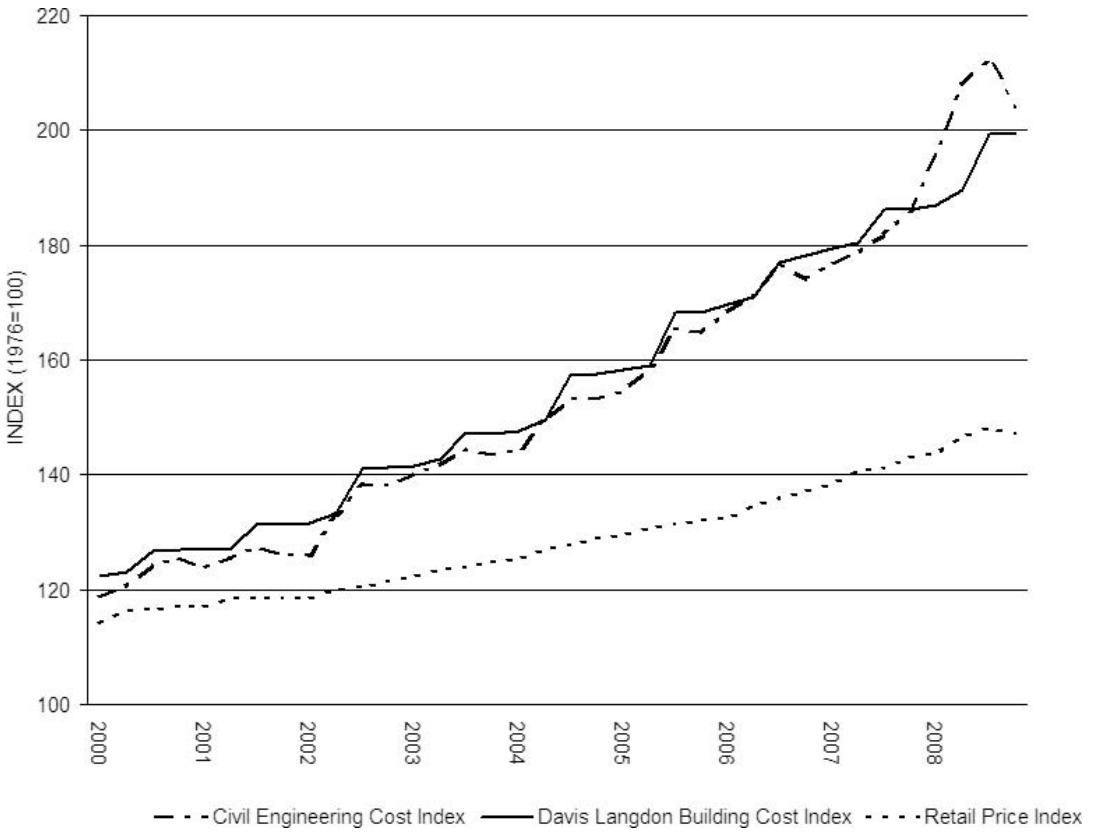
Year	First quarter	Second quarter	Third quarter	Fourth quarter	Annual Average
1988	736	743	760	763	751
1989	774	793	820	837	806
1990	849	859	894	916	880
1991	913	912	928	928	920
1992	922	927	935	951	934
1993	954	968	968	977	967
1994	984	1001	1017	1026	1007
1995	1042	1064	1073	1075	1064
1996	1086	1103	1114	1125	1107
1997	1125	1130	1135	1144	1134
1998	1138	1152	1163	1156	1152
1999	1158	1166	1206	1212	1186
2000	1238	1256	1295	1307	1274
2001	1290	1308	1328	1314	1310
2002	1313	1385	1439	1440	1394
2003	1459	1477	1505	1495	1484
2004	1502	1559	1596	1597	1564
2005	1611	1652	1722	1718	1676
2006	1757	1785	1842	1813	1799
2007	1841	1862	1895	1939	1884
2008	2039	2168	2215	2128	2138
2009	2089*				

Note: \* Provisional

Source: Davis Langdon based on BERR figures.

The figure on the following page illustrates graphically the movement of the Constructed Civil Engineering Index, the Davis Langdon Index of Building Costs and the Retail Price Index.

A CONSTRUCTED COST INDEX BASED ON THE PRICE ADJUSTMENT FORMULA INDICES



### THE ROAD CONSTRUCTION TENDER PRICE INDEX

Civil Engineering work generally does not lend itself easily to the preparation of tender price indices in the same way as building work. There is, however, a published index for road construction tender and this is reproduced below with the permission of BERR. The index is intended to indicate the movement in tender prices for road construction contracts. It is based on priced rates contained in accepted tenders for Road Construction, Motorway Widening and Major Maintenance Schemes. It is published with a base of 1995 = 100.

#### Tender Price Index of Road Construction Base: 1995 = 100

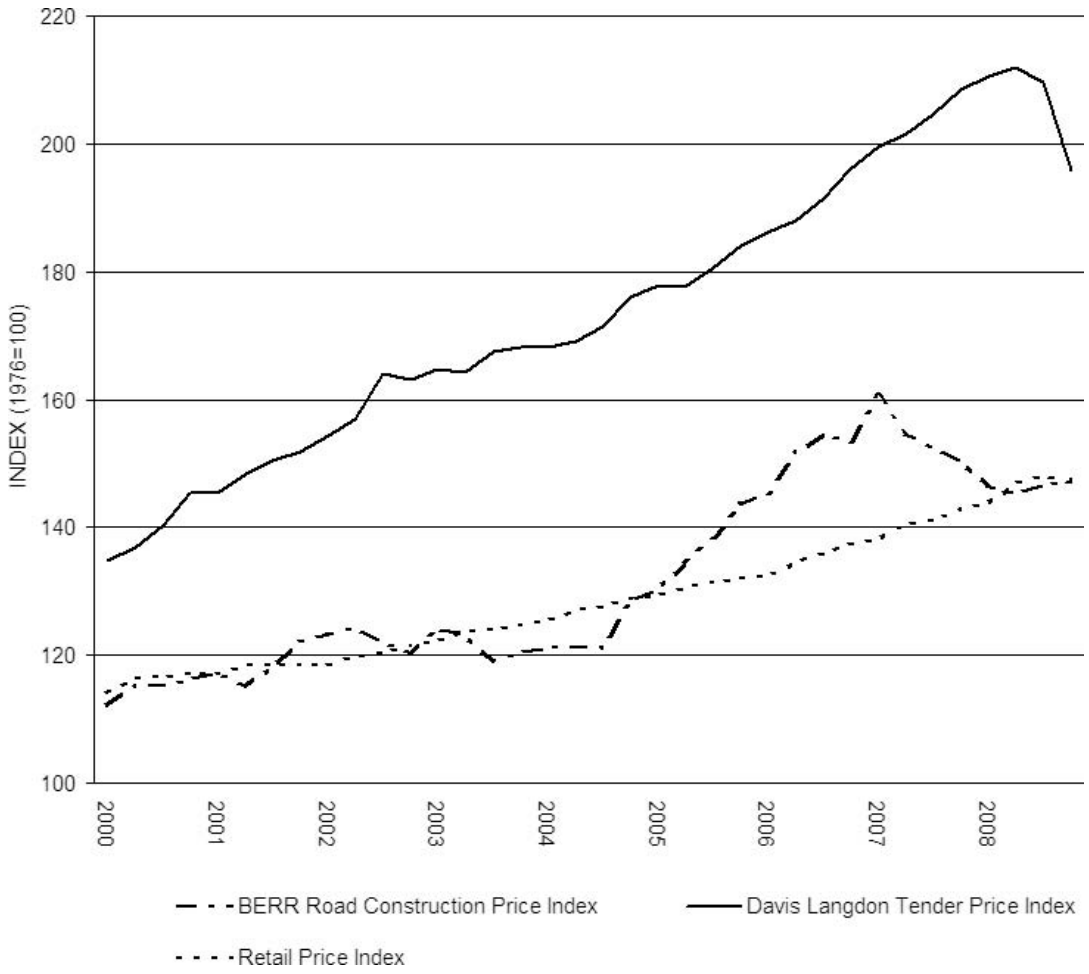
Year	First quarter	Second quarter	Third quarter	Fourth quarter	Annual Average
1990	82	82	79	79	81
1991	79	80	74	72	76
1992	71	70	70	68	70
1993	67	73	76	80	74
1994	83	87	92	93	89
1995	99	100	101	100	100
1996	96	94	100	101	98
1997	99	97	101	102	100
1998	99	102	97	96	99
1999	93	103	98	105	100
2000	111	114	114	115	114
2001	116	114	117	121	117
2002	122	123	121	119	121
2003	123	122	118	119	121
2004	120	120	120	127	122
2005	129	133	137	142	135
2006	144	150	153	152	150
2007	159	153	151	149	153
2008	145	144	145*	146*	145

Note: \* Provisional

Source: BERR

The figure on the following page illustrates graphically the movement of the Tender Index of Road Construction, the Davis Langdon Building Tender Price Index and the Retail Price Index.







## PART 10

# Daywork

### INTRODUCTORY NOTES

"Dayworks" relates to work which is carried out incidental to a contract but where no other rates have been agreed. In the case of the ICE Conditions of Contract It is ordered by the Engineer pursuant to clause 52(6):

"(6) The Engineer may if in his opinion it is necessary or desirable order in writing that any additional or substituted work shall be carried out on a daywork basis in accordance with the provisions of Clause 56(4)."

Clause 56(4) states that:

"(4) Where any work is carried out on a daywork basis the Contractor shall be paid for such work under the conditions and at the rates and prices set out in the daywork schedule included in the Contract or failing the inclusion of a daywork schedule he shall be paid at the rates and prices and under the conditions contained in the "Schedules of Dayworks carried out incidental to Contract Work" issued by The Civil Engineering Contractor's Association, current at the date of carrying out of the daywork.

The contractor shall furnish to the Engineer such records receipts and other documentation as may be necessary to prove amounts paid and/or costs incurred. Such returns shall be in the form and delivered at the times the Engineer shall direct and shall be agreed within a reasonable time.

Before ordering materials the Contractor shall if so required submit to the Engineer quotations for the same for his approval."

The most recent Schedule is dated July 2008 and is published by the Civil Engineering Contractors Association. Copies may be obtained from:

CIVIL ENGINEERING CONTRACTORS ASSOCIATION

55 Tufton Street

London

SW1P 3QL

Tel: 020 7227 4620

Fax: 020 7227 4621

Website: <http://www.ceca.co.uk>

These schedules identify a number of items that are excluded from the rates and percentages quoted, but should be recovered by the Contractor when valuing his Daywork account. Under normal circumstances it is impractical to accurately value these items for each Daywork event, although certain items can be allowed for by means of a percentage addition. Suggested methods of calculating such additions are included in this section.

In Summary the Daywork schedule allows for an addition:

- of 148% to wages paid to workmen.
- of 88% to labour only subcontractors and hired plant drivers
- of 12.5% to subsistence allowances and travel paid to workmen.
- of 12.5% to materials used on dayworks
- of 12.5% to full cost of plant hired for dayworks
- of 12.5% to cost of operating welfare facilities
- of 12.5% to cost of additional insurance premiums for abnormal contract work or special conditions.

Part 3 of this book (Resources Plant) includes detailed references to the plant section of the 2008 Daywork Schedule.

The text of the document is as follows:

### **SCHEDULES OF DAYWORKS CARRIED OUT INCIDENTAL TO CONTRACT WORK**

The General clauses in the Schedule are repeated in full as follows:

#### **1 Labour**

Add to the amount of wages paid to operatives - 148%

- 1 "Amount of wages" means:  
Actual wages and bonus paid, daily travelling allowances (fare and/or time), tool allowance and all prescribed payments including those in respect of time lost due to inclement weather paid to operatives at plain time rates and/or at overtime rates.
- 2 The percentage addition provides for all statutory charges at the date of publication and other charges including:
  - National Insurance and Surcharge.
  - Normal Contract Works, Third Party & Employer's Liability Insurances
  - Annual and Public Holidays with pay.
  - Statutory and industry sick pay.
  - Welfare benefits.
  - Industrial Training Levy.
  - Redundancy Payments.
  - Employment Rights Act 1996.
  - Employment Relations Act 1999.
  - Employment Act 2002.
  - Site Supervision and staff including foremen and walking gangers, but the time of the gangers or charge hands' working with their gangs is to be paid for as for operatives.
  - Small tools – such as picks, shovels, barrows, trowels, hand saws, buckets, trestles, hammers, chisels and all items of a like nature.
  - Protective clothing.
  - Head Office charges and profit.
- 3 The time spent in training, mobilisation, demobilisation etc. for the Dayworks operation is chargeable.
- 4 All hired plant drivers and labour subcontractor's accounts to be charged in full (without deduction of any cash discounts not exceeding 2.5%) plus 88%.
- 5 Subsistence or lodging allowances and periodic travel allowances (fare and/or time) paid to or incurred on behalf of operatives are chargeable at cost plus 12.5%.

## 2 Materials

"Add to the cost of materials - 12.5%"

- 1 The percentage addition provides for Head office charges and Profit
- 2 The cost of materials means the invoiced price of materials including delivery to site without deduction of any cash discounts not exceeding 2.5%
- 3 Unloading of materials:  
The percentage added to the cost of materials excludes the cost of handling which shall be charged in addition. An allowance for unloading into site stock or storage including wastage should be added where materials are taken from existing stock.

## 3 Supplementary Charges

- 1 Transport provided by contractors for operatives to, from, in and around the site to be charged at the appropriate Schedule rates.
- 2 Any other charges incurred in respect of any Dayworks operation including, tipping charges, professional fees, subcontractor's accounts and the like shall be paid for in full plus 12.5% (without deduction of cash discounts not exceeding 2.5%). Labour subcontractors being dealt with in Section 1.
- 3 The cost of operating welfare facilities to be charged by the contractor at cost plus 12.5%.
- 4 The cost of additional insurance premiums for abnormal contract work or special site conditions to be charged at cost plus 12.5%.
- 5 The cost of watching and lighting specially necessitated by Dayworks is to be paid for separately at Schedule rates.

## 4 Plant

- 1 These rates apply only to plant already on site, exclusive of drivers and attendants, but inclusive of fuel and consumable stores unless stated to be charged in addition, repairs and maintenance, insurance of plant but excluding time spent on general servicing.
- 2 Where plant is hired specifically for Dayworks: plant hire (exclusive of drivers and attendants), fuel, oil and grease, insurance, transport etc., to be charged at full amount of invoice (without deduction of any cash discount not exceeding 2.5%) to which should be added consumables where supplied by the contractor, all plus 12.5%.
- 3 Fuel distribution, mobilisation and demobilisation are not included in the rates quoted which shall be an additional charge.
- 4 Metric capacities are adopted and these are not necessarily exact conversions from their imperial equivalents, but cater for the variations arising from comparison of plant manufacturing firms' ratings
- 5 SAE rated capacities of plant means rated in accordance with the standards specified by the Society of Automotive Engineers.
- 6 Minimum hire charge will be for the period quoted
- 7 Hire rates for plant not included below shall be settled at prices reasonably related to the rates quoted.
- 8 The rates provide for Head Office charges and Profit

The Schedule then gives twenty-one pages of hire rates for a wide range of plant and equipment.

## APPLICATION OF DAYWORKS

### Generally

A check should be made on the accuracy of the recorded resources and times.

Tender documents generally allow the contractor to tender percentage variations to the figure calculated using the published percentage additions. These vary widely but a reasonable average indication can be along the lines of:

Labour	20% less
Materials	10% less
Plant	30% less

### Labour

The Contractor should provide substantiation of the hourly rates he wishes to be paid for the various classes of labour and should demonstrate that the basic "amount of wages" does not include any of the items actually covered by the percentage addition.

The wage bill is intended to reflect the cost to the Contractor. The time involved is not restricted to the duration of the task, but also includes mobilisation and demobilisation, together with any training needed – which would include induction courses required for Health & Safety requirements. The rate paid is the actual value of wages and bonuses paid (not simply the basic rate promulgated for the labour grade involved, and includes overtime rates if applicable, tool money, time lost due to inclement weather. In addition, daily travelling allowances are included, as are periodic travel allowances and also subsistence or lodging allowances.

Care should be taken that the matters deemed included in the percentage addition are not duplicated in the amount of wages. For example, it should be noted that foremen, gangers and other supervisory staff are covered by the percentage addition, unless they work in which case they are paid for at the correct rate for the task involved. The proportion of the time they spend working rather than supervising must be agreed. Refer to the amplification of labour categories in Part 3.

Hired or subcontracted labour is paid at invoiced cost, adjusted only where any cash discount exceeded 2½%, in which case the excess percentage is deducted.

### Materials

The cost of materials delivered to the site is simply the invoiced price of the materials plus any delivery charges.

Should the cash discount exceed 2½%, the excess percentage is deducted from the amount to be paid.

The percentage addition simply covers the cost of Head Office charges and profit. It does not include for unloading or temporarily storing the materials nor for distributing them on site to the work place. Such cost can be charged, even in cases where the materials may already be in the site stock.

Material waste should be added direct to the cost of materials used for each particular Daywork items as an appropriate percentage.

### Handling and offloading materials

Schedule 2.3 states that an allowance for handling materials, and an allowance for unloading or storage including wastage should be an additional charge.

Example: For a 12 month, £10.0m Civil Engineering scheme where the total cost of materials that require handling (excluding Ready Mix concrete, imported fills, fuels and similar items) is £2,500,000. The following gang is employed (part time) throughout the contract for offloading and handling of materials.

	Net cost (£)
2 labourers	27.18
Lorry (8T) with Hiab lift	23.94
	<hr/>
Rate per hour (£)	51.12
Allow an average of 5 hours per week over 50 weeks	
250 hours @ £51.12 / hour =	£ 12,780
This cost as a percentage of the materials element of the contract.	
(£12,780/£2,500,000) x 100	= 0.51 %

### Supplementary charges

#### 1 Transport

Schedule 3.1 states that transport provided by contractors to take operatives to and from the site as well as in and around the site shall be charged at the appropriate Schedule Rate. This would entail the driver and vehicle being included with the labour and plant parts of the Daywork calculation.

#### 2 Any other charges

This relates to any other charges incurred in respect of any Dayworks operation and includes tipping charges, professional fees, subcontractor's accounts and the like. Schedule 3.2 provides for full payment of such charges in full plus the addition of 12½% for Head Office charges and Profit.

Should the cash discount exceed 2½%, the excess percentage is deducted from the amount to be paid.

### Welfare Facilities

Schedule 3.3 allows for the net cost of operating these facilities plus 12.5%.

Example: How the costs of operating welfare facilities may be charged to the Daywork account on a 12 month, £10.0m Civil Engineering scheme, where the total labour element is £1,400,000.

Facility	Weekly Cost £
Toilet unit (4 nr)	160.00
Jack leg hutments 24' (2 nr)	120.00
Jack leg hutment 12' (1 nr)	42.00
Labour to clean, maintain and make tea, etc. 1 man, 2 hours per day, 6 days x 24.88	149.28
Consumables (heat, light, soap, disinfectant, etc) say	50.00
Rates, insurance, taxes, etc (add 2%)	10.43
Total weekly cost	531.71
 Multiply by 50 weeks (construction period) plus 6 weeks (maintenance period)	
Total cost to contract £ 531.71 x 56 =	<u>29,775.76</u>
 Thus cost as a percentage of the Labour element of the contract	2.13 %
 = (£29,776/£1,400,000) x 100 = £1,400,000	
Add, as schedule 3.3 12.5%	0.27 %
Percentage addition for facilities	2.40 %

### Insurances

Schedule 3.4 allows for the cost of additional insurance premiums for abnormal work or special site conditions to be charged at cost plus 12.5%.

### Watching and lighting

Schedule 3.5 allows for all such costs necessitated by Dayworks to be paid for separately at Schedule rates.

### Plant

The cost of the driver(s) and any required attendants such as banksmen should be covered in the labour section of the dayworks calculation.

The Schedule rates include fuel and consumable stores, repairs and maintenance (but not the time spent on general servicing) and insurance.

The Schedule rates only apply to machinery which is on site at the time of the work - where plant is specifically hired for the task, the Contractor is entitled to be paid the invoiced value. If the invoice excludes consumables used (fuel, oil and grease) then the Contractor is entitled to add the cost - together with insurance and any transport costs incurred in getting the equipment on site all subject to a 12½% addition for Head Office costs and profit.

Head Office charges and Profit allowances are included in the Schedule rates, 12½% being added to the charged value of hired plant.



## 1 General servicing of plant

Schedule 4.1 specifically excludes time spent on general servicing from the Hire Rates.

General servicing in this context can be assumed to mean:

Checking, replenishing (or changing, if applicable)

- i.e. engine lubrication
- transmission lubrications
- general greasing
- coolants
- hydraulic oils and brake systems
- filters
- tyres

Inspecting special items

- e.g. buckets
- hoses / airlines
- shank protectors
- Cables / ropes / hawsers
- rippers
- blades, steels, etc

Example Assuming an 8 hour working day these operations could take a plant operator on average:

large machine	20 minutes per day	(equating to 1 hour for each 24 worked)
medium machine	10 minutes per day	(equating to 1 hour for each 48 worked)
small machine	5 minutes per day	(equating to 1 hour for each 96 worked)

The cost of the servicing labour would be as follows

large machine	£26.54/hr / 24hrs	= £1.11
medium machine	£17.58/hr / 48 hrs	= £0.37
small machine	£14.68/hr / 96 hrs	= £0.15

These labour costs can be expressed as a percentage of the schedule hire rates :

D8 Dozer	£1.11 / £121.54/hr x 100	= 0.9 %
JCB 3CX	£0.37 / £18.16/hr x 100	= 2.0%
2 tonne dumper	£0.15 / £6.62/hr x 100	= 2.3 %

Taking into account the range of these sizes of plant which are normally deployed on site, the following would provide a reasonable average percentage addition:

0.9 % x 2	= 1.8 %
2.0 % x 3	= 6.0 %
2.3 % x 6	= 13.8 %
Total = 21.6 % for 11 items of plant	i.e. average = 2.0 %

## 2 Fuel distribution

Schedule 4.3 allows for charging for fuel distribution.

Assuming this is done with a towed fuel bowser behind a farm type tractor with driver/labourer in attendance, the operation cycle would involve visiting, service, and return or continue on to the next machine.

The attendance cost based on the hourly rate tractor/bowser/driver would be: = £15.96 + £1.38 + £13.59 = £30.93

Example: A heavy item of plant, for example a Cat D8R Tractor Bulldozer with a 212 kW engine  
 Fuel consumption is 30.4 litres/hr (38 litres/hr x 80% site utilisation factor)  
 Fuel capacity is 200 litres  
 Requires filling after 6.5 working hours operation (200 litres divided by 30.40 l/hr)  
 Tractor / bowser service taking 30 minutes

The machine cost during this 6.5 hr period would be £121.54 x 6.5, i.e. £ 790.01

The attendance cost for the 30 min cycle would be £30.93 x 0.5, i.e. £15.47

The percentage addition for fuelling the machine would be: (£15.47/£790.01) x 100 = 2.0%

Example: A medium sized item of plant, for example a JCB 3CX  
 Fuel consumption is 5.6 litres/hr (7.5 litres/hr x 75% site utilisation factor)  
 Fuel capacity is 90 litres  
 Requires filling after 16 working hours operation (90 litres divided by 5.60 l/hr)  
 Tractor / bowser service taking 10 minutes

The machine cost during this 16 hr period would be £18.16 x 16 hrs, i.e. £290.56

The attendance cost for the 10 min cycle would be £30.93 x 0.17 hrs, i.e. £5.26

The percentage addition for fuelling the machine would be: (£5.26/£290.56) x 100 = 1.8%

Example: A medium sized item of plant, for example a 2 tonne dumper  
 Fuel consumption is 2.4 litres/hr (3 litres/hr x 80% site utilisation factor)  
 Fuel capacity is 35 litres  
 Requires filling after 14.5 working hours operation (35 litres divided by 2.40 l/hr)  
 Tractor / bowser service taking 5 minutes

The machine cost during this 14.5 hr period would be £6.62 x 14.5 hrs, i.e. £95.99

The attendance cost for the 5 min cycle would be £30.93 x 0.08 hrs, i.e. £2.47

The percentage addition for fuelling the machine would be: (£2.47/£95.99) x 100 = 2.6%

Considering the range of these categories of plant which are normally deployed on site, the following would provide a reasonable average percentage addition for the above :

2.0% x 2 = 4.0 %

1.8% x 3 = 5.4 %

2.6% x 6 = 15.6 %

Total = 25.0 % for 11 items of plant average = 2.3 %

## 3 Mobilisation

Schedule 4.3 allows for charging for mobilisation and demobilisation.

PART 11

# **Professional Fees**

## **CONSULTING ENGINEERS' CONDITIONS OF APPOINTMENT**

### **Introduction**

A scale of professional charges for consulting engineering services in connection with civil engineering works is published by the Association for Consultancy and Engineering (ACE)

Copies of the document can be obtained direct from:

Association for Consultancy and Engineering  
Alliance House  
12 Caxton Street  
London SW1H 0QL  
Tel 020 7222 6557  
Fax 020 7222 0750

### **Comparisons**

Instead of the previous arrangement of having different agreements designed for each major discipline of engineering, the current agreements have been developed primarily to suit the different roles that Consulting Engineers may be required to perform, with variants of some of them for different disciplines. The agreements have been standardised as far as possible whilst retaining essential differences.

Greater attention is required than with previous agreements to ensure the documents are completed properly. This is because of the perceived need to allow for a wider choice of arrangements, particularly of methods of payment.

The agreements are not intended to be used as unsigned reference material with the details of an engagement being covered in an exchange of letters, although much of their content could be used as a basis for drafting such correspondence.

For 2009 the ACE has published a new suite of Agreements with a broader set of services, these are listed below.

### Forms of Agreement

ACE Agreement 1: Design

ACE Agreement 2: Advise and Report

ACE Agreement 3: Design and Construct

ACE Agreement 4: Sub-Consultancy

ACE Agreement 5: Homeowner

ACE Agreement 6: Expert Witness (Sole Practitioner)

ACE Agreement 7: Expert Witness (Firm)

ACE Agreement 8: Adjudicator

To a number of the the above ACE Agreements Schedules of Services are appended and currently these are:

For use with ACE Agreement 1: Design

ACE Schedule of Services – Part G(a):  
Civil and Structural Engineer – single consultant or non-lead consultant

ACE Schedule of Services – Part G(b):  
Mechanical and Electrical Engineering (detailed design in buildings)

ACE Schedule of Services – Part G(c):  
Mechanical and Electrical Engineering (performance design in buildings)

ACE Schedule of Services – Part G(d):  
Civil and Structural Engineer – Lead consultant

ACE Schedule of Services – Part G(e):  
Mechanical and Electrical Engineering Design in buildings – Lead consultant

For use with ACE Agreement 3: Design and Construct

ACE Schedule of Services – Part G(f):  
Civil and Structural Engineer

ACE Schedule of Services – Part G(g):  
Mechanical and Electrical Engineering (detailed design in buildings)

ACE Schedule of Services – Part G(h):  
Mechanical and Electrical Engineering (performance design in buildings)

**ACE Agreement 1: Design**

Design for the appointment of a consultant by a client to undertake detailed design and/or specification of permanent works to be undertaken or installed by a contractor including any studies, appraisals, investigations, contract administration or construction monitoring leading to or resulting from such detailed design and/or specification.

**ACE Agreement 2: Advise and Report**

Advise and report for the appointment of a consultant by a client to provide any type of advisory, research, checking, reviewing, investigatory, monitoring, reporting or technical services in the built and natural environments where such services do not consist of detailed design or specification of permanent works to be constructed or installed by a contractor.

**ACE Agreement 3: Design and Construct**

For the appointment of a consultant by a contractor in circumstances where the contractor is to construct permanent works designed by the consultant.

**ACE Agreement 4: Sub-consultancy**

For the appointment of a sub-consultant by a consultant in circumstances where the consultant is appointed on the terms of an ACE Agreement by its client

**ACE Agreement 5: Homeowner**

Model letter for the appointment of a consultant by a homeowner

**ACE Agreement 6: Expert Witness (Sole Practitioner)**

For the appointment of an individual to act as an expert witness

**ACE Agreement 7: Expert Witness (Firm)**

For the appointment of a firm to provide an expert witness

**ACE Agreement 8: Adjudicator**

For the appointment of an adjudicator

**Collateral Warranties**

The association is convinced that collateral warranties are generally unnecessary and should only be used in exceptional circumstances. The interests of clients, employers and others are better protected by taking out project or BUILD type latent defects insurance. Nevertheless, in response to observations raised when the pilot editions excluded any mention of warranties, references and arrangements have been included in the Memorandum and elsewhere by which Consulting Engineers may agree to enter into collateral warranty agreements; these should however only be given when the format and requirements thereof have been properly defined and recorded in advance of undertaking the commission.

Requirements for the provision of collateral warranties will be justified even less with commissions under Agreement D than with those under the other ACE agreements. Occasional calls may be made for them, such as when a client intends to dispose of property and needs evidence of a duty of care being owed to specific third parties, but these will be few and far between.

**Remuneration**

Guidance on appropriate levels of fees to be charged is given at the end of each agreement. Firms and their clients may use this or other sources, including their own records, to determine suitable fee arrangements.

**Need for formal documentation**

The Association for Consultancy and Engineering recommends that formal written documentation should be executed to record the details of each commission awarded to a Consulting Engineer. These Conditions are published as model forms of agreement suitable for the purpose. However, even if these particular Conditions are not used, it is strongly recommended that, whenever a Consulting Engineer is appointed, there should be at least an exchange of letters defining the duties to be performed and the terms of payment.

**Appointments outside the United Kingdom**

These conditions of Engagement are designed for use within the UK. For work overseas it is impracticable to give definite recommendations; circumstances differ too widely between countries. There are added complications in documentation relating to local legislation, import customs, conditions of payment, insurance, freight, etc. Furthermore, it is often necessary to arrange for visits to be made by principals and senior staff whose absence abroad during such periods represents a serious reduction of their earning power. The additional duties, responsibilities and nonrecoverable costs involved, and the extra work on general coordination, should be reflected in the levels of fees. Special arrangements are also necessary to cover travelling and other outofpocket expenses in excess of those normally incurred on similar work in the UK, including such matters as local costofliving allowances and the cost of providing homeleave facilities for expatriate staff.

**CONDITIONS OF ENGAGEMENT****Obligations of the Consulting Engineer**

The responsibilities of the Consultant Engineer for the works are as set out in the actual agreement. The various standard clauses in the Conditions relate to such matters as differentiating between Normal and Additional services, the duty to exercise skill and care, the need for Client's written consent to the assignment or transfer of any benefit or obligation of the agreement, the rendering of advice if requested on the appointment of other consultants and specialist sub consultants, any recommendations for design of any part of the Works by Contractors or Sub-contractors (with the proviso that the Consulting Engineer is not responsible for detailed design of contractors or for

defects or omissions in such design), the designation of a Project Leader, the need for timeliness in requests to the Client for information etc., freezing the design once it has been given Client approval and the specific exclusion of any duty to advise on the actual or possible presence of pollution or contamination or its consequences.

### **Obligations of the Client**

The Consultant Engineer shall be supplied with all necessary data and information in good time. The Client shall designate a Representative authorised to make decisions on his behalf and ensure that all decisions, instructions, and approvals are given in time so as not to delay or disrupt the Consultant Engineer.

### **Site Staff**

The Consulting Engineer may employ site staff he feels are required to perform the task, subject to the prior written agreement of the Client. The Client shall bear the cost of local office accommodation, equipment and running costs.

### **Commencement, Determination, Postponement, Disruption and Delay**

The Consulting Engineer's appointment commences at the date of the execution of the Memorandum of Agreement or such earlier date when the Consulting Engineer first commenced the performance of the Services, subject to the right of the Client to determine or postpone all or any of the Services at any time by Notice.

The Client or the Consulting Engineer may determine the appointment in the event of a breach of the Agreement by the other party after two weeks notice. In addition, the Consulting Engineer may determine his appointment after two weeks notice in the event of the Client failing to make proper payment.

The Consulting Engineer may suspend the performance of all or any of the Services for up to twenty-six weeks if he is prevented or significantly impeded from performance by circumstances outside his control. The appointment may be determined by either party in the event of insolvency subject to the issue of notice of determination.

### **Payments**

The Client shall pay fees for the performance of the agreed service(s) together with all fees and charges to the local or other authorities for seeking and obtaining statutory permissions, for all site staff on a time basis, together with additional payments for any variation or the disruption of the Consulting Engineer's work due to the Client varying the task list or brief or to delay caused by the Client, others or unforeseeable events.

If any part of any invoice submitted by the Consulting Engineer is contested, payment shall be made in full of all that is not contested.

Payments shall be made within 28 days of the date of the Consulting Engineer's invoice; interest shall be added to all amounts remaining unpaid thereafter.

### **Ownership of Documents and Copyright**

The Consulting Engineer retains the copyright in all drawings, reports, specifications, calculations etc. prepared in connection with the Task; with the agreement of the Consulting Engineer and subject to certain conditions, the Client may have a licence to copy and use such intellectual property solely for his own purpose on the Task in hand, subject to reservations.

The Consulting Engineer must obtain the client's permission before he publishes any articles, photographs or other illustrations relating to the Task, nor shall he disclose to any person any information provided by the Client as private and confidential unless so authorised by the Client.

**Liability, Insurance and Warranties**

The liability of the Consulting Engineer is defined, together with the duty of the Client to indemnify the Consulting Engineer against all claims etc. in excess of the agreed liability limit.

The Consulting Engineer shall maintain Professional Indemnity Insurance for an agreed amount and period at commercially reasonable rates, together with Public Liability Insurance and shall produce the brokers' certificates for inspection to show that the required cover is being maintained as and when requested by the Client.

The Consulting Engineer shall enter into and provide collateral warranties for the benefit of other parties if so agreed.

**Disputes and Differences**

Provision is made for mediation to solve disputes, subject to a time limit of six weeks of the appointment of the mediator at which point it should be referred to an independent adjudicator. Further action could be by referring the dispute to an arbitrator.



## QUANTITY SURVEYORS' CONDITIONS OF APPOINTMENT

### Introduction

#### Authors' Note:

The Royal Institution of Chartered Surveyors formally abolished standard Quantity Surveyor's fee scales with effect from 31st December 1998. However, in the absence of any alternative guidance and for the benefit of readers, extracts from relevant fee scales have been reproduced in part with the permission of the Royal Institution of Chartered Surveyors, which owns the copyright.

### Summary of Scale of Professional Charges

Scale No 38, issued by The Royal Institution of Chartered Surveyors provides an itemised scale of professional charges for Quantity Surveying Services for Civil Engineering Works which is summarised as follows :

- 1.1 Generally
- 1.2 The Scale of professional charges is applicable where the contract provides for the bills of quantities and final account to be based on measurements prepared in accordance with or based on the principles of the Standard Method of Measurement of Civil Engineering Quantities issued by the Institution of Civil Engineers.
- 1.3 The fees are in all cases exclusive of travelling and other expenses (for which the actual disbursement is recoverable unless there is some prior arrangement for such charges) and of the cost of reproduction of bills of quantities and other documents, which are chargeable in addition at net cost.
- 1.4 The fees are in all cases exclusive of services in connection with the allocation of the cost of the works for purposes of calculating value added tax for which there shall be an additional fee based on the time involved.
- 1.5 If any of the materials used in the works are supplied by the employer or charged at a preferential rate, then the actual or estimated market value thereof shall be included in the amounts upon which fees are to be calculated.
- 1.6 The fees are in all cases exclusive of preparing a specification of the materials to be used and the works to be done.
- 1.7 If the quantity surveyor incurs additional costs due to exceptional delays in construction operations or any other cause beyond the control of the quantity surveyor then the fees may be adjusted by agreement between the employer and the quantity surveyor.
- 1.8 If the works are substantially varied at any stage or if the quantity surveyor is involved in abortive work there shall be an additional fee based on the time involved.
- 1.9 The fees and charges are in all cases exclusive of value added tax which will be applied in accordance with legislation.
- 1.10 The scale is not intended to apply to works of a civil engineering nature which form a subsidiary part of a building contract or to buildings which are ancillary to a civil engineering contract. In these cases the fees to be charged for quantity surveying services shall be in accordance with the scales applicable to building works.
- 1.11 When works of both categories I\* and II\*\* are included in one contract the fee to be charged shall be calculated by taking the total value of the sections of work in each of the categories and applying the appropriate scale from the beginning in each case. General items such as preliminaries (and in the case of post contract fees contract price fluctuations) or sections of works which cannot be specifically allocated to either category shall be apportioned prorata to the values of the other sections of the works and added thereto in order to ascertain the total value of works in each category.
- 1.12 When a project is the subject of a number of contracts then, for the purpose of calculating fees, the value of such contracts shall not be aggregated but each contract shall be taken separately and the scale of charges applied as appropriate.
- 1.13 Roads, railways, earthworks and dredging which are ancillary only to any Category II\*\* work shall be regarded as Category II\*\* work. Works or sections of works of Category I\* which incorporate piled construction shall be regarded as Category II\*\* works.
- 1.14 No addition to the fees given hereunder shall be made in respect of works of alteration or repair where such works are incidental to the new works. If the work covered by a single contract is mainly one of alteration or repair then an additional fee shall be negotiated.

- 1.15 In the absence of agreement to the contrary, payments to the quantity surveyor shall be made by instalments by arrangement between the employer and the quantity surveyor.
- 1.16 Copyright in bills of quantities and other documents prepared by the quantity surveyor is reserved to the quantity surveyor.

\* Category I Works or sections of works such as monolithic walls for quays, jetties dams and reservoirs; caissons; tunnels; airport runways and tracks roads; railways; and earthworks and dredging

\*\* Category II Works or sections of works such as piled quay walls; suspended jetties and quays; bridges and their abutments; culverts; sewers; pipe-lines; electric mains; storage and treatment tanks; water cooling towers and structures for housing heavy industrial and public utility furnace houses and rolling mills to steel works; and boiler houses, plant, e.g. reactor blocks and turbine halls to electricity generating stations.

### **Scale of charges**

For the full Scale of Fees for Professional Charges for Quantity Surveying Services together with a detailed description of the full service provided the appropriate RICS Fee Scale should be consulted.

# Approximate Estimates

*This part of the book contains the following sections:*

*Industrial and Commercial Buildings and Civil Engineering Facilities Price per Square Metre  
Approximate Estimates*



# Building Prices per Square Metre

Prices given under this heading are average prices on a "fluctuating basis" for typical buildings based on the provisional first quarter 2009 Building Works tender price level index of 530 (1976 = 100). Unless otherwise stated, prices INCLUDE overheads and profit but EXCLUDE preliminaries, loose or special equipment and fees for professional services.

Prices are based upon the total floor area of all storeys, measured between external walls and without deduction for internal walls, columns, stairwells, liftwells and the like.

As in previous editions it is emphasised that the prices must be treated with reserve in that they represent the average of prices from our records and cannot provide more than a rough guide to the probable cost of a building or structure.

In many instances normal commercial pressures together with a limited range of available specifications ensure that a single rate is sufficient to indicate the prevailing average price. However, where such restrictions do not apply a range has been given; this is not to suggest that figures outside this range will not be encountered, but simply that the calibre of such a type of building can itself vary significantly.

As elsewhere in this edition, prices do not include Value Added Tax, which should be applied at the current rate where applicable.

	Unit	Cost £
Surface car parking	m <sup>2</sup>	52 to 77
Multi-storey car parks		
split level	m <sup>2</sup>	230 to 310
split level with brick facades	m <sup>2</sup>	320 to 440
flat slab	m <sup>2</sup>	320 to 460
warped	m <sup>2</sup>	350 to 410
Underground car parks		
partially underground under buildings	m <sup>2</sup>	420 to 500
completely underground under buildings	m <sup>2</sup>	630 to 860
completely underground with landscaped roof	m <sup>2</sup>	900 to 1070
Railway stations	m <sup>2</sup>	1670 to 2810
Bus and coach stations	m <sup>2</sup>	670 to 1440
Bus garages	m <sup>2</sup>	780 to 860
Garage showrooms	m <sup>2</sup>	800 to 1150
Garages, domestic	m <sup>2</sup>	430 to 870
Airport facilities (excluding aprons)		
airport terminals	m <sup>2</sup>	1470 to 3230
airport piers/satellites	m <sup>2</sup>	1800 to 4030
apron/runway - varying infrastructure content	m <sup>2</sup>	102 to 190
Airport campus facilities		
cargo handling bases	m <sup>2</sup>	530 to 880
distribution centres	m <sup>2</sup>	270 to 530
hangars (type C and D aircraft)	m <sup>2</sup>	1140 to 1340
hangars (type E aircraft)	m <sup>2</sup>	1580 to 3970
TV, radio and video studios	m <sup>2</sup>	1020 to 2020
Telephone exchanges	m <sup>2</sup>	820 to 1250
Telephone engineering centres	m <sup>2</sup>	680 to 770

	Unit	Cost £
Branch Post Offices	m <sup>2</sup>	860 to 1160
Postal delivery offices/Sorting offices	m <sup>2</sup>	870 to 1190
Mortuaries	m <sup>2</sup>	1560 to 2160
Sub - stations	m <sup>2</sup>	1160 to 1750
<b>INDUSTRIAL FACILITIES</b>		
Agricultural storage buildings	m <sup>2</sup>	410 to 700
Factories		
for letting (incoming services only)	m <sup>2</sup>	290 to 410
for letting (including lighting, power and heating)	m <sup>2</sup>	390 to 520
nursery units (including lighting, power and heating)	m <sup>2</sup>	470 to 700
workshops	m <sup>2</sup>	450 to 870
maintenance/motor transport workshops	m <sup>2</sup>	530 to 920
owner occupation - for light industrial use	m <sup>2</sup>	550 to 700
owner occupation - for heavy industrial use	m <sup>2</sup>	910 to 1060
Factory/office buildings - high technology production		
for letting (shell and core only)	m <sup>2</sup>	510 to 700
for letting (ground floor shell, first floor offices)	m <sup>2</sup>	1010 to 1310
for owner occupation (controlled environment, fully finished)	m <sup>2</sup>	1100 to 1470
B1 Light industrial/office building		
economical shell and core with heating only	m <sup>2</sup>	470 to 820
medium shell with heating and ventilation	m <sup>2</sup>	720 to 1080
high quality shell and core with air-conditioning	m <sup>2</sup>	960 to 1750
Warehouse & Distribution centres		
high bay (10-15 m high) for owner occupation (no heating) up to 10,000m <sup>2</sup>	m <sup>2</sup>	260 to 330
high bay (10-15 m high) for owner occupation (no heating) 10,000m <sup>2</sup> to 20,000m <sup>2</sup>	m <sup>2</sup>	190 to 260
high bay (16-24 m high) for owner occupation (no heating) 10,000m <sup>2</sup> to 20,000m <sup>2</sup>	m <sup>2</sup>	280 to 370
high bay (16-24 m high) for owner occupation (no heating) over 20,000m <sup>2</sup>	m <sup>2</sup>	210 to 330
Fit out cold stores, refrigerated stores inside warehouse	m <sup>2</sup>	400 to 760
<b>WATER AND TREATMENT FACILITIES</b>		
Reinforced Concrete tanks		
including all excavation; fill; structural work; valves; penstocks; pipeworks per m <sup>3</sup> of concrete in structure. treatment tanks	m <sup>3</sup>	540 to 610
fire ponds and lagoons	m <sup>3</sup>	470 to 550
reservoirs	m <sup>3</sup>	480 to 560
Reinforced Concrete river weirs, quay and wave walls		
including temporary dams; caissons overpumping, anchorages, all structural works	m <sup>2</sup>	370 to 570
Reinforced Concrete dams (up to 12 m high)		
arch dam, including excavation anchorages and structural work only. m <sup>3</sup> of structure	m <sup>3</sup>	1230 to 1800
flat slab dam including excavation anchorages and structural work only. m <sup>3</sup> of structure	m <sup>3</sup>	930 to 1460
Earth dams		
rock fill with concrete core m <sup>3</sup> of completed structure	m <sup>3</sup>	240 to 850
hydraulic fill embankment dam m <sup>3</sup> of completed structure	m <sup>3</sup>	130 to 380

# Approximate Estimates

*Estimating by means of priced approximate quantities is always more accurate than by using overall prices per square metre. Prices given in this section, which is arranged in elemental order, also include for all the incidental items and labours which are normally measured separately in Bills of Quantities. They include overheads and profit but do not include for preliminaries.*

*Whilst every effort is made to ensure the accuracy of these figures, they have been prepared for approximate estimating purposes only and on no account should they be used for the preparation of tenders.*

*Unless otherwise described units denoted as m<sup>2</sup> refer to appropriate unit areas (rather than gross floor areas).*

*As elsewhere in this edition prices do not include Value Added Tax, which should be applied at the current rate.*





**FOUNDATIONS FOR STRUCTURES**

	Unit	£
In-situ concrete foundations complete with associated excavation, formwork, reinforcement and disposal		
trench fill strip foundation; 450 x 1000 mm deep	m	70
trench fill strip foundation; 600 x 1200 mm deep	m	120
strip foundation; 900 mm deep	m	220
strip foundation; 1200 mm deep	m	330
column/stanchion base; unreinforced; 900 x 900 x 450 mm	nr	320
column/stanchion base; reinforced 50 kg/m <sup>3</sup> ; 1750 x 1750 x 500 mm	nr	750
column/stanchion base; reinforced 50 kg/m <sup>3</sup> ; 2200 x 2200 x 600 mm	nr	1180
column/stanchion base; reinforced 75 kg/m <sup>3</sup> ; 2400 x 2400 x 600 mm	nr	1460
pile cap; reinforced 75 kg/m <sup>3</sup> ; 900 x 900 x 1400 mm; for one pile	nr	750
pile cap; reinforced 75 kg/m <sup>3</sup> ; 2700 x 900 x 1400 mm; for two piles	nr	1570
pile cap; reinforced 75 kg/m <sup>3</sup> ; 2700 x 2700 x 1400 mm; for four piles	nr	3420
pile cap; reinforced 75 kg/m <sup>3</sup> ; 3700 x 2700 x 1400 mm; for six piles	nr	4440
In-situ concrete slabs comprising concrete C30 slab with tamped finish; reinforced with two layers of A393 fabric; laid in bays size 20 m x 10m on sub-base of 250 mm granular material; including all associated excavation (250 mm depth), formwork and formed expansion joints with filler		
200 mm thick	m <sup>2</sup>	86
250 mm thick	m <sup>2</sup>	95
275 mm thick	m <sup>2</sup>	100
300 mm thick	m <sup>2</sup>	104
Extra over cost of slab		
for hand trowel finish	m <sup>2</sup>	1.00
for power float finish	m <sup>2</sup>	2.40
for wire brush finish	m <sup>2</sup>	1.80
for additional sub base depth (including excavation and disposal)		
50 mm	m <sup>2</sup>	2.80
100 mm	m <sup>2</sup>	5.60
150 mm	m <sup>2</sup>	8.50

The prices following have been assembled from the relevant items in the unit costs section. They are intended to give a broad overall price or help in comparisons between a number of basic construction procedures. These approximate estimates are for construction only. They do not include for preliminaries, design/supervision costs, land purchase or OH&P etc.

Prices in this section are based on the same information and outputs as used in the unit costs section.

Costs per m<sup>2</sup> or m<sup>3</sup> of completed structure.

**EARTH RETENTION AND STABILISATION**

	Unit	£
Reinforced in-situ concrete retaining wall <i>(including excavation; reinforcement; formwork; expansion joints; granular backfill and 100 mm land drain; profiled formwork finish to one side typical retaining wall, allowing for profiling finishes)</i>		
1.0 m high	m <sup>2</sup>	515
3.0 m high	m <sup>2</sup>	535
6.0 m high	m <sup>2</sup>	735
9.0 m high	m <sup>2</sup>	840
Precast concrete block, earth retaining wall <i>(including granular fill; earth anchors and proprietary units or concrete panels, strips, fixings and accessories (Reinforced Earth))</i>		
1.5 m high	m <sup>2</sup>	370
3.0 m high	m <sup>2</sup>	340
6.0 m high	m <sup>2</sup>	370
Precast, reinforced concrete unit retaining wall (in-situ foundation): <i>(including excavation and fill; reinforced concrete foundation; precast concrete units, joints)</i>		
1.00 high	m <sup>2</sup>	450
2.00 high	m <sup>2</sup>	460
3.00 high	m <sup>2</sup>	485
Precast concrete crib wall <i>(including excavation; stabilisation and foundation work)</i>		
up to 1.0 m high	m <sup>2</sup>	295
up to 1.5 m high	m <sup>2</sup>	290
up to 2.5 m high	m <sup>2</sup>	285
up to 4.0 m high	m <sup>2</sup>	270
Timber crib walling		
up to 1.5 m high	m <sup>2</sup>	145
up to 3.7 m high	m <sup>2</sup>	180
up to 5.9 m high	m <sup>2</sup>	225
up to 7.4 m high	m <sup>2</sup>	260
Rock gabions <i>including preparation; excluding anchoring (see <a href="#">Page 159</a>)</i>		
1 m thick	m <sup>2</sup>	76

**BRIDGEWORKS**

The following prices are based on recovered data and information from approximately 50 separate structures completed as part of actual projects.

Prices include for the works described to the bridge decks and abutments, but exclude any approach works.

	Span	Unit	Range £
<b>Road bridges</b>			
Reinforced in-situ concrete viaduct <i>(including excavation; reinforcement; formwork; concrete; bearings; expansion joints; deck waterproofing; deck finishings; P1 parapet)</i>			
per m <sup>2</sup> of deck maximum span between piers or abutments	15 m	m <sup>2</sup>	1860 to 3480
	20 m	m <sup>2</sup>	1770 to 3310
	25 m plus	m <sup>2</sup>	1715 to 3210
Reinforced concrete bridge with precast beams <i>(including excavation; reinforcement; formwork; concrete; bearings; expansion joints; deck waterproofing; deck finishings; P1 parapet)</i>			
per m <sup>2</sup> of deck maximum span between piers or abutments	12 m	m <sup>2</sup>	2225 to 2745
	17 m	m <sup>2</sup>	2085 to 2570
	22 m	m <sup>2</sup>	1985 to 2445
	30 m plus	m <sup>2</sup>	1900 to 2345
Reinforced concrete bridge with pre-fabricated steel beams <i>(including excavation; reinforcement; formwork; concrete; bearings; expansion joints; deck waterproofing; deck finishings; P1 parapet)</i>			
per m <sup>2</sup> of deck maximum span between piers or abutments	20 m	m <sup>2</sup>	1155 to 2575
	30 m	m <sup>2</sup>	1090 to 2430
	40 m	m <sup>2</sup>	1060 to 2355
<b>Footbridges</b>			
Reinforced in situ concrete with precast beams <i>(including excavation; reinforcement; formwork; concrete; bearings; expansion joints; deck waterproofing; deck finishings; P6 parapet)</i>			
widths up to 6 m wide; per m <sup>2</sup> of deck maximum span between piers or abutments	5 m	m <sup>2</sup>	2120 to 2615
	10 m	m <sup>2</sup>	2055 to 2535
	20 m plus	m <sup>2</sup>	1970 to 4445
Structural steel bridge with concrete foundations			
width up to 4 m wide per m <sup>2</sup> of deck maximum span	10 m	m <sup>2</sup>	1055 to 1115
	12 m	m <sup>2</sup>	1065 to 1115
	16 m	m <sup>2</sup>	1065 to 1130
	20 m	m <sup>2</sup>	1115 to 1140
Timber footbridge (stress graded with concrete piers) per m <sup>2</sup> of deck maximum span			
	12 m	m <sup>2</sup>	980 to 1005
	18 m	m <sup>2</sup>	1005 to 1040

## HIGHWAY WORKS

The following prices are the approximate costs per metre run of roadway, and are based on information from a number of sources including engineers estimates, tenders, final account values etc on a large number of highways contracts.

Motorway and All Purpose Road prices include for earthworks, structures, drainage, pavements, line markings, reflective studs, footways signs, lighting, motorway communications, fencing and barrier works as well as allowance for accommodation works, statutory undertakings and landscaping as appropriate to the type and location of the carriageway. The earthworks elements can be adjusted by reference to factors detailed at the end of this sub-section.

Motorway and All Purpose Road prices do NOT include for the cost of associated features such as side roads, interchanges, underbridges, overbridges, culverts, sub-ways, gantries and retaining walls. These are shown separately beside the cost range for each road type, based on statistical frequency norms.

	Unit	Range £	Feature £
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### MOTORWAYS

The following costs are based on a 850 mm construction comprising 40 mm wearing course, 60 mm base course, 250 mm road base, 200 mm sub-base and 350 mm capping layer; central reserve incorporating two 0.7 m wide hardstrips; no footpaths or cycle paths included

#### Rural motorways

grassed central reserve and outer berms; no kerbs or edgings; assumption that 30% of excavated material is unsuitable for filling; costs allow for forming embankments for 50% of highway length average 4.70 m high and 50% of length in cuttings average 3.90 m deep; accommodation fencing each side; allowance of 25% of length having crash barriers and 20% of length having lighting

dual two lane (D2M_R); 25.20 m overall width; each carriageway 7.30 m with 3.30 m hard shoulder; 4.00 m central reserve	m	2,850 to 3,600	1,650
dual three lane (D3M_R); 32.60 m overall width; each carriageway 11.00 m with 3.30 m hard shoulder; 4.00 m central reserve	m	3,540 to 4,470	1,790
dual four lane (D4M_R); 39.80 m overall width; each carriageway 14.60 m with 3.30 m hard shoulder; 4.00 m central reserve	m	4,240 to 5,320	1,930

#### Urban motorways

hard paved central reserve and outer berms; precast concrete kerbs; assumption that 30% of excavated material is unsuitable for filling; costs allow for forming embankments for 50% of highway length average 3.20 m high and 50% of length in cuttings average 1.60 m accommodation fencing each side; allowance of 25% of length having crash barriers and 20% of length having lighting

dual two lane (D2M_U); 23.10 m overall width; each carriageway 7.30 m with 2.75m hard shoulder; 3.00 m central reserve	m	2,850 to 3,690	2,970
dual three lane (D3M_U); 30.50 m overall width; each carriageway 11.00 m with 2.75 m hard shoulder; 3.00 m central reserve	m	3,570 to 4,630	3,130
dual four lane (D4M_U); 37.70 m overall width; each carriageway 14.60 m with 2.75 m hard shoulder; 3.00 m central reserve	m	4,270 to 5,550	3,280

**ALL-PURPOSE ROADS**

The following costs are based on a 800 mm construction comprising 40 mm wearing course, 60 mm base course, 200 mm road base, 150 mm sub-base and 350 mm capping layer; no footpaths or cycle paths included

**Rural all-purpose roads**

grassed central reserve; no kerbs or edgings; assumption that 30% of excavated material is unsuitable for filling; costs allow for forming embankments for 50% of highway length average 4.00m high and 50% of length in cuttings average 3.75m deep; allowance of 25% of length having crash barriers and 20% of length having lighting

dual two lane (D2AP_R); 18.60m overall width; each carriageway 7.30m ; 4.00m central reserve	m	2,140 to 2,580	1,270
dual three lane (D3AP_R); 26.00m overall width; each carriageway 11.00m ; 4.00m central reserve	m	2,830 to 3,390	1,370

**Urban all-purpose roads**

hard paved central reserve; precast concrete kerbs; assumption that 30% of excavated material is unsuitable for filling; costs allow for forming embankments for 50% of highway length in average 2.2 m high and 50% of length in cuttings average 1.62 m deep; allowance of 25% of length having crash barriers and 20% of length having lighting

dual two lane (D2AP_U); 23.10m overall width; each carriageway 7.30 m with 2.75m hard shoulder; 3.00m central reserve	m	2,650 to 3,120	2,020
dual three lane (D3AP_U); 30.50m overall width; each carriageway 11.00 m C456with 2.75m hard shoulder; 3.00m central reserve	m	3,370 to 4,000	2,410

**Other roads****Rural All-Purpose Roads**

Single carriageway all-purpose road (carriageway is 7.3 m wide)	m	0,990 to 1,160	690
Wide single carriageway all-purpose road (carriageway is 10.0 m wide)	m	1,240 to 1,460	760

**Rural Link Roads**

Two lane link road (carriageway is 7.3 m wide)	m	940 to 1,170	770
Single lane link road (carriageway is 3.7 m wide)	m	500 to 0,770	500

**Rural Motorway or Dual Carriageway Slip Roads**

Single carriageway slip road (carriageway is 5.0 m wide)	m	620 to 920	640
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**Urban Motorway or Dual Carriageway Sliproads**

Single carriageway slip road (carriageway is 6.0 m wide)	m	730 to 1,060	990
Wide single carriageway all-purpose road with footway each side (carriageway is 10.0 m wide each footway is 3.0 m wide)	m	1,420 to 1,900	1,180

Cost of nominal 3.0 m cycle track to all-purpose roads (one side only)	m	160 to 200	
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**Urban Link Roads**

Two lane link road (carriageway is 7.3 m wide)	m	970 to 1,210	1,120
Single lane link road (carriageway is 3.7 m wide)	m	520 to 790	750

The following are approximate costs for the installation of roads and drains to serve as part of the development of infrastructure for Housing, Retail or Industrial development. The density ( i.e. percentage of area used for roads, etc., is also given to enable adjustments). NB: excludes car parking.

Type A Construction = medium duty carriageway consisting of 100 mm surfacing, roadbase up to 115 mm subbase of 150 mm.

Type B Construction = heavy duty carriageway consisting of reinforced concrete slab 225 mm thick subbase 130 mm thick capping layer 280 mm thick.

Density of facility		Cost/unit £		Cost/hectare £		Density of road per hectare
per hectare	per acre	Type A	Type B	Type A	Type B	
5	(2)	4,300	6,250	21,500	31,260	2.00%
15	(6)	2,510	3,650	37,625	54,705	3.50%
20	(8)	2,040	2,970	40,850	59,394	3.80%
25	(10)	1,760	2,560	44,075	64,083	4.10%
30	(12)	1,610	2,340	48,375	70,335	4.50%
37	(15)	1,510	2,200	55,900	81,276	5.20%
50	(20)	1,400	2,030	69,875	101,595	6.50%

	Unit	£
Turning or passing bay = 35 m <sup>2</sup> overall area; suitable for cars, vans		
Type A construction	nr	4,260
Type B construction	nr	6,120
Turning or passing bay = 100 m <sup>2</sup> overall area; suitable for semi trailer		
Type A construction	nr	10,750
Type B construction	nr	15,630
Bus lay-by = 40 m <sup>2</sup> overall area		
Type B construction	nr	4,880
Parking lay-by = 200 m <sup>2</sup> overall area		
Type A construction	nr	21,270
Type B construction	nr	30,960
Vehicle crossing verge/footway/central reserve	m <sup>2</sup>	122
Footway construction (bit-mac plus edgings)	m <sup>2</sup>	46

**CIVIL ENGINEERING WORKS SITE UTILITIES AND INFRASTRUCTURE**

The following prices have been compiled for various services and provide average costs for site utilities and infrastructure works.

	Unit road	To estate road £	To major road £
<b>UNDERPASSES</b>			
Provision of underpasses to new roads, constructed as part of a road building programme			
pedestrian underpass 3 m wide x 2.5 m high	m	3,900	4,700
vehicle underpass 7 m wide x 5 m high	m	16,000	21,000
vehicle underpass 14 m wide x 5 m high	m	38,500	48,500

**ROAD CROSSINGS**

Costs include road markings, beacons, lights, signs, advance danger signs, etc.

4 way traffic signal installation	nr	40,000	68,000
zebra crossing	nr	4,750	6,100
pelican crossing	nr	18,000	22,750
pedestrian guard railing	m	120	175

**STREET FURNITURE**

There is an almost infinite variety of items with which local authorities and private developers can enhance the roadside and public areas, including statutory requirements such as lighting. It is therefore impossible to price all the different street furniture available. The following however gives a selection of the more common items:-

	Unit	£
reflectorised traffic signs 0.25-0.75 m <sup>2</sup> area on steel post	nr	120 to 200
internally illuminated traffic signs (dependent on area)	nr	225 to 300
externally illuminated traffic signs (up to 4 m <sup>2</sup> )	nr	550 to 1,500
lighting to pedestrian areas and estates roads on 4-6 m columns with up to 70 W lamps	nr	280 to 350
lighting to main roads on 10-12 m columns with 250 W lamps	nr	1030 to 1,290
lighting to main roads on 12-15 m columns with 400 W		
high pressure sodium lighting	nr	1380 to 1,730
benches - hardwood and precast concrete	nr	220 to 950
litter bins: precast concrete	nr	220 to 390
hardwood slatted	nr	140 to 155
cast iron	nr	255 to 525
large all-steel	nr	790
concrete bollards	nr	120 to 275
steel bollards	nr	160 to 175
bus stops	nr	385
bus stops inc basic shelter	nr	950
pillar box on post	nr	315
Telephone box	nr	3,500
Hi mast radio/beacon - 60 m	nr	32,500
automatic barrier equipment	nr	20,000

## FOOTPATHS AND PAVINGS

Costs include excavation, base course as necessary and precast concrete edgings on foundations to one or both sides

	Unit	£
bitumen macadam footpath	m <sup>2</sup>	45 to 050
precast concrete paving flags	m <sup>2</sup>	30 to 070
precast concrete block pavings	m <sup>2</sup>	45 to 070
clay brick paving	m <sup>2</sup>	55 to 165
granite setts	m <sup>2</sup>	90 to 110
cobbled paving	m <sup>2</sup>	80 to 095

## SURFACE CAR PARKS

Surface car parking is the cheapest way of providing car parking. The cost of rooftop or basement car parking can be 10 to 15 times the cost of the surface car parking. The vogue in car parking for all except industrial schemes is for concrete block pavers, with different colours marking out parking bays and zones.

Guideline figures for parking requirements are shown below:-

	one car space per :
offices	22 to 25 m <sup>2</sup> gross floor area
industrial	
- factories	45 to 55 m <sup>2</sup> gross floor area
- warehouses	200 m <sup>2</sup> gross floor area
shops	20 to 25 m <sup>2</sup> gross floor area
superstores	10 m <sup>2</sup> gross floor area
cinemas, theatres	3 to 5 seats
hospital	3 hospital beds
residential	1 to 2 dwellings

For surface level car parking the area required per car will not generally show much variation. Site shape, position of the building on the site, and parking configuration will be the main determinants of the area to be allowed per car. A fairly low range of 20-23 m<sup>2</sup> / car will usually suffice.

Typical costs for surface car parking including lighting and drainage are illustrated below:-

	£/m <sup>2</sup>	£/car
Tarmacadam surfaced, marked out with thermoplastic road paint	100	2,200 to 2,500
Interlocking or herringbone concrete block paving, marked out with coloured blocks	143	3,150 to 3,580
Grassblock recycled polythene units filled with top soil and grass seeded	71	1,560 to 1,780

Note: Costs include forecourts, aprons and access areas but not approach roads.



**SERVICES**

Costs of services to a site are built up of connection charges and service runs. This can vary significantly depending upon the availability or otherwise of a suitably sized main in the neighbourhood of the site. However, typical service charges for an estate of 200 houses might be as follows:-

	Charge per house £	
Water	525 to 1,100	
Electric	275 if all electric	(plus cost of substation £ 12,500 - 21,000 total)
	525 gas/electric	(plus cost of substation £ 12,500 - 21,000 total)
Gas	525 to 675	(plus cost of governing station £ 19,000 - 22,500 total)
Telephone	175	
Sewerage	400 to 525	

	Unit	£
Mains laid in trenches including excavation and filling		
Water main		
75 mm PVC-U main in 225 mm ductile iron pipe as duct	m	95
Electric main		
600/1000 volt cables. Two core 25 mm cable including 100 mm clayware duct	m	40
Gas main		
150 mm ductile or cast iron gas pipe	m	75
Telephone		
British Telecom installation in 110 mm PVC-U duct	m	22
Drainage		
100/150 mm clay or PVC-U pipes on granular bed and surround up to 3 m deep	m	45
100/150 mm cast iron pipes on concrete beds up to 3 m deep	m	90
300 mm clay drain pipe on granular bed and surround up to 3 m deep	m	165
450 mm concrete pipe on concrete beds up to 3 m deep	m	135
900 mm diameter concrete sewage pipe on granular bed up to 3.5 m deep	m	270
Brick manholes in commons, rendered internally, clay channel with three branches, concrete cover slab, cast iron cover and frame 900 - 1500 mm deep	nr	1,440
Precast concrete manholes with precast concrete rings up to 1200 mm diameter, channel with three branches, concrete cover slab and frame 900-1500 mm deep	nr	1,490
Vitrified clay or precast concrete road gully 450 x 900 mm deep with concrete surround, brick seating and cast iron grating	nr	465

**LANDSCAPING**

Landscaping as a subject matter is sufficiently large to fill a book (see Spons External Works and Landscape Price Book). However, there are certain items that arise on a majority of projects and other discrete items for which indicative costs can be produced. The following rates include for normal surface excavation but exclude bulk excavation, levelling or earth shifting and land drain provision.

Soft landscaping	Unit	£
cultivate ground, remove rubbish and plant with grass seed	m <sup>2</sup>	5.90
ditto and turf	m <sup>2</sup>	11.70
shrubbed areas	m <sup>2</sup>	66.70
shrubbed areas including allowance for small trees	m <sup>2</sup>	71.20
standard tree in tree pit including stake	nr	58.70
ditto but with tree guard and precast tree grid slabs	nr	223.00

### Sports pitches

The provision of sports facilities will involve different techniques of earth shifting and cultivation and usually will be carried out by specialist landscaping contractors.

Costs include for cultivating ground, bringing to appropriate levels for the specified game, applying fertiliser, weedkiller, seeding and rolling and white line marking with nets, posts etc as required.

	Unit	£
football pitch (114 x 72 m)	nr	19,100
cricket outfield (160 x 142 m)	nr	52,400
cricket square (20 x 20 m) including imported marl or clay loam bringing to accurate levels, seeding with cricket square type grass	nr	14,800
bowling green (38 x 38 m) rink, including french drain and gravel path on four sides	nr	53,600
grass tennis courts 1 court (35 x 17 m) including bringing to accurate levels, chain link perimeter fence and gate, tennis posts and net	nr	22,600
two grass tennis courts (35 x 32 m) ditto	pair	38,400
artificial surface tennis courts (35 x 17 m) including chain link fencing, gate, tennis posts and net	nr	42,560
two courts (45 x 32 m) ditto	pair	103,003
artificial football pitch including sub-base, bitumen macadam open textured base and heavy duty astro-turf carpet	nr	450,000
golf putting green	hole	1,900
pitch and putt course	hole	6,000 to 9,100
full length golf course, full specifications inc watering system	hole	21,200 to 40,100
championship course	hole	up to 149,000

### Parklands

As with all sports pitches, parklands will involve different techniques of earth shifting and cultivation. The following rates include for normal surface excavation.

	Unit	£
parklands, including cultivating ground applying fertiliser etc. and seeding with parks type grass	ha	17,300
general sportsfield	ha	20,500
lakes including excavation up to 10 m deep, laying 1.5 mm thick butyl rubber sheet and spreading top soil evenly on top to depth of 300 mm		
under 1 ha in area	ha	376,800
between 1 and 5 ha in area	ha	352,100
extra for planting aquatic plants in lake top soil	m <sup>2</sup>	60

### Playground equipment

Modern swings with flat rubber safety seats four seats, two bays	nr	3,160
Stainless steel slide, 3.40 m long	nr	2,730
Climbing frame - Lappset "Playhouse"	nr	3,350

Seesaw comprising timber plank on sealed ball bearings 3960 x 230 x 70 mm thick - "no-bump"	nr	2,230
Wicksteed safety tiles surfacing around play equipment	m <sup>2</sup>	56
"Playbark particles type safety surfacing 150 mm thick on hardcore bed	m <sup>2</sup>	52

### Land drainage

The above rates exclude provision of any land drainage. If land drainage is required on a project, the propensity of the land to flood will decide the spacing of the land drains. However, some indicative figures can be given for land drainage.

Costs include for excavation and backfilling of trenches and laying agricultural clay drain pipes with 75 mm diameter lateral runs average

land drainage to parkland with laterals at 30 m centres and main runs at 100 m centres	ha	3,460
land drainage to sportsfields with laterals at 10 m centres and main runs at 33 m centres	ha	16,570

### TEMPORARY WORKS

#### Bailey bridges

	Unit	£
Installation of temporary Bailey bridges <i>(including temporary concrete abutments; erection maintenance; dismantling )</i>		
span up to 10 m		
hire costs (for 52 weeks)		12,890
delivery/collect		1,120
erect/dismantle		4,120
concrete abutments		5,060
demolish after dismantling		840
allowance for maintenance, etc		2,480
	nr	26,500
span 15 m	nr	30,000
span 20 m	nr	39,000
span 25 m	nr	42,000

#### Cofferdams

Installation of cofferdams (based on driven steel sections with recovery value)  
*(including all plant, for installation and dismantling; loss of materials; pumping and maintenance excluding excavation and disposal of material - backfilling on completion)*

Cost range based on 12 weeks installation

	Unit	£ range
Depth of drive up to 5 m, diameter or side length		
up to 2 m	nr	3,900 to 4,100
up to 10 m	nr	18,800 to 20,900
up to 20 m	nr	33,100 to 41,700

Depth of drive 5 - 10 m, diameter or side length		
up to 2 m	nr	5,500 to 7,900
up to 10 m	nr	24,500 to 39,000
up to 20 m	nr	44,900 to 77,700
Depth of drive 10 - 15 m, diameter or side length		
up to 2 m	nr	7,900 to 10,800
up to 10 m	nr	37,800 to 54,100
up to 20 m	nr	70,700 to 108,300
Depth of drive 15 - 20 m, diameter or side length		
up to 2 m	nr	13,300 to 16,700
up to 10 m	nr	37,700 to 66,700
up to 20 m	nr	94,500 to 133,100
Above based on soft-medium ground conditions		
add for medium-hard	+ 20%	
hard but not rock	+ 33%	

### Access scaffolding

The following are guideline costs for the hire and erection of proprietary scaffold systems (tube and coupling). Costs are very general and are based on a minimum area of 360 m<sup>2</sup> at 1.80m deep.

	Unit	£
1. Approximate hire (supply and fix) of patent scaffold per 4 week (cost dependent upon length of hire, quality of system, number of toe boards, handrails etc.)	m <sup>2</sup>	5.00 to 6.60
Based on this a typical cost of a 60 x 10m (600 m <sup>2</sup> ) area for 8 weeks would be about £7,200		
2. Approximate hire (supply and fix of mobile access towers per 4 week hire (refer also to plant hire in Section 3)	m <sup>2</sup>	16.90 to 25.30
3. Additional costs of Pole ladder access, per 4.0 m high, per 4 week	nr	6.40 to 7.30
4. Additional cost of stair towers extra over the cost of scaffold system per 2 m rise, per 4 week	m <sup>2</sup>	71.00
5. Additional cost of hoarding around base perimeter (using multi-use ply sheeting) per 4 week period	m <sup>2</sup>	1.00 to 1.80
6. Additional cost of polythene debris netting (no re-use)	m <sup>2</sup>	0.20
7. Additional cost of Monaflex 'T' plus weather-proof sheeting including anchors and straps (based on 3 uses)	m <sup>2</sup>	1.20

Erection of scaffolding system is based on 3 men erecting a 16 m<sup>2</sup> bay in about 1 hour and dismantling the same in 20 minutes (i.e. experienced scaffolders)

Note: Although scaffolding is essentially plant hire, allowance must be made for inevitable loss and damage to fittings, for consumables used and for maintenance during hire periods.

**Earthwork support**

The following are comparative costs for earthwork and trench support based on the hire of modular systems (trench box hydraulic) with an allowance for consumable materials (maximum 5 day hire allowance).

	Unit	£
Earthwork support not exceeding 1m deep, distance between opposing faces not exceeding 2m	m <sup>2</sup>	5.60
Earthwork support not exceeding 1m deep distance between opposing faces 2-4m	m <sup>2</sup>	9.60
Earthwork support not exceeding 2m deep distance between opposing faces not exceeding 2m	m <sup>2</sup>	10.80
Earthwork support not exceeding 2m deep distance between opposing faces 2-4m	m <sup>2</sup>	19.10
Earthwork support not exceeding 4m deep distance between opposing faces not exceeding 2m	m <sup>2</sup>	27.20
Earthwork support not exceeding 4m deep distance between opposing face 2-4m	m <sup>2</sup>	39.30

For larger excavations requiring Earthwork support refer to cofferdam estimates; or sheet piling within unit cost sections.

The following are approximate weekly hire costs for a range of basic support equipment used on site (see also Plant Costs Section - Part 3).

	Unit	£/week
Steel sheet piling AU or AZ series section	tonne	31.70 to 39.60
Trench sheeting		
Standard overlapping sheets	m <sup>2</sup>	1.50 to 1.90
Interlocking type	m <sup>2</sup>	2.90 to 4.20
Heavy duty overlapping sheets		
6 mm thick	m <sup>2</sup>	4.80 to 5.50
8 mm thick	m <sup>2</sup>	4.90
driving cap	nr	13.20
extraction clamp	nr	26.40
Trench box with hydraulic walings - as above		
Trench struts		
No. 0 - 0.3 - 0.40 m	nr	0.70
No. 1 - 0.5 - 0.75 m	nr	0.70
No. 2 - 0.7 - 1.14 m	nr	0.70
No. 3 - 1.0 - 1.75 m	nr	0.90



## PART 13

# Outputs

*This part lists a selection of OUTPUT CONSTANTS for use within various areas of Civil Engineering Work.*

**DISPOSAL OF EXCAVATED MATERIALS****Outputs Per Hundred Cubic Metres**

Tipper Capacity and Length of Haul	Driver (hours)	Attendant Labour (hours)	Number of cycles	Average Speed (km/hr)	Cycle time (minutes)				
					Loading	Haul	Discharge	Return	Total
<b>3 m<sup>3</sup> tipper:</b>									
1 km haul	8.8	0.0	43.3	10	0.70	6.0	0.7	5.5	12.2
5 km haul	26.3	0.0	43.3	16	0.70	18.8	0.7	17.0	36.5
9 km haul	41.9	0.0	43.3	18	0.70	30.0	0.7	27.3	58.0
12 km haul	52.7	0.0	43.3	19	0.70	37.9	0.7	34.4	73.0
15 km haul	65.8	0.0	43.3	19	0.70	47.4	0.7	43.1	91.2
<b>8 m<sup>3</sup> tipper:</b>									
1 km haul	10.6	0.8	16.3	3	2.0	20.0	0.9	18.2	39.1
5 km haul	19.7	0.8	16.3	8	2.0	37.5	0.9	34.1	72.5
9 km haul	25.7	0.8	16.3	11	2.0	49.1	0.9	44.6	94.6
12 km haul	26.9	0.8	16.3	14	2.0	51.4	0.9	46.8	99.1
15 km haul	31.4	0.8	16.3	15	2.0	60.0	0.9	54.5	115.4
<b>12 m<sup>3</sup> tipper:</b>									
1 km haul	7.1	0.7	10.8	3	2.90	20.0	1.1	18.2	39.3
5 km haul	13.1	0.7	10.8	8	2.90	37.5	1.1	34.1	72.7
9 km haul	17.1	0.7	10.8	11	2.90	49.1	1.1	44.6	94.8
12 km haul	17.9	0.7	10.8	14	2.90	51.4	1.1	46.8	99.3
15 km haul	20.8	0.7	10.8	15	2.90	60.0	1.1	54.5	115.6
<b>15 m<sup>3</sup> tipper:</b>									
1 km haul	5.8	0.8	8.7	3	3.70	20.0	1.5	18.2	39.7
5 km haul	10.6	0.8	8.7	8	3.70	37.5	1.5	34.1	73.1
9 km haul	13.8	0.8	8.7	11	3.70	49.1	1.5	44.6	95.2
12 km haul	14.5	0.8	8.7	14	3.70	51.4	1.5	46.8	99.7
15 km haul	16.8	0.8	8.7	15	3.70	60.0	1.5	54.5	116.0

Man hours include round trip for tipper and driver together with attendant labour for positioning during loading and unloading.

The number of cycles are based on the stated heaped capacity of the tipper divided into the total volume of 100 m<sup>3</sup> to be moved, being multiplied by a bulking factor of x 1.30 to the loose soil volume.

The average speeds are calculated assuming that the vehicles run on roads or on reasonably level firm surfaces and allow for acceleration and deceleration with the return empty journey being say 10% faster than the haul.

The cycle time shows in detail the time spent being loaded (calculated using a 1.5 m<sup>3</sup> loader with a cycle time of 22 seconds), haul journey, discharge (turning / manoeuvring / tipping) and return journey.



**BREAKING OUT OBSTRUCTIONS BY HAND****Breaking out pavements, brickwork, concrete and masonry by hand and pneumatic breaker**

Description	Unit	By hand using picks, shovels & points	Using Compressor			
			7 m <sup>3</sup> Compressor (2 Tool)		10 m <sup>3</sup> Compressor (3 Tool)	
			Labour	Compressor	Labour	Compressor
Break out bitmac surfaces on sub-base or hardcore						
75 mm thick	m <sup>2</sup> /hr	1.00	25	13	50	17
100 mm thick	m <sup>2</sup> /hr	1.00	20	10	33	11
Break out asphalt roads on hardcore:						
150 mm thick	m <sup>2</sup> /hr	0.60	8	4	11	4
225 mm thick	m <sup>2</sup> /hr	0.50	6	3	8	3
300 mm thick	m <sup>2</sup> /hr	0.40	4	2	7	2
Remove existing set paving	m <sup>2</sup> /hr	0.80	10	5	17	6
Break out brickwork in cement mortar: 215 mm thick	m <sup>2</sup> /hr	0.20	3	2	5	2
Break out concrete in areas						
100 mm thick	m <sup>2</sup> /hr	0.90	9	5	14	5
150 mm thick	m <sup>2</sup> /hr	0.50	7	4	10	4
225 mm thick	m <sup>2</sup> /hr	0.30	4	2	6	2
300 mm thick	m <sup>2</sup> /hr	0.20	3	1	4	1
Break out reinforced concrete	m <sup>3</sup> /hr	0.02	0.40	0.20	0.60	0.20
Break out sandstone	m <sup>3</sup> /hr	0.03	0.50	0.30	0.80	0.30

**Loading loose materials and items by hand**

Material	Unit	Loading into Vehicles	
		Tonne	m <sup>3</sup>
Bricks	hr	1.7	2.9
Concrete, batches	hr	1.4	1.2
Gulley grates and frames	hr	1.0	
Kerb	hr	1.1	
Paving slabs	hr	0.9	
Pipes, concrete and clayware	hr	0.9	
Precast concrete items	hr	0.9	
Soil	hr	1.4	2.0
Steel reinforcement	hr	0.8	
Steel sections, etc	hr	1.0	
Stone and aggregates:			
bedding material	hr	1.5	1.8
filter/subbase	hr	1.3	1.4
rock fill (6" down)	hr	1.3	1.3
Trench planking and shoring	hr	0.9	2.9

**CONCRETE WORK****Placing ready mixed concrete in the works**

Description	Labour Gang (m <sup>3</sup> per hour)
MASS CONCRETE	
Blinding	
150 mm thick	5.50
150 - 300 mm thick	6.25
300 - 500 mm thick	7.00
Bases and oversite concrete	
not exceeding 150 mm thick	5.00
not exceeding 300 mm thick	5.75
not exceeding 500 mm thick	6.75
exceeding 500 mm thick	7.00
REINFORCED CONCRETE	
Bases	
not exceeding 300 mm thick	5.50
not exceeding 500 mm thick	6.25
exceeding 500 mm thick	6.75
Suspended slabs (not exceeding 3m above pavement level)	
not exceeding 150 mm thick	3.75
not exceeding 300 mm thick	4.75
exceeding 300 mm thick	5.75
Walls and stems (not exceeding 3m above pavement):	
not exceeding 150 mm thick	3.50
not exceeding 300 mm thick	4.50
exceeding 300 mm thick	5.00
Beams, columns and piers (not exceeding 3m above pavement):	
sectional area not exceeding 0.03 m <sup>2</sup>	2.00
sectional area not exceeding 0.03 - 1.0 m <sup>2</sup>	2.50
sectional area exceeding 1.0 m <sup>2</sup>	3.50

**Fixing bar reinforcement**

All bars delivered to site cut and bent and marked, including craneage and hoisting (maximum height 5 m).

Description (fix only)	Unit	up to 6 mm		7 to 12 mm		13 to 19 mm		over 19 mm	
		steelfixer	labourer	steelfixer	labourer	steelfixer	labourer	steelfixer	labourer
<b>Straight round bars</b>									
to beams, floors, roofs and walls	t/hr	0.03	0.03	0.04	0.04	0.06	0.06	0.08	0.08
to braces, columns, sloping roofs and battered walls	t/hr	0.01	0.01	0.02	0.02	0.03	0.03	0.05	0.05
<b>Bent round bars</b>									
to beams, floors, roofs and walls	t/hr	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04
to braces, columns, sloping roofs and battered walls	t/hr	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
<b>Straight, indented or square bars</b>									
to beams, floors, roofs and walls	t/hr	0.02	0.02	0.04	0.04	0.05	0.05	0.07	0.07
to braces, columns, sloping roofs and battered walls	t/hr	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.04
<b>Bent, indented or square bars</b>									
to beams, floors, roofs and walls	t/hr	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
to braces, columns, sloping roofs and battered walls	t/hr	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
(Average based on Gang D)		0.125		0.148		0.163		0.225	

**Erecting formwork to beams and walls**

Erect and strike formwork	Unit	Joiner	Labourer
Walls - vertical face (first fix)			
up to 1.5 m	m <sup>2</sup> /hr	1.7	0.8
1.5 to 3.0 m	m <sup>2</sup> /hr	1.4	0.7
3.0 to 4.5 m	m <sup>2</sup> /hr	1.2	0.6
4.5 to 6.0 m	m <sup>2</sup> /hr	1.0	0.5

**Erecting formwork to slabs**

Erect and strike formwork	Unit	Joiner	Labourer
Horizontal flat formwork at heights (first fix)			
up to 3.0 m	m <sup>2</sup> /hr	1.11	1.11
3.0 to 3.6 m	m <sup>2</sup> /hr	1.05	1.05
3.6 to 4.2 m	m <sup>2</sup> /hr	1.00	1.00
4.2 to 4.8 m	m <sup>2</sup> /hr	0.95	0.95
4.8 to 5.4 m	m <sup>2</sup> /hr	0.90	0.90
5.4 to 6.0 m	m <sup>2</sup> /hr	0.83	0.83

**Multipliers for formwork**

Description	Multiplier
Walls built to batter	1.20
Walls built circular to large radius	1.70
Walls built circular to small radius	2.10
Formwork used once	1.00
Formwork used twice, per use	0.85
Formwork used three times, per use	0.75
Formwork used four times, per use	0.72
Formwork used five times, per use	0.68
Formwork used six times, per use	0.66
Formwork used seven or more times, per use	0.63
Formwork to slope not exceeding 45° from horizontal	1.25

**DRAINAGE****Laying and jointing flexible-jointed clayware pipes**

Diameter of pipe in mm	Drainage Gang	In trench not exceeding 1.5 m	In trench not exceeding 3 m	In trench 3 - 4.5 m
Pipework				
100 mm	m/hr	10	8	7
150 mm	m/hr	7	6	5
225 mm	m/hr	5	4	3
300 mm	m/hr	4	3	2
375 mm	m/hr	3	2	2
450 mm	m/hr	2	2	1
Bends				
100 mm	nr/hr	20	17	14
150 mm	nr/hr	17	14	13
225 mm	nr/hr	13	10	8
300 mm	nr/hr	10	8	7
375 mm	nr/hr	7	6	5
450 mm	nr/hr	3	3	2
Single junctions				
100 mm	nr/hr	13	10	8
150 mm	nr/hr	7	6	5
225 mm	nr/hr	6	5	4
300 mm	nr/hr	4	3	3
375 mm	nr/hr	3	2	2
450 mm	nr/hr	2	2	1

**Precast concrete manholes in sections**

Description	Unit	Pipelaye	Labourer
Place 675 mm dia shaft rings	m/hr	1.00	0.30
Place 900 mm manhole rings	m/hr	0.60	0.20
Place 1200 mm manhole rings	m/hr	0.40	0.10
Place 1500 mm manhole rings	m/hr	0.30	0.10
Place 900/675 mm tapers	nr/hr	1.00	0.30
Place 1200/675 mm tapers	nr/hr	0.60	0.20
Place 1500/675 mm tapers	nr/hr	0.50	0.20
Place cover slabs to 675 mm rings	nr/hr	2.50	0.80
Place cover slabs to 900 mm rings	nr/hr	2.00	0.70
Place cover slabs to 1200 mm rings	nr/hr	1.40	0.50
Place cover slabs to 1500 mm rings	nr/hr	0.90	0.30
Build in pipes and make good base:			
150 mm diameter	nr/hr	4.00	-
300 mm diameter	nr/hr	2.00	-
450 mm diameter	nr/hr	1.00	-
Benching 150 mm thick	m <sup>2</sup> /hr	1.20	1.20
Benching 300 mm thick	m <sup>2</sup> /hr	0.60	0.60
Render benching 25 mm thick	m <sup>2</sup> /hr	1.10	1.10
Fix manhole covers frame	nr/hr	1.30	1.30





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Tel: 0207 692 4000  
Fax: 0207 580 9641  
Website: [www.buildingcentre.co.uk](http://www.buildingcentre.co.uk)

BRITISH REINFORCEMENT MANUFACTURERS  
ASSOCIATION (BRMA)  
See UK STEEL ASSOCIATION

BUILDING MAINTENANCE INFORMATION (BMI)  
3 Cadogan gate, London SW1X 0AS  
Tel: 0207 695 1500  
Fax: 0207 695 1501

BRITISH RUBBER MANUFACTURERS  
ASSOCIATION LTD  
90 Tottenham Court Road, London W1P 0BR  
Tel: 0207 457 5040  
Fax: 0207 631 5471  
Website: [www.brma.co.uk](http://www.brma.co.uk)

BUILDING RESEARCH ESTABLISHMENT (BRE)  
Bucknalls Lane, Garston, Watford, Herts  
WD25 9XX  
Tel: 01923 664 000  
Fax: 01923 664 010  
Website: [www.bre.co.uk](http://www.bre.co.uk)

BRITISH STAINLESS STEEL ASSOCIATION  
Broomgrove, 59 Clarkhouse Road, Sheffield  
S10 2LE  
Tel: 0114 267 1260  
Fax: 0114 266 1252  
Website: [www.bssa.org.uk](http://www.bssa.org.uk)

BUILDING RESEARCH ESTABLISHMENT:  
SCOTLAND (BRE)  
Kelvin Rd, East Kilbride, Glasgow G75 0RZ  
Tel: 01355 576 200  
Fax: 01355 576 210

BRITISH STANDARDS INSTITUTION  
389 Chiswick High Road, Chiswick W4 4AL  
Tel: 0208 996 9000  
Fax: 0208 996 7001  
Website: [www.bsi-global.com.uk](http://www.bsi-global.com.uk)

BUILDING SERVICES RESEARCH AND  
INFORMATION ASSOCIATION  
Old Bracknell Lane West, Bracknell, Berks  
RG12 7AH  
Tel: 01344 465 600  
Fax: 01344 465 626  
Website: [www.bsria.co.uk](http://www.bsria.co.uk)

BRITISH WATER  
1 Queen Anne's Gate, London SW1 9BT  
Tel: 0207 957 4554  
Fax: 0207 957 4565  
Website: [www.britishwater.co.uk](http://www.britishwater.co.uk)  
CASTINGS technology international  
7 East Bank Road, Sheffield S2 3PT  
Tel: 0114 272 8647  
Fax: 0114 273 0854  
Website: [www.castingsdev.com](http://www.castingsdev.com)

BRITISH WOOD PRESERVING & DAMP PROOFING  
ASSOCIATION  
1 Gleneagles House, Vernon, Gate, South Street,  
Derby DE1 1UP  
Tel: 01332 225 100  
Fax: 01332 225 101  
Website: [www.bwpda.co.uk](http://www.bwpda.co.uk)

CEMENT ADMIXTURES ASSOCIATION  
38 Tilehouse, Green Lane, Knowle,  
West Midlands B93 9EY  
Tel: + Fax: 01564 776 362  
Website: [www.admixtures.org.uk](http://www.admixtures.org.uk)

CHARTERED INSTITUTE OF ARBITRATORS  
International Arbitration Centre  
12 Bloomsbury Square, London WC1A 2LP  
Tel: 0207 421 7444  
Fax: 0207 404 4023  
Website: [www.arbitrators.org.uk](http://www.arbitrators.org.uk)

CONSTRUCTION CONFEDERATION  
55 Tufton Street, Westminster, London  
SW1P 3QL  
Tel: 0870 8989090  
Fax: 0207 8989095  
Website: [www.thecc.org.uk](http://www.thecc.org.uk)

CHARTERED INSTITUTE OF BUILDING (CIOB)  
Englemere, Kings Ride, Ascot, Berks SL5 7TB  
Tel: 01344 630 700  
Fax: 01344 630 777  
Website: [www.ciob.org.uk](http://www.ciob.org.uk)

CONSTRUCTION EMPLOYERS FEDERATION  
143 Malone Rd, Belfast BT9 6SU  
Tel: 02890 877 143  
Fax: 02890 877 155  
Website: [www.cefnl.co.uk](http://www.cefnl.co.uk)

CHARTERED INSTITUTION OF WATER AND  
ENVIRONMENTAL MANAGEMENT  
15 John Street, London WC1N 2EB  
Tel: 0207 831 3110  
Fax: 0207 405 4967  
Website: [www.ciwem.org.uk](http://www.ciwem.org.uk)

CONSTRUCTION INDUSTRY RESEARCH  
& INFORMATION ASSOCIATION (CIRIA)  
Classic House, 174-180 Old Street,  
London EC1V 9BP  
Tel: 020 7549 3000  
Fax: 020 7253 0523  
Website: [www.ciria.org.uk](http://www.ciria.org.uk)

CIVIL ENGINEERING CONTRACTORS  
ASSOCIATION  
55 Tufton Street, Westminster, London  
SW1P 3QL  
Tel: 0207 227 4620  
Fax: 0207 227 4621  
Website: [www.ceca.co.uk](http://www.ceca.co.uk)

CORUS CONSTRUCTION & INDUSTRIAL  
PO Box L, Brigg Road, Scunthorpe, North  
Lincolnshire, DN16 1BP  
Tel: 01724 404040  
Fax: 01724 402191  
Website: [www.corusgroup.com](http://www.corusgroup.com)

CLAY PIPE DEVELOPMENT ASSOCIATION  
Copsham House, 53 Broad Street, Chesham,  
Bucks HP5 3EA  
Tel: 01494 791 456  
Fax: 01494 792 378  
Website: [www.cpdo.co.uk](http://www.cpdo.co.uk)

DEPARTMENT OF TRADE AND INDUSTRY  
1 Victoria Street, London SW1H 0ET  
Tel: 0207 215 5000  
Fax: 0207 828 3258

COLD ROLLED SECTIONS ASSOCIATIONS  
National Metal Forming Centre, 47 Birmingham Road,  
West Bromwich, B70 6PY  
Tel: 0121 601 6350  
Fax: 0121 601 6373  
Website: [www.crsauk.com](http://www.crsauk.com)

DEPARTMENT FOR TRANSPORT  
Ashdown House, 123 Victoria Street, London  
SW1E 6DE  
Tel: 020 7944 3000  
Website: [www.dft.gov.uk](http://www.dft.gov.uk)

CONCRETE PIPELINE SYSTEMS ASSOCIATION  
60 Charles St, Leicester LE1 1FB  
Tel: 0116 253 6161  
Fax: 0116 251 4568  
Website: [www.concretepipes.co.uk](http://www.concretepipes.co.uk)

ELECTRICAL CONTRACTORS ASSOCIATION  
(ECA)  
ESCA House, 34 Palace Court, Bayswater,  
London W2 4HY  
Tel: 0207 313 4800  
Fax: 0207 221 7344  
Website: [www.eca.co.uk](http://www.eca.co.uk)

CONFEDERATION OF BRITISH INDUSTRY  
Centre Point, 103 New Oxford St, London  
WC1A 1DU  
Tel: 0207 379 7400  
Fax: 0207 240 1578  
Website: [www.cbi.org.uk](http://www.cbi.org.uk)

ELECTRICAL CONTRACTORS ASSOCIATION OF  
SCOTLAND (SELECT)  
The Walled Garden, Bush Estate, Midlothian  
EH26 0SB  
Tel: 0131 445 5577  
Fax: 0131 445 5548  
Website: [www.select.org.uk](http://www.select.org.uk)

FEDERATION OF ENVIRONMENTAL TRADE  
ASSOCIATIONS  
2 Waltham Court, Milley Lane, Hare Hatch, Reading  
RG10 9TH  
Tel: 0118 940 3416  
Fax: 0118 940 6258  
Website: [www.feta.co.uk](http://www.feta.co.uk)

HEATING AND VENTILATORS CONTRACTORS  
ASSOCIATION  
ESCA House, 34 Palace Court,  
London W2 4JG  
Tel: 0207 313 4900  
Fax: 0207 727 9268  
Website: [www.hvca.org.uk](http://www.hvca.org.uk)

FEDERATION OF MASTER BUILDERS  
Gordon Fisher House, 14–15 Gt James St,  
London WC1N 3DP  
Tel: 0207 242 7583  
Fax: 0207 404 0296  
Website: [www.fmb.org.uk](http://www.fmb.org.uk)

HM LAND REGISTRY (HQ)  
32 Lincolns Inn Fields, London WC2A 3PH  
Tel: 0207 917 8888  
Fax: 0207 955 0110  
Website: [www.landreg.gov.uk](http://www.landreg.gov.uk)

FEDERATION OF PILING SPECIALISTS  
Forum Court, 83 Copers Cope Road, Beckenham,  
Kent BR3 1NR  
Tel: 0208 663 0947  
Fax: 0208 663 0949  
Website: [www.fps.org.uk](http://www.fps.org.uk)

ICOM ENERGY ASSOCIATION  
6th Floor, The MacLaren Building, 35 Dale End,  
Birmingham B14 7LN  
Tel: 0121 200 2100  
Fax: 0121 200 1306

FEDERATION OF PLASTERING AND  
 DRYWALL CONTRACTORS  
 The Building Centre, 26 Store Street,  
 London WC1E 7BT  
 Tel: 020 7580 3545  
 Fax: 020 7580 3288  
 Website: [www.fpdc.org.uk](http://www.fpdc.org.uk)

INSTITUTE OF CONCRETE TECHNOLOGY  
 4 Meadows Business Park, Station Approach,  
 Blackwater, Camberley GU17 9AB  
 Tel/Fax: 01276 37831  
 Website: [www.ictech.org](http://www.ictech.org)

FENCING CONTRACTORS ASSOCIATION  
 Warren Road, Trelleck, Monmouthshire  
 NP25 4PQ  
 Tel: 07000 560 722  
 Fax: 01600 860 614  
 Website: [www.fencingcontractors.org](http://www.fencingcontractors.org)

INSTITUTE OF MATERIALS, MINERALS & MINING  
 1 Carlton House Terrace, London SW1Y 5DB  
 Tel: 0207 451 7300  
 Fax: 0207 839 1702  
 Website: [www.materials.org.uk](http://www.materials.org.uk)

FLAT ROOFING ALLIANCE  
 Fields House, Gower Road, Haywards Heath, West  
 Sussex RH16 4PL  
 Tel: 01444 440 027  
 Fax: 01444 415 616  
 Website: [www.fra.org.uk](http://www.fra.org.uk)

INSTITUTE OF QUALITY ASSURANCE  
 12 Grosvenor Crescent, London SW1X 7EE  
 Tel: 0207 245 6722  
 Fax: 0207 245 6755  
 Website: [www.iqa.org.uk](http://www.iqa.org.uk)

HEALTH & SAFETY LABORATORY  
 Business Development Unit Health & Safety  
 Laboratory, Harpur Hill, Buxton, Derbyshire  
 SK17 9JN  
 Tel: 01298 218 218  
 Fax: 01298 218 822  
 Website: [www.hsl.gov.uk](http://www.hsl.gov.uk)

INSTITUTION OF BRITISH ENGINEERS  
 Clifford Hill Court, Clifford Chambers,  
 Stratford Upon-Avon,  
 Warwickshire CU37 8AA  
 Tel: 01789 298 739  
 Fax: 01789 294 442  
 Website: [www.britishengineers.com](http://www.britishengineers.com)

INSTITUTION OF CIVIL ENGINEERS  
 1 Great George St, London SW1P 3AA  
 Tel: 0207 222 7722  
 Fax: 0207 222 7500  
 Website: [www.ice.org.uk](http://www.ice.org.uk)

THE JOINT CONTRACTS TRIBUNAL  
 9 Cavendish Place, London W1G 0QD  
 Tel: 0207 637 8650  
 Fax: 0207 637 8670  
 Website: [www.jcttd.co.uk](http://www.jcttd.co.uk)

INSTITUTION OF ELECTRICAL ENGINEERS  
 Savoy Place, London WC2R 0BL  
 Tel: 0207 240 1871  
 Fax: 0207 240 7735  
 Website: [www.iet.org.uk](http://www.iet.org.uk)

LANDSCAPE INSTITUTE  
 33 Great Portland Street, London W1W 8QG  
 Tel: 0207 299 4500  
 Fax: 0207 299 4501  
 Website: [www.landscapeinstitute.org.uk](http://www.landscapeinstitute.org.uk)

INSTITUTION OF INCORPORATED ENGINEERS  
 Savoy Hill House, Savoy Hill, London WC2R 0BS  
 Tel: 0207 836 3357  
 Fax: 0207 497 9006  
 Website: [www.ii.org.uk](http://www.ii.org.uk)

LEAD DEVELOPMENT ASSOCIATION  
 42 Weymouth Street, London W1G 6NP  
 Tel: 0207 499 8422  
 Fax: 0207 493 1555  
 Website: [www.ldaint.org](http://www.ldaint.org)

INSTITUTION OF MECHANICAL ENGINEERS  
 1 Birdcage Walk, London SW1H 9JJ  
 Tel: 0207 222 7899  
 Fax: 0207 222 4557  
 Website: [www.imeche.org.uk](http://www.imeche.org.uk)

MASTIC ASPHALT COUNCIL LTD  
 PO Box 77, Hastings,  
 Kent TN35 4WL  
 Tel: 01424 814 400  
 Fax: 01424 814 446  
 Website: [www.masticasphaltcouncil.co.uk](http://www.masticasphaltcouncil.co.uk)

INSTITUTION OF STRUCTURAL ENGINEERS  
 11 Upper Belgrave Street, London SW1X 8BH  
 Tel: 0207 235 4535  
 Fax: 0207 235 4294  
 Website: [www.istructe.org.uk](http://www.istructe.org.uk)

MET OFFICE  
 Fitzroy Road, Exeter, Devon EX1 3PB  
 Tel: 0870 900 0100  
 Fax: 0870 900 5050  
 Website: [www.met-office.gov.uk](http://www.met-office.gov.uk)

INSTITUTION OF WATER AND ENVIRONMENTAL  
 MANAGEMENT  
 See CHARTERED INSTITUTION OF WATER AND  
 ENVIRONMENTAL MANAGEMENT

NATIONAL ASSOCIATION OF STEEL  
 STOCKHOLDERS  
 6th Floor, McLaren Building, 35 Dale End, Birmingham  
 B4 7LN  
 Tel: 0121 200 2288  
 Fax: 0121 236 7444  
 Website: [www.nass.org.uk](http://www.nass.org.uk)

INSTITUTION OF WASTES MANAGEMENT  
 9 Saxon Court, St Peter's Gardens, Marefair,  
 Northampton NN1 1SX  
 Tel: 01604 620 426  
 Fax: 01604 621 339  
 Website: [www.ciwm.co.uk](http://www.ciwm.co.uk)

ORDNANCE SURVEY  
 Romsey Road, Maybush, Southampton  
 SO16 4GU  
 Tel: 0845 605 0505  
 Fax: 02380 792 615  
 Website: [www.ordsvy.gov.uk](http://www.ordsvy.gov.uk)

INTERNATIONAL CONCRETE BRICK ASSOCIATION  
 See BRITISH PRECAST CONCRETE FEDERATION

PIPELINE INDUSTRIES GUILD  
 14/15 Belgrave Square, London SW1X 8PS  
 Tel: 0207 235 7938  
 Fax: 0207 235 0074  
 Website: [www.pipeguild.co.uk](http://www.pipeguild.co.uk)

INTERPAVE  
 See BRITISH PRECAST CONCRETE FEDERATION

PLASTIC PIPE MANUFACTURERS SOCIETY  
 9 Cornwall Street, Birmingham B3 3BY  
 Tel: 0121 236 1866  
 Fax: 0121 200 1389

PUBLIC RECORDS OFFICE  
 (the national archives)  
 Ruskin Avenue, Q Richmond, Surrey TW9 4DU  
 Tel: 0208 876 3444  
 Fax: 0208 392 5286  
 Website: [www.nationalarchives.gov.uk](http://www.nationalarchives.gov.uk)

SCOTTISH ENTERPRISE  
 5 Atlantic Quay, 150 Broomielaw,  
 Glasgow G2 8LU  
 Tel: 0141 248 2700  
 Fax: 0141 221 3217  
 Website: [www.scottish-enterprise.com](http://www.scottish-enterprise.com)

QUARRY PRODUCTS ASSOCIATION  
 Gillingham House, 38-44 Gillingham Street,  
 London SW1V 1HU  
 Tel: 0207 963 8000  
 Fax: 0207 963 8001  
 Website: [www.qpa.org](http://www.qpa.org)

SOCIETY OF GLASS TECHNOLOGY  
 Don Valley House, Saville Street East,  
 Sheffield S4 7UQ  
 Tel: 0114 263 4455  
 Fax: 0114 263 4411  
 Website: [www.societyofglasstechnology.org](http://www.societyofglasstechnology.org)

REINFORCED CONCRETE COUNCIL  
 Riverside House, 4 Meadows Business Park, Station  
 Approach, Camberley GU17 9AB  
 Tel: 01276 607140  
 Fax: 01276 607141  
 Website: [www.rcc-info.org.uk](http://www.rcc-info.org.uk)

SPECIALISED ACCESS ENGINEERING AND  
MAINTENANCE ASSOCIATION  
Carthusian Court, 12 Carthusian Street,  
London EC1M 6EZ  
Tel: 020 7397 8122  
Fax: 020 7397 8121  
Website: [www.saema.org](http://www.saema.org)

THE RESIN FLOORING FEDERATION  
Association House, 99 West Street,  
Farnham, Surrey GU9 7EN  
Tel: 01252 739 149  
Fax: 01252 739 140  
Website: [www.ferfa.org.uk](http://www.ferfa.org.uk)

STEEL CONSTRUCTION INSTITUTE  
Silwood Park, Ascot, Berks SL5 7QN  
Tel: 01344 623 345  
Fax: 01344 622 944  
Website: [www.steel-sci.org](http://www.steel-sci.org)

ROYAL INSTITUTE OF BRITISH ARCHITECTS  
66 Portland Place, London W1B 1AD  
Tel: 0207 580 5533  
Fax: 0207 255 1541  
Website: [www.riba.org.uk](http://www.riba.org.uk)

SWIMMING POOL AND ALLIED TRADES  
ASSOCIATION (SPATA)  
SPATA House, 1A Junction Road, Andover, Hants  
SP10 3QT  
Tel: 01264 356 210  
Fax: 01264 332 628  
Website: [www.spata.co.uk](http://www.spata.co.uk)

ROYAL INSTITUTION OF CHARTERED  
SURVEYORS (RICS)  
12 Great George Street, Parliament Square London  
SW1P 3AD  
Tel: 0870 333 1600  
Fax: 0207 222 9430  
Website: [www.rics.org.uk](http://www.rics.org.uk)

THERMAL INSULATION CONTRACTORS  
ASSOCIATION  
TICA House, Allington Way, Yarm Road Business  
Park, Darlington, County Durham DL1 4QB  
Tel: 01325 466 704  
Fax: 01325 487 691  
Website: [www.tica-acad.co.uk](http://www.tica-acad.co.uk)

SCOTTISH BUILDING EMPLOYERS FEDERATION  
Carron Grange, Carrongrange Avenue,  
Stenhousemuir, FK5 3BQ  
Tel: 01324 555 550  
Fax: 01324 555 551  
Website: [www.scottish-building.co.uk](http://www.scottish-building.co.uk)

THERMAL INSULATION MANUFACTURERS  
AND SUPPLIERS ASSOCIATION  
Association House, 99 West Street, Farnham,  
Surrey GU9 7EN  
Tel: 01252 739 154  
Fax: 01252 739 140  
Website: [www.timsa.org.uk](http://www.timsa.org.uk)

TIMBER TRADE FEDERATION LTD  
Clareville House, 2627 Oxenden Street,  
London SW1Y 4EL  
Tel: 0207 839 1891  
Fax: 0207 930 0094  
Website: [www.ttf.co.uk](http://www.ttf.co.uk)

TWI THE WELDING INSTITUTE  
Granta Park, Great Abington, Cambridge  
CB1 6AL  
Tel: 01123 891 162  
Fax: 01223 892 588  
Website: [www.twi.co.uk](http://www.twi.co.uk)

TOWN AND COUNTRY PLANNING  
ASSOCIATION  
17 Carlton House Terrace, London SW1Y 5AS  
Tel: 0207 930 8903  
Fax: 0207 930 3280  
Website: [www.tcpa.org.uk](http://www.tcpa.org.uk)

UK STEEL ASSOCIATION  
Broadway House, Tothill Street, London  
SW1H 9NQ  
Tel: 0207 222 7777  
Fax: 0207 222 2782  
Website: [www.uksteel.org.uk](http://www.uksteel.org.uk)

TRADA TECHNOLOGY LTD  
Stocking Lane, Hughenden Valley,  
High Wycombe, Bucks HP14 4ND  
Tel: 01494 569 602  
Fax: 01494 565 487  
Website: [www.trada.co.uk](http://www.trada.co.uk)



PART 14

# **Tables and Memoranda**

**QUICK REFERENCE CONVERSION TABLES**

	<b>Imperial</b>		<b>Metric</b>	
<b>1. LINEAR</b>				
0.039	in	1	mm	25.4
3.281	ft	1	m	0.305
1.094	yd	1	m	0.914
<b>2. WEIGHT</b>				
0.020	cwt	1	kg	50.802
0.984	ton	1	tonne	1.016
2.205	lb	1	kg	0.454
<b>3. CAPACITY</b>				
1.760	pint	1	litre	0.568
0.220	gal	1	litre	4.546
<b>4. AREA</b>				
0.002	in <sup>2</sup>	1	mm <sup>2</sup>	645.16
10.764	ft <sup>2</sup>	1	m <sup>2</sup>	0.093
1.196	yd <sup>2</sup>	1	m <sup>2</sup>	0.836
2.471	acre	1	ha	0.405
0.386	mile <sup>2</sup>	1	km <sup>2</sup>	2.59
<b>5. VOLUME</b>				
0.061	in <sup>3</sup>	1	cm <sup>3</sup>	16.387
35.315	ft <sup>3</sup>	1	m <sup>3</sup>	0.028
1.308	yd <sup>3</sup>	1	m <sup>3</sup>	0.765
<b>6. POWER</b>				
1.310	HP	1	kW	0.746

**CONVERSION FACTORS - METRIC TO IMPERIAL**

<b>Multiply Metric</b>	<b>Unit</b>	<b>By</b>	<b>To obtain Imperial</b>	<b>Unit</b>
<b>Length</b>				
kilometre	km	0.6214	statute mile	mi
metre	m	1.0936	yard	yd
centimetre	cm	0.0328	foot	ft
millimetre	mm	0.0394	inch	in
<b>Area</b>				
hectare	ha	2.471	acre	
square kilometre	km <sup>2</sup>	0.3861	square mile	sq mi
square metre	m <sup>2</sup>	10.764	square foot	sq ft
square metre	m <sup>2</sup>	1550	square inch	sq in
square centimetre	cm <sup>2</sup>	0.155	square inch	sq in
<b>Volume</b>				
cubic metre	m <sup>3</sup>	35.336	cubic foot	cu ft
cubic metre	m <sup>3</sup>	1.308	cubic yard	cu yd
cubic centimetre	cm <sup>3</sup>	0.061	cubic inch	cu in
cubic centimetre	cm <sup>3</sup>	0.0338	fluid ounce	fl oz
<b>Liquid volume</b>				
litre	l	0.0013	cubic yard	cu yd
litre	l	61.02	cubic inch	cu in
litre	l	0.22	Imperial gallon	gal
litre	l	0.2642	US gallon	US gal
litre	l	1.7596	pint	pt
<b>Mass</b>				
metric tonne	t	0.984	long ton	lg ton
metric tonne	t	1.102	short ton	sh ton
kilogram	kg	2.205	pound, avoirdupois	lb
gram	g or gr	0.0353	ounce, avoirdupois	oz
<b>Unit mass</b>				
kilograms/cubic metre	kg/m <sup>3</sup>	0.062	pounds/cubic foot	lbs/cu ft
kilograms/cubic metre	kg/m <sup>3</sup>	1.686	pounds/cubic yard	lbs/cu yd
tonnes/cubic metre	t/m <sup>3</sup>	1692	pound/cubic yard	lbs/cu yd
kilograms/sq centimetre	kg/cm <sup>2</sup>	14.225	pounds/square inch	lbs/sq in
kilogram-metre	kg.m	7.233	foot-pound	ft-lb

<b>Multiply Metric</b>	<b>Unit</b>	<b>By</b>	<b>To obtain Imperial</b>	<b>Unit</b>
<b>Force</b>				
meganewton	MN	9.3197	tons force	tonf
kilonewton	kN	225	pounds force	lbf
newton	N	0.225	pounds force	lbf
<b>Pressure and stress</b>				
meganewton per square metre	MN/m <sup>2</sup>	9.3197	tons force/square foot	tonf/ft <sup>2</sup>
kilopascal	kPa	0.145	pounds/square inch	psi
bar		14.5	pounds/square inch	psi
kilogramme metre	kgm	7.2307	foot-pound	ft-lb
<b>Energy</b>				
kilocalorie	kcal	3.968	British thermal unit	Btu
metric horsepower	CV	0.9863	horse power	hp
kilowatt	kW	1.341	horse power	hp
<b>Speed</b>				
kilometres/hour	km/h	0.621	miles/hour	mph

**CONVERSION FACTORS - IMPERIAL TO METRIC**

<b>Multiply Imperial</b>	<b>Unit</b>	<b>By</b>	<b>To obtain metric</b>	<b>Unit</b>
<b>Length</b>				
statute mile	mi	1.609	kilometre	km
yard	yd	0.9144	metre	m
foot	ft	0.3048	metre	m
inch	in	25.4	millimetre	mm
<b>Area</b>				
acre	acre	0.4047	hectare	ha
square mile	sq mi	2.59	square kilometre	km <sup>2</sup>
square foot	sq ft	0.0929	square metre	m <sup>2</sup>
square inch	sq in	0.0006	square metre	m <sup>2</sup>
square inch	sq in	6.4516	square centimetre	cm <sup>2</sup>
<b>Volume</b>				
cubic foot	cu ft	0.0283	cubic metre	m <sup>3</sup>
cubic yard	cu yd	0.7645	cubic metre	m <sup>3</sup>
cubic inch	cu in	16.387	cubic centimetre	cm <sup>3</sup>
fluid ounce	fl oz	29.57	cubic centimetre	cm <sup>3</sup>
<b>Liquid volume</b>				
cubic yard	cu yd	764.55	litre	l
cubic inch	cu in	0.0164	litre	l
Imperial gallon	gal	4.5464	litre	l
US gallon	US gal	3.785	litre	l
US gallon	US gal	0.833	Imperial gallon	gal
pint	pt	0.5683	litre	l
<b>Mass</b>				
long ton	lg ton	1.016	metric tonne	tonne
short ton	sh ton	0.907	metric tonne	tonne
pound	lb	0.4536	kilogram	kg
ounce	oz	28.35	gram	g
<b>Unit mass</b>				
pounds/cubic foot	lb/cu ft	16.018	kilograms/cubic metre	kg/m <sup>3</sup>
pounds/cubic yard	lb/cu yd	0.5933	kilograms /cubic metre	kg/m <sup>3</sup>
pounds/cubic yard	lb/cu yd	0.0006	tonnes/cubic metre	t/m <sup>3</sup>
foot-pound	ft-lb	0.1383	kilogram-metre	kg.m

Multiply Imperial	Unit	By	To obtain metric	Unit
<b>Force</b>				
tons force	tonf	0.1073	meganewton	MN
pounds force	lbf	0.0045	kilonewton	kN
pounds force	lbf	4.45	newton	N
<b>Pressure and stress</b>				
pounds/square inch	psi	0.1073	kilogram/sq. centimetre	kg/cm <sup>2</sup>
pounds/square inch	psi	6.89	kilopascal	kPa
pounds/square inch	psi	0.0689	bar	
foot-pound	ft-lb	0.1383	kilogram metre	kgm
<b>Energy</b>				
British Thermal Unit	Btu	0.252	kilocalorie	kcal
horsepower (Hp)	Hp	1.014	metric horsepower	CV
horsepower (Hp)	Hp	0.7457	kilowatt	kW
<b>Speed</b>				
miles/hour	mph	1.61	kilometres/hour	km/h

## CONVERSION TABLES

<b>Length</b>									
Millimetre	mm	1 in	=	25.4 cm	1 mm	=	0.0394 in		
Centimetre	cm	1 in	=	2.54 cm	1 cm	=	0.3937 in		
Metre	m	1 ft	=	0.3048 m	1 m	=	3.2808 ft		
		1 yd	=	0.9144 m	1 m	=	1.0936 yd		
Kilometre	km	1 mile	=	1.6093 km	1 km	=	0.6214 mile		
		<b>Note:</b>		1 cm	=	10 mm	1 ft	=	12 in
				1 m	=	100 cm	1 yd	=	3 ft
				1 km	=	1,000 m	1 mile	=	1,760 yd
<b>Area</b>									
Square millimetre	mm <sup>2</sup>	1 in <sup>2</sup>	=	645.2 mm <sup>2</sup>	1 mm <sup>2</sup>	=	0.0016 in <sup>2</sup>		
Square centimetre	cm <sup>2</sup>	1 in <sup>2</sup>	=	6.4516 cm <sup>2</sup>	1 cm <sup>2</sup>	=	1.1550 in <sup>2</sup>		
Square metre	m <sup>2</sup>	1 ft <sup>2</sup>	=	0.0929 m <sup>2</sup>	1 m <sup>2</sup>	=	10.764 ft <sup>2</sup>		
		1 yd <sup>2</sup>	=	0.8361 m <sup>2</sup>	1 m <sup>2</sup>	=	1.1960 yd <sup>2</sup>		
Square Kilometre	km <sup>2</sup>	1 mile <sup>2</sup>	=	2.590 km <sup>2</sup>	1 km <sup>2</sup>	=	0.3861 mile <sup>2</sup>		
		<b>Note:</b>		1 cm <sup>2</sup>	=	100 m <sup>2</sup>	1 ft <sup>2</sup>	=	144 in <sup>2</sup>
				1 m <sup>2</sup>	=	10,000 cm <sup>2</sup>	1 yd <sup>2</sup>	=	9 ft <sup>2</sup>
				1 km <sup>2</sup>	=	100 hectares	1 mile <sup>2</sup>	=	640 acres
							1 acre	=	4,840 yd <sup>2</sup>
<b>Volume</b>									
Cubic centimetre	cm <sup>3</sup>	1 cm <sup>3</sup>	=	0.0610 in <sup>3</sup>	1 in <sup>3</sup>	=	16.387 cm <sup>3</sup>		
Cubic decimetre	dm <sup>3</sup>	1 dm <sup>3</sup>	=	0.0353 ft <sup>3</sup>	1 ft <sup>3</sup>	=	28.329 dm <sup>3</sup>		
Cubic metre	m <sup>3</sup>	1 m <sup>3</sup>	=	35.3147 ft <sup>3</sup>	1 ft <sup>3</sup>	=	0.0283 m <sup>3</sup>		
		1 m <sup>3</sup>	=	1.3080 yd <sup>3</sup>	1 yd <sup>3</sup>	=	0.7646 m <sup>3</sup>		
Litre	L	1 L	=	1.76 pint	1 pint	=	0.5683 L		
		1 L	=	2.113 US pt	1 pint	=	0.4733 L		
		<b>Note:</b>		1 dm <sup>3</sup>	=	1,000 cm <sup>3</sup>	1 ft <sup>3</sup>	=	1.728 in <sup>3</sup>
				1 m <sup>3</sup>	=	1,000 dm <sup>3</sup>	1 yd <sup>3</sup>	=	27 ft <sup>3</sup>
				1 L	=	1 dm <sup>3</sup>	1 pint	=	20 fl oz
				1 HL	=	100 L	1 gal	=	8 pints

**Mass**

Milligram	mg	1 mg	=	0.0154 grain	1 grain	=	64.935 mg
Gram	g	1 g	=	0.0353 oz	1 oz	=	28.35 g
Kilogram	kg	1 kg	=	2.2046 lb	1 lb	=	0.4536 kg
Tonne	t	1 t	=	0.9842 ton	1 ton	=	1.016 t

<b>Note:</b>		1 g	=	1,000 mg	1 oz	=	437.5 grains
		1 kg	=	1000 g	1 lb	=	16 oz
		1 t	=	1,000 kg	1 stone	=	14 lb
					1 cwt	=	112 lb
					1 ton	=	20 cwt

**Force**

Newton	N	1 lbf	=	4.448 N	1 kgf	=	9.807 N
Kilonewton	kN	1 lbf	=	0.00448 kN	1 ton f	=	9.964 kN
Meganewton	MN	100 tonf	=	0.9964 MN			

**Pressure and stress**

Kilonewton per square metre		1 lbf/in <sup>2</sup>	=	6.895 kN/m <sup>2</sup>		
	kN/m <sup>2</sup>	1 bar	=	100 kN/m <sup>2</sup>		
Meganewton per square metre		1 tonf/ft <sup>2</sup>	=	107.3 kN/m <sup>2</sup> = 0.1073 MN/m <sup>2</sup>		
	MN/m <sup>2</sup>	1 kgf/cm <sup>2</sup>	=	98.07 kN/m <sup>2</sup>		
		1 lbf/ft <sup>2</sup>	=	0.04788 kN/m <sup>2</sup>		

**Temperature**

Degree Celsius °C	$^{\circ}\text{C} = \frac{5(^{\circ}\text{F} - 32)}{9}$	$^{\circ}\text{F} = \frac{(9^{\circ}\text{C}) + 32}{5}$
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**CONVERSION TABLES – continued**

<b>Metric Equivalents</b>		
1 km	=	1000 m
1 m	=	100 cm
1 cm	=	10 mm
1 km <sup>2</sup>	=	100 ha
1 ha	=	10,000 m <sup>2</sup>
1 m <sup>2</sup>	=	10,000 cm <sup>2</sup>
1 cm <sup>2</sup>	=	100 mm <sup>2</sup>
1 m <sup>3</sup>	=	1,000 litres
1 litre	=	1,000 cm <sup>3</sup>
1 metric tonne	=	1,000 kg
1 quintal	=	100 kg
1 N	=	0.10197 kg
1 kg	=	1000 g
1 g	=	1000 mg
1 bar	=	14.504 psi
1 cal	=	427 kg.m
1 cal	=	0.0016 cv.h
torque unit	=	0.00116 kw.h
1 CV	=	75 kg.m/s
1 kg/cm <sup>2</sup>	=	0.97 atmosphere
<b>English Unit Equivalents</b>		
1 mile	=	1760 yd
1 yd	=	3 ft
1 ft	=	12 in
1 sq mile	=	640 acres
1 acre	=	43,560 sq ft
1 sq ft	=	144 sq in
1 cu ft	=	7.48 gal liq
1 gal	=	231 cu in
	=	4 quarts liq
1 quart	=	32 fl oz
1 fl oz	=	1.80 cu in
	=	437.5 grains
1 stone	=	14 lb
1 cwt	=	112 lb
1 sh ton	=	2000 lb
1 lg ton	=	2240 lb
	=	20 cwt
1 lb	=	16 oz, avdp
1 Btu	=	778 ft lb
	=	0.000393 hph
	=	0.000293 kwh
1 hp	=	550 ft-lb/sec
1 atmosph	=	14.7 lb/in <sup>2</sup>

<b>Power Units</b>		
kW	=	Kilowatt
HP	=	Horsepower
CV	=	Cheval Vapeur (Steam Horsepower)
	=	French designation for Metric Horsepower
PS	=	Pferdestärke (Horsepower)
	=	German designation of Metric Horsepower
1 HP	=	1.014 CV = 1.014 PS
	=	0.7457 kW
1 PS	=	1 CV = 0.9863 HP
	=	0.7355 kW
1 kW	=	1.341 HP
	=	1.359 CV
	=	1.359 PS

**SPEED CONVERSION**

<b>km/h</b>	<b>m/min</b>	<b>Mph</b>	<b>fpm</b>
1	16.7	0.6	54.7
2	33.3	1.2	109.4
3	50.0	1.9	164.0
4	66.7	2.5	218.7
5	83.3	3.1	273.4
6	100.0	3.7	328.1
7	116.7	4.3	382.8
8	133.3	5.0	437.4
9	150.0	5.6	492.1
10	166.7	6.2	546.8
11	183.3	6.8	601.5
12	200.0	7.5	656.2
13	216.7	8.1	710.8
14	233.3	8.7	765.5
15	250.0	9.3	820.2
16	266.7	9.9	874.9
17	283.3	10.6	929.6
18	300.0	11.2	984.3
19	316.7	11.8	1038.9
20	333.3	12.4	1093.6
21	350.0	13.0	1148.3
22	366.7	13.7	1203.0
23	383.3	14.3	1257.7
24	400.0	14.9	1312.3
25	416.7	15.5	1367.0
26	433.3	16.2	1421.7
27	450.0	16.8	1476.4
28	466.7	17.4	1531.1
29	483.3	18.0	1585.7
30	500.0	18.6	1640.4
31	516.7	19.3	1695.1
32	533.3	19.9	1749.8
33	550.0	20.5	1804.5
34	566.7	21.1	1859.1
35	583.3	21.7	1913.8
36	600.0	22.4	1968.5
37	616.7	23.0	2023.2
38	633.3	23.6	2077.9
39	650.0	24.2	2132.5
40	666.7	24.9	2187.2

<b>km/h</b>	<b>m/min</b>	<b>Mph</b>	<b>fpm</b>
41	683.3	25.5	2241.9
42	700.0	26.1	2296.6
43	716.7	26.7	2351.3
44	733.3	27.3	2405.9
45	750.0	28.0	2460.6
46	766.7	28.6	2515.3
47	783.3	29.2	2570.0
48	800.0	29.8	2624.7
49	816.7	30.4	2679.4
50	833.3	31.1	2734.0

**FORMULAE**

Two dimensional figures

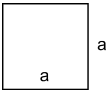
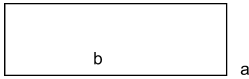
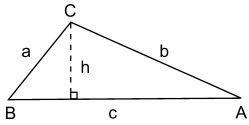
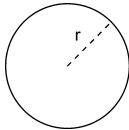
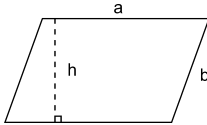
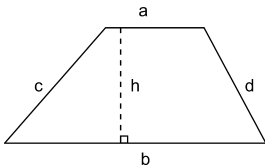
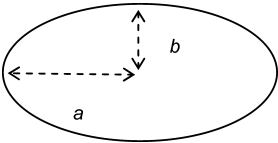
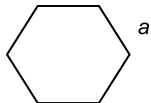
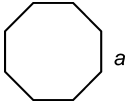
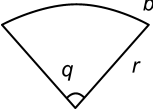
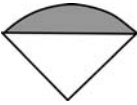
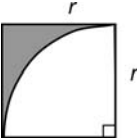
Figure	Diagram of figure	Surface area	Perimeter
Square		$a^2$	$4a$
Rectangle		$ab$	$2(a + b)$
Triangle		$\frac{1}{2}ch$ $\frac{1}{2}ab \sin C$ $\sqrt{\{s(s - a)(s - b)(s - c)\}}$ where $s = \frac{1}{2}(a + b + c)$	$a + b + c$
Circle		$\pi r^2$ $\frac{1}{4} \pi d^2$ where $2r = d$	$2\pi r$ $\pi d$
Parallelogram		$ah$	$2(a + b)$
Trapezium		$\frac{1}{2}h(a + b)$	$a + b + c + d$
Ellipse		Approximately $\pi ab$	$\pi(a + b)$
Hexagon		$2.6 \times a^2$	

Figure	Diagram of figure	Surface area	Perimeter
Octagon		$4.83 \times a^2$	
Sector of a circle		$\frac{1}{2}rb$ or $\frac{q}{360}\pi r^2$ note $b = \text{angle } \frac{q}{360} \times \pi 2r$	
Segment of a circle		$S - T$ where $S = \text{area of sector}$ , $T = \text{area of triangle}$	
Bellmouth		$\frac{3}{14} \times r^2$	

Three dimensional figures

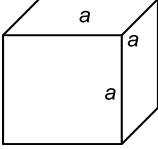
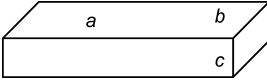
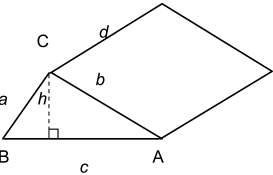
Figure	Diagram of figure	Surface area	Volume
Cube		$6a^2$	$a^3$
Cuboid/ rectangular block		$2(ab + ac + bc)$	$abc$
Prism/ triangular block		$bd + hc + dc + ad$	$\frac{1}{2}hcd$ $\frac{1}{2}ab \sin C d$ $d \sqrt{s(s-a)(s-b)(s-c)}$ where $s = \frac{1}{2}(a + b + c)$

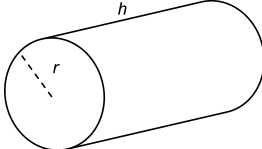
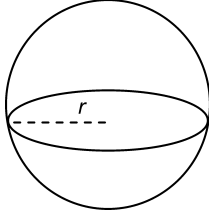
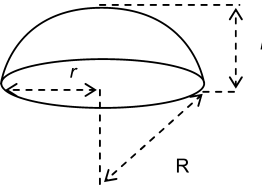
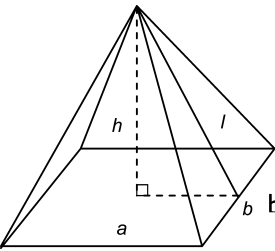
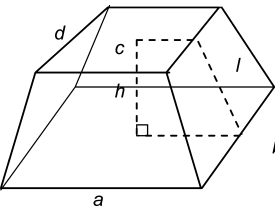
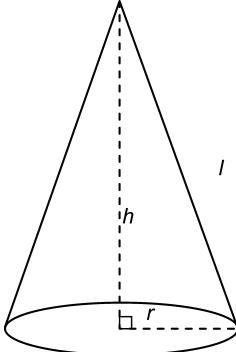
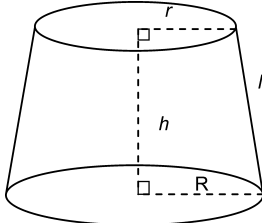
Figure	Diagram of figure	Surface area	Volume
Cylinder		$2\pi rh + 2\pi^2$ $\pi dh + \frac{1}{2}\pi d^2$	$\pi r^2 h$ $\frac{1}{4}\pi d^2 h$
Sphere		$4\pi r^2$	$\frac{4}{3}\pi r^3$
Segment of sphere		$2\pi R h$	$\frac{1}{6}\pi h(3r^2 + h^2)$ $\frac{1}{3}\pi h^2(3R - H)$
Pyramid		$(a + b)l + ab$	$\frac{1}{3}abh$
Frustrum of a pyramid		$l(a + b + c + d) + \sqrt{(ab + cd)}$ <p>[rectangular figure only]</p>	$\frac{h}{3}(ab + cd + \sqrt{abcd})$

Figure	Diagram of figure	Surface area	Volume
Cone	 <p>A diagram of a cone. A vertical dashed line from the apex to the center of the base is labeled <math>h</math>. A horizontal dashed line from the center of the base to the edge is labeled <math>r</math>. A solid line along the side of the cone is labeled <math>l</math>. A right-angle symbol is shown at the center of the base.</p>	$\pi r l + \pi r^2$ $\frac{1}{2} \pi d h + \frac{1}{4} \pi d^2$	$\frac{1}{3} \pi r^2 h$ $\frac{1}{12} \pi d^2 h$
Frustum of a cone	 <p>A diagram of a frustum of a cone. A vertical dashed line from the center of the top circular face to the center of the bottom circular face is labeled <math>h</math>. A horizontal dashed line from the center of the top face to its edge is labeled <math>r</math>. A horizontal dashed line from the center of the bottom face to its edge is labeled <math>R</math>. A solid line along the side of the frustum is labeled <math>l</math>. Right-angle symbols are shown at the centers of both the top and bottom faces.</p>	$\pi r^2 + \pi R^2 + \pi l(R + r)$	$\frac{1}{3} \pi h(R^2 + Rr + r^2)$



Formula	Description
<b>Pythagoras theorem</b>	$A^2 = B^2 + C^2$ where A is the hypotenuse of a right-angled triangle and B and C are the two adjacent sides
<b>Simpsons Rule</b>	The Area is divided into an even number of strips of equal width, and therefore has an odd number of ordinates at the division points $\text{area} = \frac{S(A + 2B + 4C)}{3}$ where <ul style="list-style-type: none"> <li>S = common interval (strip width)</li> <li>A = sum of first and last ordinates</li> <li>B = sum of remaining odd ordinates</li> <li>C = sum of the even ordinates</li> </ul> The Volume can be calculated by the same formula, but by substituting the area of each co-ordinate rather than its length.
<b>Trapezoidal Rule</b>	A given trench is divided into two equal sections, giving three ordinates, the first, the middle and the last. $\text{volume} = \frac{S \times (A + B + 2C)}{2}$ where <ul style="list-style-type: none"> <li>S = width of the strips</li> <li>A = area of the first section</li> <li>B = area of the last section</li> <li>C = area of the rest of the sections</li> </ul>
<b>Prismoidal Rule</b>	A given trench is divided into two equal sections, giving three ordinates, the first, the middle and the last. $\text{volume} = \frac{L \times (A + 4B + C)}{6}$ where <ul style="list-style-type: none"> <li>L = total length of trench</li> <li>A = area of the first section</li> <li>B = area of the middle section</li> <li>C = area of the last section</li> </ul>

**EARTHWORK****Weights of typical materials handled by excavators**

The weight of the material is that of the state in its natural bed and includes moisture. Adjustments should be made to allow for loose or compacted states.

<b>Material</b>	<b>kg/m<sup>3</sup></b>	<b>lb/cu yd</b>
Adobe	1914	3230
Ashes	610	1030
Asphalt, rock	2400	4050
Asphalt, pavement	1920	3240
Basalt	2933	4950
Bauxite: alum ore	2619	4420
Bentonite	1600	2700
Borax	1730	2920
Caliche	1440	2430
Cement	1600	2700
Chalk (hard)	2406	4060
Cinders	759	1280
Clay: dry	1908	3220
Clay: damp	1985	3350
Coal: bituminous	1351	2280
Coke	510	860
Concrete, stone aggregate	2345	3960
Concrete, cinder aggregate	1760	2970
Conglomerate	2204	3720
Dolomite	2886	4870
Earth (loam): dry	1796	3030
Earth (loam): damp	1997	3370
Earth: wet, mud	1742	2940
Feldspar	2613	4410
Felsite	2495	4210
Fluorite	3093	5220
Gabbro	3093	5220
Gneiss	2696	4550
Granite	2690	4540
Gravel, dry	1790	3020
Gravel, wet	2092	3530
Gypsum	2418	4080
Lignite	1244	2100
Limestone	2596	4380
Macadam, pavement	1685	2840
Masonry rubble	2325	3920
Magnesite, magnesium ore	2993	5050
Marble	2679	4520
Marl	2216	3740
Mud	1742	2940
Peat	700	1180
Potash	2193	3700

<b>Material</b>	<b>kg/m<sup>3</sup></b>	<b>lb/cu yd</b>
Pumice	640	1080
Quartz	2584	4360
Rhyolite	2400	4050
Rock : Earth mixture (75:25)	1955	3300
Rock : Earth mixture (50:50)	1720	2900
Rock : Earth mixture (25:75)	1575	2660
Sand: dry	1707	2880
Sand: wet	1831	3090
Sand and gravel - dry	1790	3020
- wet	2092	3530
Sandstone	2412	4070
Schist	2684	4530
Shale	2637	4450
Slag (blast)	2868	4840
Slate	2667	4500
Topsoil	1440	2430
Trachyte	2400	4050
Traprock	2791	4710
Snow - dry	130	220
- wet	509.61	860
Water	1000	1685
Quarry waste	1438	2425
Hardcore (consolidated)	1928	3250

**EARTHWORK – continued****Transport Capacities**

Type of vehicle	Capacity of vehicle	
	Payload t	Heaped capacity m <sup>3</sup>
Wheelbarrow	150	0.10
1 tonne dumper	1250	1.00
2.5 tonne dumper	4000	2.50
Articulated dump truck (Volvo A25D 6x4)	24000	15.00
Articulated dump truck (Volvo A35D 6x4)	32500	20.00
Large capacity rear dumper (Hitachi EH750)	38000	28.00
Large capacity rear dumper (Hitachi EH1700)	88000	60.00

**Bulkage of soils (After excavation)**

Type of soil	Approximate bulking of 1 m <sup>3</sup> after excavation
Vegetable soil and loam	25 - 30%
Soft clay	30 - 40%
Stiff clay	10 - 20%
Gravel	20 - 25%
Sand	40 - 50%
Chalk	40 - 50%
Rock, weathered	30 - 40%
Rock, unweathered	50 - 60%

**Shrinkage of materials (On being deposited)**

Type of soil	Approximate shrinking of 1 m <sup>3</sup> after excavation
Clay	10%
Gravel	8%
Gravel and sand	9%
Loam and light sandy soils	12%
Loose vegetable soils	15%

**Voids in material used as sub bases or beddings**

<b>Material</b>	<b>m<sup>3</sup> of voids/m<sup>3</sup></b>
Alluvium	0.37
River grit	0.29
Quarry sand	0.24
Shingle	0.37
Gravel	0.39
Broken stone	0.45
Broken bricks	0.42

**Angles of repose**

<b>Type of soil</b>	<b>degrees</b>
Clay - dry	30
- damp, well drained	45
- wet	15 - 20
Earth - dry	30
- damp	45
Gravel - moist	48
Sand - dry or moist	35
- wet	25
Loam	40

**Slopes and angles**

<b>Ratio of base to height</b>	<b>Angle in degrees</b>
5 : 1	11
4 : 1	14
3 : 1	18
2 : 1	27
1½ : 1	34
1 : 1	45
1 : 1½	56
1 : 2	63
1 : 3	72
1 : 4	76
1 : 5	79

**EARTHWORK – continued****Grades (In Degrees and Percents)**

<b>Degrees</b>	<b>Percent</b>	<b>Degrees</b>	<b>Percent</b>
1	1.8	24	44.5
2	3.5	25	46.6
3	5.2	26	48.8
4	7.0	27	51.0
5	8.8	28	53.2
6	10.5	29	55.4
7	12.3	30	57.7
8	14.0	31	60.0
9	15.8	32	62.5
10	17.6	33	64.9
11	19.4	34	67.4
12	21.3	35	70.0
13	23.1	36	72.7
14	24.9	37	75.4
15	26.8	38	78.1
16	28.7	39	81.0
17	30.6	40	83.9
18	32.5	41	86.9
19	34.4	42	90.0
20	36.4	43	93.3
21	38.4	44	96.6
22	40.4	45	100.0

**Bearing powers**

<b>Ground conditions</b>	<b>Bearing Power</b>		
	<b>kN/m<sup>2</sup></b>	<b>lb/in<sup>2</sup></b>	<b>metric</b>
Rock (broken)	483	70	50
Rock (solid)	2,415	350	240
Clay, dry or hard	380	55	40
medium dry	190	27	20
soft or wet	100	14	10
Gravel, cemented	760	110	80
Sand, compacted	380	55	40
clean dry	190	27	20
Swamp and alluvial soils	48	7	5

**Earthwork support****Maximum depth of excavation in various soils without the use of earthwork support:**

<b>Ground conditions</b>	<b>Feet (ft)</b>	<b>Metres (m)</b>
Compact soil	12	3.66
Drained loam	6	1.83
Dry sand	1	0.3
Gravelly earth	2	0.61
Ordinary earth	3	0.91
Stiff clay	10	3.05

It is important to note that the above table should only be used as a guide. Each case must be taken on its merits and, as the limited distances given above are approached, careful watch must be kept for the slightest signs of caving in.

**CONCRETE WORK****Weights of concrete and concrete elements**

<b>Type of Material</b>	<b>kg/m<sup>3</sup></b>	<b>lb/cu ft</b>
<b><u>Ordinary concrete (dense aggregates)</u></b>		
Non-reinforced plain or mass concrete		
Nominal weight	2305	144
Aggregate		
- limestone	2162 to 2407	135 to 150
- gravel	2244 to 2407	140 to 150
- broken brick	2000 (av)	125 (av)
- other crushed stone	2326 to 2489	145 to 155
Reinforced concrete		
Nominal weight	2407	150
Reinforcement		
- 1%	2305 to 2468	144 to 154
- 2%	2356 to 2519	147 to 157
- 4%	2448 to 2703	153 to 163
<b><u>Special concretes</u></b>		
Heavy concrete		
Aggregates		
- barytes, magnetite	3210 (min)	200 (min)
- steel shot, punchings	5280	330
Lean mixes		
Dry-lean (gravel aggregate)	2244	140
Soil-cement (normal mix)	1601	100



Type of material	kg/m <sup>2</sup> per mm thick	lb/sq ft per inch thick
<b>Ordinary concrete (dense aggregates)</b>		
Solid slabs (floors, walls etc.)		
Thickness: 75 mm or 3 in	184	37.5
100 mm or 4 in	245	50
150 mm or 6 in	378	75
250 mm or 10 in	612	125
300 mm or 12 in	734	150
Ribbed slabs		
Thickness: 125 mm or 5 in	204	42
150 mm or 6 in	219	45
225 mm or 9 in	281	57
300 mm or 12 in	342	70
<b>Special concretes</b>		
Finishes etc		
Rendering, screed etc		
Granolithic, terrazzo	1928 to 2401	10 to 12.5
Glass-block (hollow) concrete	1734 (approx)	9 (approx)
Prestressed concrete	Weights as for reinforced concrete (upper limits)	
Air-entrained concrete	Weights as for plain or reinforced concrete	

**CONCRETE WORK – continued****Average weight of aggregates**

Materials	Voids %	Weight kg/m <sup>3</sup>
Sand	39	1660
Gravel 10 - 20 mm	45	1440
Gravel 35 - 75 mm	42	1555
Crushed stone	50	1330
Crushed granite(over 15 mm)	50	1345
(n.e. 15 mm)	47	1440
'All-in' ballast	32	1800 - 2000

Material	kg/m <sup>3</sup>	lb/cu yd
Vermiculite (aggregate)	64-80	108-135
All-in aggregate	1999	125

**Common mixes (per m<sup>3</sup>)**

Recommended mix	Class of work suitable for: -	Cement	Sand	Coarse aggregate	No 50kg bags cement per m <sup>3</sup> of combined aggregate
		(kg)	(kg)	(kg)	
1:3:6	Roughest type of mass concrete such as footings, road haunching over 300mm thick	208	905	1509	4.00
1:2½:5	Mass concrete of better class than 1:3:6 such as bases for machinery, walls below ground etc.	249	881	1474	5.00
1:2:4	Most ordinary uses of concrete, such as mass walls above ground, road slabs etc. and general reinforced concrete work	304	889	1431	6.00
1:1½:3	Watertight floors, pavements and walls, tanks, pits, steps, paths, surface of 2 course roads, reinforced concrete where where extra strength is required	371	801	1336	7.50
1:1:2	Work of thin section such as fence posts and small precast work	511	720	1206	10.50

**CONCRETE WORK – continued**

**Prescribed mixes for ordinary structural concrete**

Weights of cement and total dry aggregates in kg to produce approximately one cubic metre of fully compacted concrete together with the percentages by weight of fine aggregate in total dry aggregates.

Concrete grade	Nominal max. size of aggregate (mm)	40		20		14		10	
		Med.	High	Med.	High	Med.	High	Med.	High
	Limits to slump that may be expected (mm)	50-100	100-150	25-75	75-125	10-50	50-100	10-25	25-50
7	Cement (kg)	180	200	210	230	-	-	-	-
	Total aggregate (kg)	1950	1850	1900	1800	-	-	-	-
	Fine aggregate (%)	30-45	30-45	35-50	35-50	-	-	-	-
10	Cement (kg)	210	230	240	260	-	-	-	-
	Total aggregate (kg)	1900	1850	1850	1800	-	-	-	-
	Fine aggregate (%)	30-45	30-45	35-50	35-50	-	-	-	-
15	Cement (kg)	250	270	280	310	-	-	-	-
	Total aggregate (kg)	1850	1800	1800	1750	-	-	-	-
	Fine aggregate (%)	30-45	30-45	35-50	35-50	-	-	-	-
20	Cement (kg)	300	320	320	350	340	380	360	410
	Total aggregate (kg)	1850	1750	1800	1750	1750	1700	1750	1650
	Sand								
	Zone 1 (%)	35	40	40	45	45	50	50	55
	Zone 2 (%)	30	35	35	40	40	45	45	50
	Zone 3 (%)	30	30	30	35	35	40	40	45
25	Cement (kg)	340	360	360	390	380	420	400	450
	Total aggregate (kg)	1800	1750	1750	1700	1700	1650	1700	1600
	Sand								
	Zone 1 (%)	35	40	40	45	45	50	50	55
	Zone 2 (%)	30	35	35	40	40	45	45	50
	Zone 3 (%)	30	30	30	35	35	40	40	45
30	Cement (kg)	370	390	400	430	430	470	460	510
	Total aggregate (kg)	1750	1700	1700	1650	1700	1600	1650	1550
	Sand								
	Zone 1 (%)	35	40	40	45	45	50	50	55
	Zone 2 (%)	30	35	35	40	40	45	45	50
	Zone 3 (%)	30	30	30	35	35	40	40	45

**Weights of bar reinforcement**

Nominal sizes (mm)	Cross-sectional area (mm <sup>2</sup> )	Mass kg/m	Length of bar m/tonne
6	28.27	0.222	4505
8	50.27	0.395	2534
10	78.54	0.617	1622
12	113.10	0.888	1126
16	201.06	1.578	634
20	314.16	2.466	405
25	490.87	3.853	260
32	804.25	6.313	158
40	1265.64	9.865	101
50	1963.50	15.413	65

**Weights of bars (at specific spacings)****Weights of metric bars in kilogrammes per square metre**

Size (mm)	Spacing of bars in millimetres									
	75	100	125	150	175	200	225	250	275	300
6	2.96	2.220	1.776	1.480	1.27	1.110	0.99	0.89	0.81	0.74
8	5.26	3.95	3.16	2.63	2.26	1.97	1.75	1.58	1.44	1.32
10	8.22	6.17	4.93	4.11	3.52	3.08	2.74	2.47	2.24	2.06
12	11.84	8.88	7.10	5.92	5.07	4.44	3.95	3.55	3.23	2.96
16	21.04	15.78	12.63	10.52	9.02	7.89	7.02	6.31	5.74	5.26
20	32.88	24.66	19.73	16.44	14.09	12.33	10.96	9.87	8.97	8.22
25	51.38	38.53	30.83	25.69	22.02	19.27	17.13	15.41	14.01	12.84
32	84.18	63.13	50.51	42.09	36.08	31.57	28.06	25.25	22.96	21.04
40	131.53	98.65	78.92	65.76	56.37	49.32	43.84	39.46	35.87	32.88
50	205.51	154.13	123.31	102.76	88.08	77.07	68.50	61.65	56.05	51.38

Basic weight of steelwork taken as 7850 kg/m<sup>3</sup>

Basic weight of bar reinforcement per metre run = 0.00785 kg/mm<sup>2</sup>

The value of PI has been taken as 3.141592654

**Fabric reinforcement**

Preferred range of designated fabric types and stock sheet sizes

Fabric reference	Longitudinal wires			Cross wires			Mass (kg/m <sup>2</sup> )
	Nominal wire size (mm)	Pitch (mm)	Area (mm/m <sup>2</sup> )	Nominal wire size (mm)	Pitch (mm)	Area (mm/m <sup>2</sup> )	
<b>Square mesh</b>							
A393	10	200	393	10	200	393	6.16
A252	8	200	252	8	200	252	3.95
A193	7	200	193	7	200	193	3.02
A142	6	200	142	6	200	142	2.22
A98	5	200	98	5	200	98	1.54
<b>Structural mesh</b>							
B1131	12	100	1131	8	200	252	10.90
B785	10	100	785	8	200	252	8.14
B503	8	100	503	8	200	252	5.93
B385	7	100	385	7	200	193	4.53
B283	6	100	283	7	200	193	3.73
B196	5	100	196	7	200	193	3.05
<b>Long mesh</b>							
C785	10	100	785	6	400	70.8	6.72
C636	9	100	636	6	400	70.8	5.55
C503	8	100	503	5	400	49.00	4.34
C385	7	100	385	5	400	49.00	3.41
C283	6	100	283	5	400	49.00	2.61
<b>Wrapping mesh</b>							
D98	5	200	98	5	200	98	1.54
D49	2.5	100	49	2.5	100	49	0.77
<b>Stock sheet size</b>	<b>Length 4.8 m</b>		<b>Width 2.4 m</b>		<b>(Sheet area 11.52m<sup>2</sup>)</b>		

**Wire**

SWG	6g	5g	4g	3g	2g	1g	1/0g	2/0g	3/0g	4/0g	5/0g
<b>diameter</b> in mm	0.192	0.212	0.232	0.252	0.276	0.300	0.324	0.348	0.372	0.400	0.432
	4.9	5.4	5.9	6.4	7.0	7.6	8.2	8.8	9.5	10.2	11.0
<b>Area</b> in mm <sup>2</sup>	0.029	0.035	0.042	0.050	0.060	0.071	0.082	0.095	0.109	0.126	0.146
	19	23	27	32	39	46	53	61	70	81	95

**Average weight kg/m<sup>3</sup> of steelwork reinforcement in concrete for various building elements**

	<b>kg/m<sup>3</sup> concrete</b>
<b>Substructure</b>	
Pile caps	110 - 150
Tie beams	130 - 170
Ground beams	230 - 330
Bases	90 - 130
Footings	70 - 110
Retaining walls	110 - 150
<b>Superstructure</b>	
Slabs - one way	75 - 125
Slabs - two way	65 - 135
Plate slab	95 - 135
Cantilevered slab	90 - 130
Ribbed floors	80 - 120
Columns	200 - 300
Beams	250 - 350
Stairs	130 - 170
Walls - normal	30 - 70
Walls - wind	50 - 90

**Note: For exposed elements add the following % :**

**Walls 50%, Beams 100%, Columns 15%**

**CONCRETE WORK – continued**

**Normal Curing Periods**

Conditions under which concrete is maturing	Minimum periods of protection for different types of cement					
	Number of days (where the average surface temperature of the concrete exceeds 10°C during the whole period)			Equivalent maturity (degree hours) calculated as the age of the concrete in hours multiplied by the number of degrees Celsius by which the average surface temperature of the concrete exceeds -10°C		
	Other	SRPC	OPC or RHPC	Other	SRPC	OPC or RHPC
Hot weather or drying winds	7	4	3	3500	2000	1500
Conditions not covered by 1	4	3	2	2000	1500	1000
<b>KEY</b> OPC - Ordinary Portland Cement RHPC - Rapid-hardening Portland cement SRPC - Sulphate-resisting Portland cement						

**Minimum period before striking formwork**

	Minimum period before striking		
	Surface temperature of concrete		
	16 ° C	17 ° C	t ° C(0-25)
Vertical formwork to columns, walls and large beams	12 hours	18 hours	$\frac{300}{t + 10}$ hours
Soffit formwork to slabs	4 days	6 days	$\frac{100}{t + 10}$ days
Props to slabs	10 days	15 days	$\frac{250}{t + 10}$ days
Soffit formwork to beams	9 days	14 days	$\frac{230}{t + 10}$ days
Props to beams	14 days	21 days	$\frac{360}{t + 10}$ days

**MASONRY****Weights of bricks and blocks**

<b>Walls and components of walls</b>	<b>kg/m<sup>2</sup> per mm thick</b>	<b>lb/sq ft per inch thick</b>
<b>Blockwork</b>		
Hollow clay blocks (Average)	1.15	6
Common clay blocks	1.90	10
<b>Brickwork</b>		
Engineering clay bricks	2.30	12
Refractory bricks	1.15	6
Sand-lime (and similar) bricks	2.02	10.5

**Weights of stones**

<b>Type of stone</b>	<b>kg/m<sup>3</sup></b>	<b>lb/cu ft</b>
Natural stone (solid)		
Granite	2560 to 2927	160 to 183
Limestone - Bath stone	2081	130
- Marble	2723	170
- Portland stone	2244	140
Sandstone	2244 to 2407	140 to 150
Slate	2880	180
Stone rubble (packed)	2244	140



**MASONRY – continued****Quantities of bricks and mortar**

<b>Materials per m<sup>2</sup> of wall:</b>		
<b>Thickness</b>	<b>No. of bricks</b>	<b>Mortar m<sup>3</sup></b>
Half brick (112.5 mm)	58	0.022
One brick (225 mm)	116	0.055
Cavity, both skins (275 mm)	116	0.045
1.5 brick (337 mm)	174	0.074
Mass brickwork per m <sup>3</sup>	464	0.36

**Mortar mixes: quantities of dry materials**

<b>Mix</b>	<b>Imperial cu yd</b>			<b>Metric m<sup>3</sup></b>		
	<b>Cement cwts</b>	<b>Lime cwts</b>	<b>Sand cu yds</b>	<b>Cement tonnes</b>	<b>Lime tonnes</b>	<b>Sand cu m</b>
1:3	7.0	-	1.04	0.54	-	1.10
1:4	6.3	-	1.10	0.40	-	1.20
1:1:6	3.9	1.6	1.10	0.27	0.13	1.10
1:2:9	2.6	2.1	1.10	0.20	0.15	1.20
0:1:3	-	3.3	1.10	-	0.27	1.00

**Mortar mixes for various uses**

<b>Mix</b>	<b>Use</b>
1:3	Construction designed to withstand heavy loads in all seasons
1:1:6	Normal construction not designed for heavy loads. Sheltered and moderate conditions in spring and summer. Work above d.p.c - sand, lime bricks, clay blocks etc.
1:2:9	Internal partitions with blocks which have high drying shrinkage, pumice blocks, etc. any periods
0:1:3	Hydraulic lime only should be used in this mix and may be used for construction not designed for heavy loads and above d.p.c spring and summer.

Quantities of bricks and mortar required per m<sup>2</sup> of walling

Description	Unit	Nr of bricks required	Mortar required (m <sup>3</sup> )		
			No frogs	Single frogs	Double frogs
<b>Standard bricks</b>					
<b>Brick size</b>					
<b>215 x 102.5 x 50 mm</b>					
half brick wall (103 mm)	m <sup>2</sup>	72	0.022	0.027	0.032
2 x half brick cavity wall (270 mm)	m <sup>2</sup>	144	0.044	0.054	0.064
one brick wall (215 mm)	m <sup>2</sup>	144	0.052	0.064	0.076
one and a half brick wall (328 mm)	m <sup>2</sup>	216	0.073	0.091	0.108
mass brickwork	m <sup>3</sup>	576	0.347	0.413	0.480
<b>Brick size</b>					
<b>215 x 102.5 x 65 mm</b>					
half brick wall (103 mm)	m <sup>2</sup>	58	0.019	0.022	0.026
2 x half brick cavity wall (270 mm)	m <sup>2</sup>	116	0.038	0.045	0.055
one brick wall (215 mm)	m <sup>2</sup>	116	0.046	0.055	0.064
one and a half brick wall (328 mm)	m <sup>2</sup>	174	0.063	0.074	0.088
mass brickwork	m <sup>3</sup>	464	0.307	0.360	0.413
<b>Metric modular bricks</b>			<b>Perforated</b>		
<b>Brick co-ordinating size</b>					
<b>200 x 100 x 75 mm</b>					
90 mm thick	m <sup>2</sup>	67	0.016	0.019	
190 mm thick	m <sup>2</sup>	133	0.042	0.048	
290 mm thick	m <sup>2</sup>	200	0.068	0.078	
<b>Brick co-ordinating size</b>					
<b>200 x 100 x 100 mm</b>					
90 mm thick	m <sup>2</sup>	50	0.013	0.016	
190 mm thick	m <sup>2</sup>	100	0.036	0.041	
290 mm thick	m <sup>2</sup>	150	0.059	0.067	
<b>Brick co-ordinating size</b>					
<b>300 x 100 x 75 mm</b>					
90 mm thick	m <sup>2</sup>	33	-	0.015	
<b>Brick co-ordinating size</b>					
<b>300 x 100 x 100 mm</b>					
90 mm thick	m <sup>2</sup>	44	0.015	0.018	
<b>Note: Assuming 10 mm deep joints.</b>					

**MASONRY – continued****Mortar required per m<sup>2</sup> blockwork (9.88 blocks/m<sup>2</sup>)**

Wall thickness	75	90	100	125	140	190	215
Mortar m <sup>3</sup> /m <sup>2</sup>	0.005	0.006	0.007	0.008	0.009	0.013	0.014

Mortar Group	Cement: lime: sand	Masonry cement: sand	Cement: sand with plasticiser
1	1 : 0-0.25:3		
2	1 : 0.5 :4-4.5	1 : 2.5-3.5	1 : 3-4
3	1 : 1:5-6	1 : 4-5	1 : 5-6
4	1 : 2:8-9	1 : 5.5-6.5	1 : 7-8
5	1 : 3:10-12	1 : 6.5-7	1 : 8

Group 1: strong inflexible mortar  
Group 5: weak but flexible.

All mixes within a group are of approximately similar strength.  
Frost resistance increases with the use of plasticisers.  
Cement:lime:sand mixes give the strongest bond and greatest resistance to rain penetration.  
Masonry cement equals ordinary Portland cement plus a fine neutral mineral filler and an air entraining agent.

**Calcium Silicate Bricks**

Type	Strength	Location
Class 2 crushing strength	14.0N/mm <sup>2</sup>	not suitable for walls
Class 3	20.5N/mm <sup>2</sup>	walls above dpc
Class 4	27.5N/mm <sup>2</sup>	cappings and copings
Class 5	34.5N/mm <sup>2</sup>	retaining walls
Class 6	41.5N/mm <sup>2</sup>	walls below ground
Class 7	48.5N/mm <sup>2</sup>	walls below ground

The Class 7 calcium silicate bricks are therefore equal in strength to Class B bricks.  
Calcium silicate bricks are not suitable for DPCs

**Durability of Bricks**

FL	Frost resistant with low salt content
FN	Frost resistant with normal salt content
ML	Moderately frost resistant with low salt content
MN	Moderately frost resistant with normal salt content

**Brickwork Dimensions**

<b>No. of Horizontal Bricks</b>	<b>Dimensions mm</b>	<b>No. of Vertical courses</b>	<b>No. of Vertical courses</b>
1/2	112.5	1	75
1	225.0	2	150
1 1/2	337.5	3	225
2	450.0	4	300
2 1/2	562.5	5	375
3	675.0	6	450
3 1/2	787.5	7	525
4	900.0	8	600
4 1/2	1012.5	9	675
5	1125.0	10	750
5 1/2	1237.5	11	825
6	1350.0	12	900
6 1/2	1462.5	13	975
7	1575.0	14	1050
7 1/2	1687.5	15	1125
8	1800.0	16	1200
8 1/2	1912.5	17	1275
9	2025.0	18	1350
9 1/2	2137.5	19	1425
10	2250.0	20	1500
20	4500.0	24	1575
40	9000.0	28	2100
50	11250.0	32	2400
60	13500.0	36	2700
75	16875.0	40	3000

**MASONRY – continued****Standard available block sizes**

<b>Block</b>	<b>Co-ordinating size Length x height</b>	<b>Work size</b>	<b>Thicknesses (work size)</b>
A	400 x 100	390 x 90	) 75, 90, 100, 140 & 190 mm
	400 x 200	440 x 190	
	450 x 225	440 x 215	) 75, 90, 100, 140, 190 & 215 mm
B	400 x 100	390 x 90	) 75, 90, 100, 140 & 190 mm
	400 x 200	390 x 190	
	450 x 200	440 x 190	) 75, 90, 100, 140, 190 & 215 mm
	450 x 225	440 x 215	
	450 x 300	440 x 290	
	600 x 200	590 x 190	
	600 x 225	590 x 215	
C	400 x 200	390 x 190	) 60 & 75 mm
	450 x 200	440 x 190	
	450 x 225	440 x 215	
	450 x 300	440 x 290	
	600 x 200	590 x 190	
	600 x 225	590 x 215	

**TIMBER****Weights of timber**

<b>Material</b>	<b>kg/m<sup>3</sup></b>	<b>lb/cu ft</b>
<b>General</b>	806 (avg)	50 (avg)
Douglas fir	479	30
Yellow pine, spruce	479	30
Pitch pine	673	42
Larch, elm	561	35
Oak (English)	724 to 959	45 to 60
Teak	643 to 877	40 to 55
Jarrah	959	60
Greenheart	1040 to 1204	65 to 75
Quebracho	1285	80
<b>Material</b>	<b>kg/m<sup>2</sup> per mm thickness</b>	<b>lb/sq ft per inch thickness</b>
Wooden boarding and blocks		
Softwood	0.48	2.5
Hardwood	0.76	4
Hardboard	1.06	5.5
Chipboard	0.76	4
Plywood	0.62	3.25
Blockboard	0.48	2.5
Fibreboard	0.29	1.5
Wood-wool	0.58	3
Plasterboard	0.96	5
Weather boarding	0.35	1.8

**TIMBER – continued****Conversion tables (for sawn timber only)**

<b>Inches &gt;</b>	<b>Millimetres</b>	<b>Feet &gt;</b>	<b>Metres</b>
1	25	1	0.300
2	50	2	0.600
3	75	3	0.900
4	100	4	1.200
5	125	5	1.500
6	150	6	1.800
7	175	7	2.100
8	200	8	2.400
9	225	9	2.700
10	250	10	3.000
11	275	11	3.300
12	300	12	3.600
13	325	13	3.900
14	350	14	4.200
15	375	15	4.500
16	400	16	4.800
17	425	17	5.100
18	450	18	5.400
19	475	19	5.700
20	500	20	6.000
21	525	21	6.300
22	550	22	6.600
23	575	23	6.900
24	600	24	7.200

**Planed softwood**

The finished end section size of planed timber is usually 3/16" less than the original size from which it is produced. This however varies slightly dependant upon availability of material and origin of species used.

**Standard (timber) to cubic metres and cubic metres to standards (timber)**

<b>m<sup>3</sup></b>	<b>m<sup>3</sup>/Standards</b>	<b>Standard</b>
4.672	1	0.214
9.344	2	0.428
14.017	3	0.642
18.689	4	0.856
23.361	5	1.070
28.033	6	1.284
32.706	7	1.498
37.378	8	1.712
42.05	9	1.926
46.722	10	2.140
93.445	20	4.281
140.167	30	6.421
186.890	40	8.561
233.612	50	10.702
280.335	60	12.842
327.057	70	14.982
373.779	80	17.122
420.502	90	19.263
467.224	100	21.403
<b>1 cu metre = 35.3148 cu ft</b> <b>1 cu ft = 0.028317 cu metres</b> <b>1 std = 4.67227 cu metres</b>		

**Standards (timber) to cubic metres and cubic metres to standards (timber)**

1 cu metre	=	35.3148 cu ft	=	0.21403 std
1 cu ft	=	0.028317 cu metres		
1 std	=	4.67227 cu metres		



**TIMBER – continued**

**Basic sizes of sawn softwood available (cross sectional areas)**

Thickness (mm)	Width (mm)								
	75	100	125	150	175	200	225	250	300
16	x	x	x	x					
19	x	x	x	x					
22	x	x	x	x					
25	x	x	x	x	x	x	x	x	x
32	x	x	x	x	x	x	x	x	x
36	x	x	x	x					
38	x	x	x	x	x	x	x		
44	x	x	x	x	x	x	x	x	x
47*	x	x	x	x	x	x	x	x	x
50	x	x	x	x	x	x	x	x	x
63	x	x	x	x	x	x	x		
75		x	x	x	x	x	x	x	x
100		x		x		x		x	x
150				x		x			x
200						x			
250								x	
300									x

\* This range of widths for 47 mm thickness will usually be found to be available in construction quality only.

Note: The smaller sizes below 100 mm thick and 250 mm width are normally but not exclusively of European origin. Sizes beyond this are usually of North and South American origin.

**Basic lengths of sawn softwood available (metres)**

1.80	2.10	3.00	4.20	5.10	6.00	7.20
2.40	3.30	4.50	5.40	6.30		
2.70	3.60	4.80	5.70	6.60		
3.90			6.90			

Note: Lengths of 6.00 m and over will generally only be available from North American species and may have to be recut from larger sizes.

**Reductions from basic size to finished size of timber by planing of two opposed faces**

Purpose	15 - 35 mm	36 - 100 mm	101 - 150 mm	over 150 mm
Constructional timber	3 mm	3 mm	5 mm	6 mm
Matching interlocking boards	4 mm	4 mm	6 mm	6 mm
Wood trim not specified in BS 1186-3	5 mm	7 mm	7 mm	9 mm
Joinery and cabinet work	7 mm	9 mm	11 mm	13 mm

Note: The reduction of width or depth is overall the extreme size and is exclusive of any reduction of the face by the machining of a tongue or lap joints.

**STRUCTURAL METALWORK****Weights of metalwork**

<b>Material</b>	<b>kg/m<sup>3</sup></b>	<b>lb/cu ft</b>
<b>Metals, steel construction, etc</b>		
Iron - cast	7207	450
- wrought	7687	480
- ore - general	2407	150
- (crushed) Swedish	3682	230
Steel	7854	490
Copper - cast	8731	545
- wrought	8945	558
Brass	8497	530
Bronze	8945	558
Aluminium	2774	173
Lead	11322	707
Zinc (rolled)	7140	446
	<b>g/mm<sup>2</sup> per metre</b>	<b>lb/sq ft per foot</b>
<b>Steel bars</b>	7.85	3.4
Structural steelwork rivetted welded Rolled sections beams stanchions Plate web girders	Net weight of member @ 7854 kg/m <sup>3</sup> + 10% for cleats, rivets, bolts, etc + 1.25% to 2.5% for welds, etc + 2.5% + 5% (extra for caps and bases) + 10% for rivets or welds, stiffeners, etc	
	<b>kg/m</b>	<b>lb/ft</b>
Steel stairs : industrial type 1 m or 3ft wide	84	56
Steel tubes 50 mm or 2 in bore	5 to 6	3 to 4
Gas piping 20 mm or 3/4 in	2	1¼

## Universal Beams BS 4: Part 1: 2005

Designation	Mass Kg/m	Depth of Section mm	Width of Section mm	Thickness		Surface Area m <sup>2</sup> /m
				Web mm	Flange mm	
1016 x 305 x 487	487.0	1036.1	308.5	30.0	54.1	3.20
1016 x 305 x 438	438.0	1025.9	305.4	26.9	49.0	3.17
1016 x 305 x 393	393.0	1016.0	303.0	24.4	43.9	3.15
1016 x 305 x 349	349.0	1008.1	302.0	21.1	40.0	3.13
1016 x 305 x 314	314.0	1000.0	300.0	19.1	35.9	3.11
1016 x 305 x 272	272.0	990.1	300.0	16.5	31.0	3.10
1016 x 305 x 249	249.0	980.2	300.0	16.5	26.0	3.08
1016 x 305 x 222	222.0	970.3	300.0	16.0	21.1	3.06
914 x 419 x 388	388.0	921.0	420.5	21.4	36.6	3.44
914 x 419 x 343	343.3	911.8	418.5	19.4	32.0	3.42
914 x 305 x 289	289.1	926.6	307.7	19.5	32.0	3.01
914 x 305 x 253	253.4	918.4	305.5	17.3	27.9	2.99
914 x 305 x 224	224.2	910.4	304.1	15.9	23.9	2.97
914 x 305 x 201	200.9	903.0	303.3	15.1	20.2	2.96
838 x 292 x 226	226.5	850.9	293.8	16.1	26.8	2.81
838 x 292 x 194	193.8	840.7	292.4	14.7	21.7	2.79
838 x 292 x 176	175.9	834.9	291.7	14.0	18.8	2.78
762 x 267 x 197	196.8	769.8	268.0	15.6	25.4	2.55
762 x 267 x 173	173.0	762.2	266.7	14.3	21.6	2.53
762 x 267 x 147	146.9	754.0	265.2	12.8	17.5	2.51
762 x 267 x 134	133.9	750.0	264.4	12.0	15.5	2.51
686 x 254 x 170	170.2	692.9	255.8	14.5	23.7	2.35
686 x 254 x 152	152.4	687.5	254.5	13.2	21.0	2.34
686 x 254 x 140	140.1	383.5	253.7	12.4	19.0	2.33
686 x 254 x 125	125.2	677.9	253.0	11.7	16.2	2.32
610 x 305 x 238	238.1	635.8	311.4	18.4	31.4	2.45
610 x 305 x 179	179.0	620.2	307.1	14.1	23.6	2.41
610 x 305 x 149	149.1	612.4	304.8	11.8	19.7	2.39
610 x 229 x 140	139.9	617.2	230.2	13.1	22.1	2.11
610 x 229 x 125	125.1	612.2	229.0	11.9	19.6	2.09
610 x 229 x 113	113.0	607.6	228.2	11.1	17.3	2.08
610 x 229 x 101	101.2	602.6	227.6	10.5	14.8	2.07
533 x 210 x 122	122.0	544.5	211.9	12.7	21.3	1.89
533 x 210 x 109	109.0	539.5	210.8	11.6	18.8	1.88
533 x 210 x 101	101.0	536.7	210.0	10.8	17.4	1.87
533 x 210 x 92	92.1	533.1	209.3	10.1	15.6	1.86
533 x 210 x 82	82.2	528.3	208.8	9.6	13.2	1.85
457 x 191 x 98	98.3	467.2	192.8	11.4	19.6	1.67
457 x 191 x 89	89.3	463.4	191.9	10.5	17.7	1.66
457 x 191 x 82	82.0	460.0	191.3	9.9	16.0	1.65
457 x 191 x 74	74.3	457.0	190.4	9.0	14.5	1.64
457 x 191 x 67	67.1	453.4	189.9	8.5	12.7	1.63
457 x 152 x 82	82.1	465.8	155.3	10.5	18.9	1.51
457 x 152 x 74	74.2	462.0	154.4	9.6	17.0	1.50

Designation	Mass Kg/m	Depth of Section mm	Width of Section mm	Thickness		Surface Area m <sup>2</sup> /m
				Web mm	Flange mm	
457 x 152 x 67	67.2	458.0	153.8	9.0	15.0	1.50
457 x 152 x 60	59.8	454.6	152.9	8.1	13.3	1.50
457 x 152 x 52	52.3	449.8	152.4	7.6	10.9	1.48
406 x 178 x 74	74.2	412.8	179.5	9.5	16.0	1.51
406 x 178 x 67	67.1	409.4	178.8	8.8	14.3	1.50
406 x 178 x 60	60.1	406.4	177.9	7.9	12.8	1.49
406 x 178 x 50	54.1	402.6	177.7	7.7	10.9	1.48
406 x 140 x 46	46.0	403.2	142.2	6.8	11.2	1.34
406 x 140 x 39	39.0	398.0	141.8	6.4	8.6	1.33
356 x 171 x 67	67.1	363.4	173.2	9.1	15.7	1.38
356 x 171 x 57	57.0	358.0	172.2	8.1	13.0	1.37
356 x 171 x 51	51.0	355.0	171.5	7.4	11.5	1.36
356 x 171 x 45	45.0	351.4	171.1	7.0	9.7	1.36
356 x 127 x 39	39.1	353.4	126.0	6.6	10.7	1.18
356 x 127 x 33	33.1	349.0	125.4	6.0	8.5	1.17
305 x 165 x 54	54.0	310.4	166.9	7.9	13.7	1.26
305 x 165 x 46	46.1	306.6	165.7	6.7	11.8	1.25
305 x 165 x 40	40.3	303.4	165.0	6.0	10.2	1.24
305 x 127 x 48	48.1	311.0	125.3	9.0	14.0	1.09
305 x 127 x 42	41.9	307.2	124.3	8.0	12.1	1.08
305 x 127 x 37	37.0	304.4	123.3	7.1	10.7	1.07
305 x 102 x 33	32.8	312.7	102.4	6.6	10.8	1.01
305 x 102 x 28	28.2	308.7	101.8	6.0	8.8	1.00
305 x 102 x 25	24.8	305.1	101.6	5.8	7.0	0.992
254 x 146 x 43	43.0	259.6	147.3	7.2	12.7	1.08
254 x 146 x 37	37.0	256.0	146.4	6.3	10.9	1.07
254 x 146 x 31	31.1	251.4	146.1	6.0	8.6	1.06
254 x 102 x 28	28.3	260.4	102.2	6.3	10.0	0.904
254 x 102 x 25	25.2	257.2	101.9	6.0	8.4	0.897
254 x 102 x 22	22.0	254.0	101.6	5.7	6.8	0.890
203 x 133 x 30	30.0	206.8	133.9	6.4	9.6	0.923
203 x 133 x 25	25.1	203.2	133.2	5.7	7.8	0.915
203 x 102 x 23	23.1	203.2	101.8	5.4	9.3	0.790
178 x 102 x 19	19.0	177.8	101.2	4.8	7.9	0.738
152 x 89 x 16	16.0	152.4	88.7	4.5	7.7	0.638
127 x 76 x 13	13.0	127.0	76.0	4.0	7.6	0.537

**STRUCTURAL METALWORK – continued****Universal Columns BS 4: Part 1: 2005**

Designation	Mass Kg/m	Depth of Section mm	Width of Section mm	Thickness		Surface Area m <sup>2</sup> /m
				Web mm	Flange mm	
356 x 406 x 634	633.9	474.7	424.0	47.6	77.0	2.52
356 x 406 x 551	551.0	455.6	418.5	42.1	67.5	2.47
356 x 406 x 467	467.0	436.6	412.2	35.8	58.0	2.42
356 x 406 x 393	393.0	419.0	407.0	30.6	49.2	2.38
356 x 406 x 340	339.9	406.4	403.0	26.6	42.9	2.35
356 x 406 x 287	287.1	393.6	399.0	22.6	36.5	2.31
356 x 406 x 235	235.1	381.0	384.8	18.4	30.2	2.28
356 x 368 x 202	201.9	374.6	374.7	16.5	27.0	2.19
356 x 368 x 177	177.0	368.2	372.6	14.4	23.8	2.17
356 x 368 x 153	152.9	362.0	370.5	12.3	20.7	2.16
356 x 368 x 129	129.0	355.6	368.6	10.4	17.5	2.14
305 x 305 x 283	282.9	365.3	322.2	26.8	44.1	1.94
305 x 305 x 240	240.0	352.5	318.4	23.0	37.7	1.91
305 x 305 x 198	198.1	339.9	314.5	19.1	31.4	1.87
305 x 305 x 158	158.1	327.1	311.2	15.8	25.0	1.84
305 x 305 x 137	136.9	320.5	309.2	13.8	21.7	1.82
305 x 305 x 118	117.9	314.5	307.4	12.0	18.7	1.81
305 x 305 x 97	96.9	307.9	305.3	9.9	15.4	1.79
254 x 254 x 167	167.1	289.1	265.2	19.2	31.7	1.58
254 x 254 x 132	132.0	276.3	261.3	15.3	25.3	1.55
254 x 254 x 107	107.1	266.7	258.8	12.8	20.5	1.52
254 x 254 x 89	88.9	260.3	256.3	10.3	17.3	1.50
254 x 254 x 73	73.1	254.1	254.6	8.6	14.2	1.49
203 x 203 x 86	86.1	222.2	209.1	12.7	20.5	1.24
203 x 203 x 71	71.0	215.8	206.4	10.0	17.3	1.22
203 x 203 x 60	60.0	209.6	205.8	9.4	14.2	1.21
203 x 203 x 52	52.0	206.2	204.3	7.9	12.5	1.20
203 x 203 x 46	46.1	203.2	203.6	7.2	11.0	1.19
152 x 152 x 37	37.0	161.8	154.4	8.0	11.5	0.912
152 x 152 x 30	30.0	157.6	152.9	6.5	9.4	0.901
152 x 152 x 23	23.0	152.4	152.2	5.8	6.8	0.889

**Joists BS 4: Part 1: 2005 (Retained for Reference, Corus have ceased manufacture in UK)**

Designation	Mass Kg/m	Depth of Section mm	Width of Section mm	Thickness		Surface Area m <sup>2</sup> /m
				Web mm	Flange mm	
254 x 203 x 82	82.0	254.0	203.2	10.2	19.9	1.210
203 x 152 x 52	52.3	203.2	152.4	8.9	16.5	0.932
152 x 127 x 37	37.3	152.4	127.0	10.4	13.2	0.737
127 x 114 x 29	29.3	127.0	114.3	10.2	11.5	0.646
127 x 114 x 27	26.9	127.0	114.3	7.4	11.4	0.650
102 x 102 x 23	23.0	101.6	101.6	9.5	10.3	0.549
102 x 44 x 7	7.5	101.6	44.5	4.3	6.1	0.350
89 x 89 x 19	19.5	88.9	88.9	9.5	9.9	0.476
76 x 76 x 13	12.8	76.2	76.2	5.1	8.4	0.411

**Parallel Flange Channels**

Designation	Mass Kg/m	Depth of Section mm	Width of Section mm	Thickness		Surface Area m <sup>2</sup> /m
				Web mm	Flange mm	
430 x 100 x 64	64.4	430	100	11.0	19.0	1.23
380 x 100 x 54	54.0	380	100	9.5	17.5	1.13
300 x 100 x 46	45.5	300	100	9.0	16.5	0.969
300 x 90 x 41	41.4	300	90	9.0	15.5	0.932
260 x 90 x 35	34.8	260	90	8.0	14.0	0.854
260 x 75 x 28	27.6	260	75	7.0	12.0	0.79
230 x 90 x 32	32.2	230	90	7.5	14.0	0.795
230 x 75 x 26	25.7	230	75	6.5	12.5	0.737
200 x 90 x 30	29.7	200	90	7.0	14.0	0.736
200 x 75 x 23	23.4	200	75	6.0	12.5	0.678
180 x 90 x 26	26.1	180	90	6.5	12.5	0.697
180 x 75 x 20	20.3	180	75	6.0	10.5	0.638
150 x 90 x 24	23.9	150	90	6.5	12.0	0.637
150 x 75 x 18	17.9	150	75	5.5	10.0	0.579
125 x 65 x 15	14.8	125	65	5.5	9.5	0.489
100 x 50 x 10	10.2	100	50	5.0	8.5	0.382

**STRUCTURAL METALWORK – continued****Equal Angles BS EN 10056-1**

Designation	Mass kg/m	Surface area m <sup>2</sup> /m
200 x 200 x 24	71.1	0.790
200 x 200 x 20	59.9	0.790
200 x 200 x 18	54.2	0.790
200 x 200 x 16	48.5	0.790
150 x 150 x 18	40.1	0.59
150 x 150 x 15	33.8	0.59
150 x 150 x 12	27.3	0.59
150 x 150 x 10	23.0	0.59
120 x 120 x 15	26.6	0.47
120 x 120 x 12	21.6	0.47
120 x 120 x 10	18.2	0.47
120 x 120 x 8	14.7	0.47
100 x 100 x 15	21.9	0.39
100 x 100 x 12	17.8	0.39
100 x 100 x 10	15.0	0.39
100 x 100 x 8	12.2	0.39
90 x 90 x 12	15.9	0.35
90 x 90 x 10	13.4	0.35
90 x 90 x 8	10.9	0.35
90 x 90 x 7	9.61	0.35
90 x 90 x 6	8.30	0.35

**Unequal Angles BS EN 10056-1**

Designation	Mass kg/m	Surface area m <sup>2</sup> /m
200 x 150 x 18	47.1	0.69
200 x 150 x 15	39.6	0.69
200 x 150 x 12	32.0	0.69
200 x 100 x 15	33.7	0.59
200 x 100 x 12	27.3	0.59
200 x 100 x 10	23.0	0.59
150 x 90 x 15	26.6	0.47
150 x 90 x 12	21.6	0.47
150 x 90 x 10	18.2	0.47
150 x 75 x 15	24.8	0.44
150 x 75 x 12	20.2	0.44
150 x 75 x 10	17.0	0.44
125 x 75 x 12	17.8	0.40
125 x 75 x 10	15.0	0.40
125 x 75 x 8	12.2	0.40
100 x 75 x 12	15.4	0.34
100 x 75 x 10	13.0	0.34
100 x 75 x 8	10.6	0.34
100 x 65 x 10	12.3	0.32
100 x 65 x 8	9.94	0.32
100 x 65 x 7	8.77	0.32

**STRUCTURAL METALWORK – continued****Structural tees split from universal beams BS 4: Part 1: 2005**

Designation	Mass kg/m	Surface area m <sup>2</sup> /m
305 x 305 x 90	89.5	1.22
305 x 305 x 75	74.6	1.22
254 x 343 x 63	62.6	1.19
229 x 305 x 70	69.9	1.07
229 x 305 x 63	62.5	1.07
229 x 305 x 57	56.5	1.07
229 x 305 x 51	50.6	1.07
210 x 267 x 61	61.0	0.95
210 x 267 x 55	54.5	0.95
210 x 267 x 51	50.5	0.95
210 x 267 x 46	46.1	0.95
210 x 267 x 41	41.1	0.95
191 x 229 x 49	49.2	0.84
191 x 229 x 45	44.6	0.84
191 x 229 x 41	41.0	0.84
191 x 229 x 37	37.1	0.84
191 x 229 x 34	33.6	0.84
152 x 229 x 41	41.0	0.76
152 x 229 x 37	37.1	0.76
152 x 229 x 34	33.6	0.76
152 x 229 x 30	29.9	0.76
152 x 229 x 26	26.2	0.76



**Universal Bearing Piles BS 4: Part 1: 2005**

Designation	Mass Kg/m	Depth of Section mm	Width of Section mm	Thickness	
				Web mm	Flange mm
356 x 368 x 174	173.9	361.4	378.5	20.3	20.4
356 x 368 x 152	152.0	356.4	376.0	17.8	17.9
356 x 368 x 133	133.0	352.0	373.8	15.6	15.7
356 x 368 x 109	108.9	346.4	371.0	12.8	12.9
305 x 305 x 223	222.9	337.9	325.7	30.3	30.4
305 x 305 x 186	186.0	328.3	320.9	25.5	25.6
305 x 305 x 149	149.1	318.5	316.0	20.6	20.7
305 x 305 x 126	126.1	312.3	312.9	17.5	17.6
305 x 305 x 110	110.0	307.9	310.7	15.3	15.4
305 x 305 x 95	94.9	303.7	308.7	13.3	13.3
305 x 305 x 88	88.0	301.7	307.8	12.4	12.3
305 x 305 x 79	78.9	299.3	306.4	11.0	11.1
254 x 254 x 85	85.1	254.3	260.4	14.4	14.3
254 x 254 x 71	71.0	249.7	258.0	12.0	12.0
254 x 254 x 63	63.0	247.1	256.6	10.6	10.7
203 x 203 x 54	53.9	204.0	207.7	11.3	11.4
203 x 203 x 45	44.9	200.2	205.9	9.5	9.5

**STRUCTURAL METALWORK – continued****Hot Formed Square Hollow Sections EN 10210 S275J2H & S355J2H**

Size (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
40 x 40	2.5	2.89	0.154
	3.0	3.41	0.152
	3.2	3.61	0.152
	3.6	4.01	0.151
	4.0	4.39	0.150
50 x 50	5.0	5.28	0.147
	2.5	3.68	0.194
	3.0	4.35	0.192
	3.2	4.62	0.192
	3.6	5.14	0.191
	4.0	5.64	0.190
	5.0	6.85	0.187
60 x 60	6.0	7.99	0.185
	6.3	8.31	0.184
	3.0	5.29	0.232
	3.2	5.62	0.232
	3.6	6.27	0.231
	4.0	6.90	0.230
	5.0	8.42	0.227
70 x 70	6.0	9.87	0.225
	6.3	10.30	0.224
	8.0	12.50	0.219
	3.0	6.24	0.272
	3.2	6.63	0.272
	3.6	7.40	0.271
	4.0	8.15	0.270
80 x 80	5.0	9.99	0.267
	6.0	11.80	0.265
	6.3	12.30	0.264
	8.0	15.00	0.259
	3.2	7.63	0.312
	3.6	8.53	0.311
	4.0	9.41	0.310
90 x 90	5.0	11.60	0.307
	6.0	13.60	0.305
	6.3	14.20	0.304
	8.0	17.50	0.299
	3.6	9.66	0.351
	4.0	10.70	0.350
	5.0	13.10	0.347
90 x 90	6.0	15.50	0.345
	6.3	16.20	0.344
	8.0	20.10	0.339

Size (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
100 x 100	3.6	10.80	0.391
	4.0	11.90	0.390
	5.0	14.70	0.387
	6.0	17.40	0.385
	6.3	18.20	0.384
	8.0	22.60	0.379
	10.0	27.40	0.374
120 x 120	4.0	14.40	0.470
	5.0	17.80	0.467
	6.0	21.20	0.465
	6.3	22.20	0.464
	8.0	27.60	0.459
	10.0	33.70	0.454
	12.0	39.50	0.449
140 x 140	12.5	40.90	0.448
	5.0	21.00	0.547
	6.0	24.90	0.545
	6.3	26.10	0.544
	8.0	32.60	0.539
	10.0	40.00	0.534
	12.0	47.00	0.529
150 x 150	12.5	48.70	0.528
	5.0	22.60	0.587
	6.0	26.80	0.585
	6.3	28.10	0.584
	8.0	35.10	0.579
	10.0	43.10	0.574
	12.0	50.80	0.569
Hot formed from seamless hollow 160 x 160	12.5	52.70	0.568
	16.0	65.2	0.559
	5.0	24.10	0.627
	6.0	28.70	0.625
	6.3	30.10	0.624
	8.0	37.60	0.619
	10.0	46.30	0.614
180 x 180	12.0	54.60	0.609
	12.5	56.60	0.608
	16.0	70.20	0.599
	5.0	27.30	0.707
	6.0	32.50	0.705
	6.3	34.00	0.704
	8.0	42.70	0.699
	10.0	52.50	0.694
	12.0	62.10	0.689
	12.5	64.40	0.688
	16.0	80.20	0.679

Size (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
200 x 200	5.0	30.40	0.787
	6.0	36.20	0.785
	6.3	38.00	0.784
	8.0	47.70	0.779
	10.0	58.80	0.774
	12.0	69.60	0.769
	12.5	72.30	0.768
	16.0	90.30	0.759
250 x 250	5.0	38.30	0.987
	6.0	45.70	0.985
	6.3	47.90	0.984
	8.0	60.30	0.979
	10.0	74.50	0.974
	12.0	88.50	0.969
	12.5	91.90	0.968
	16.0	115.00	0.959
300 x 300	6.0	55.10	1.18
	6.3	57.80	1.18
	8.0	72.80	1.18
	10.0	90.20	1.17
	12.0	107.00	1.17
	12.5	112.00	1.17
	16.0	141.00	1.16
	8.0	85.40	1.38
350 x 350	10.0	106.00	1.37
	12.0	126.00	1.37
	12.5	131.00	1.37
	16.0	166.00	1.36
	8.0	97.90	1.58
400 x 400	10.0	122.00	1.57
	12.0	145.00	1.57
	12.5	151.00	1.57
	16.0	191.00	1.56
	20.00*	235.00	1.55
(Grade S355J2H only)			

Note: \* SAW process

**STRUCTURAL METALWORK – continued****Hot Formed Square Hollow Sections JUMBO RHS : JIS G3136**

Size (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
350 x 350	19.0	190.00	1.33
	22.0	217.00	1.32
	25.0	242.00	1.31
400 x 400	22.0	251.00	1.52
	25.0	282.00	1.51
450 x 450	12.0	162.00	1.76
	16.0	213.00	1.75
	19.0	250.00	1.73
	22.0	286.00	1.72
	25.0	321.00	1.71
500 x 500	28.0 *	355.00	1.70
	32.0 *	399.00	1.69
	12.0	181.00	1.96
	16.0	238.00	1.95
	19.0	280.00	1.93
	22.0	320.00	1.92
550 x 550	25.0	360.00	1.91
	28.0 *	399.00	1.90
	32.0 *	450.00	1.89
	36.0 *	498.00	1.88
	16.0	263.00	2.15
	19.0	309.00	2.13
	22.0	355.00	2.12
	25.0	399.00	2.11
600 x 600	28.0 *	443.00	2.10
	32.0 *	500.00	2.09
	36.0 *	555.00	2.08
	40.0 *	608.00	2.06
	25.0 *	439.00	2.31
	28.0 *	487.00	2.30
700 x 700	32.0 *	550.00	2.29
	36.0 *	611.00	2.28
	40.0 *	671.00	2.26
	25.0 *	517.00	2.71
	28.0 *	575.00	2.70
	32.0 *	651.00	2.69
	36.0 *	724.00	2.68
	40.0 *	797.00	2.68

**Note:**

\* SAW process

**Hot Formed Rectangular Hollow Sections: EN10210 S275J2h & S355J2H**

Size (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
50 x 30	2.5	2.89	0.154
	3.0	3.41	0.152
	3.2	3.61	0.152
	3.6	4.01	0.151
	4.0	4.39	0.150
	5.0	5.28	0.147
60 x 40	2.5	3.68	0.194
	3.0	4.35	0.192
	3.2	4.62	0.192
	3.6	5.14	0.191
	4.0	5.64	0.190
	5.0	6.85	0.187
80 x 40	6.0	7.99	0.185
	6.3	8.31	0.184
	3.0	5.29	0.232
	3.2	5.62	0.232
	3.6	6.27	0.231
	4.0	6.90	0.230
76.2 x 50.8	5.0	8.42	0.227
	6.0	9.87	0.225
	6.3	10.30	0.224
	8.0	12.50	0.219
	3.0	5.62	0.246
	3.2	5.97	0.246
90 x 50	3.6	6.66	0.245
	4.0	7.34	0.244
	5.0	8.97	0.241
	6.0	10.50	0.239
	6.3	11.00	0.238
	8.0	13.40	0.233
100 x 50	3.0	6.24	0.272
	3.2	6.63	0.272
	3.6	7.40	0.271
	4.0	8.15	0.270
	5.0	9.99	0.267
	6.0	11.80	0.265
100 x 50	6.3	12.30	0.264
	8.0	15.00	0.259
	3.0	6.71	0.292
	3.2	7.13	0.292
	3.6	7.96	0.291
	4.0	8.78	0.290
100 x 50	5.0	10.80	0.287
	6.0	12.70	0.285
	6.3	13.30	0.284
	8.0	16.30	0.279

Size (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
100 x 60	3.0	7.18	0.312
	3.2	7.63	0.312
	3.6	8.53	0.311
	4.0	9.41	0.310
	5.0	11.60	0.307
	6.0	13.60	0.305
	6.3	14.20	0.304
	8.0	17.50	0.299
120 x 60	3.6	9.70	0.351
	4.0	10.70	0.350
	5.0	13.10	0.347
	6.0	15.50	0.345
	6.3	16.20	0.344
120 x 80	8.0	20.10	0.339
	3.6	10.80	0.391
	4.0	11.90	0.390
	5.0	14.70	0.387
	6.0	17.40	0.385
	6.3	18.20	0.384
	8.0	22.60	0.379
	10.0	27.40	0.374
150 x 100	4.0	15.10	0.490
	5.0	18.60	0.487
	6.0	22.10	0.485
	6.3	23.10	0.484
	8.0	28.90	0.479
	10.0	35.30	0.474
	12.0	41.40	0.469
	12.5	42.80	0.468
160 x 80	4.0	14.40	0.470
	5.0	17.80	0.467
	6.0	21.20	0.465
	6.3	22.20	0.464
	8.0	27.60	0.459
	10.0	33.70	0.454
	12.0	39.50	0.449
	12.5	40.90	0.448
200 x 100	5.0	22.60	0.587
	6.0	26.80	0.585
	6.3	28.10	0.584
	8.0	35.10	0.579
	10.0	43.10	0.574
	12.0	50.80	0.569
	12.5	52.70	0.568
	16.0	65.20	0.559

Size (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
250 x 150	5.0	30.40	0.787
	6.0	36.20	0.785
	6.3	38.00	0.784
	8.0	47.70	0.779
	10.0	58.80	0.774
	12.0	69.60	0.769
	12.5	72.30	0.768
	16.0	90.30	0.759
300 x 200	5.0	38.30	0.987
	6.0	45.70	0.985
	6.3	47.90	0.984
	8.0	60.30	0.979
	10.0	74.50	0.974
	12.0	88.50	0.969
	12.5	91.90	0.968
	16.0	115.00	0.959
400 x 200	6.0	55.10	1.18
	6.3	57.80	1.18
	8.0	72.80	1.18
	10.0	90.20	1.17
	12.0	107.00	1.17
	12.5	112.00	1.17
	16.0	141.00	1.16
	450 x 250	8.0	85.40
10.0		106.00	1.37
12.0		126.00	1.37
12.5		131.00	1.37
16.0		166.00	1.36
500 x 300	8.0	98.00	1.58
	10.0	122.00	1.57
	12.0	145.00	1.57
	12.5	151.00	1.57
	16.0	191.00	1.56
	20.0	235.00	1.55



**Hot Formed Circular Hollow Sections EN 10210 S275J2H & S355J2H**

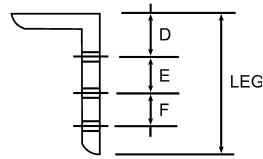
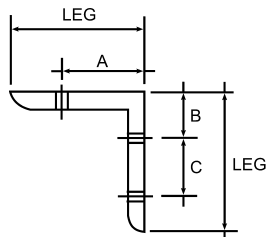
Outside Diameter (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)	
21.3	3.2	1.43	0.067	
	26.9	3.2	1.87	0.085
33.7	3.0	2.27	0.106	
	3.2	2.41	0.106	
	3.6	2.67	0.106	
	4.0	2.93	0.106	
	42.4	3.0	2.91	0.133
42.4	3.2	3.09	0.133	
	3.6	3.44	0.133	
	4.0	3.79	0.133	
	48.3	2.5	2.82	0.152
48.3	3.0	3.35	0.152	
	3.2	3.56	0.152	
	3.6	3.97	0.152	
	4.0	4.37	0.152	
	5.0	5.34	0.152	
	60.3	2.5	3.56	0.189
60.3	3.0	4.24	0.189	
	3.2	4.51	0.189	
	3.6	5.03	0.189	
	4.0	5.55	0.189	
	5.0	6.82	0.189	
76.1	2.5	4.54	0.239	
	3.0	5.41	0.239	
	3.2	5.75	0.239	
	3.6	6.44	0.239	
	4.0	7.11	0.239	
	5.0	8.77	0.239	
	6.0	10.40	0.239	
	6.3	10.80	0.239	
	88.9	2.5	5.33	0.279
	88.9	3.0	6.36	0.279
3.2		6.76	0.27	
3.6		7.57	0.279	
88.9	4.0	8.38	0.279	
	5.0	10.30	0.279	
	6.0	12.30	0.279	
	6.3	12.80	0.279	
114.3	3.0	8.23	0.359	
	3.2	8.77	0.359	
	3.6	9.83	0.359	
	4.0	10.09	0.359	
	5.0	13.50	0.359	
	6.0	16.00	0.359	
	6.3	16.80	0.359	

Outside Diameter (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)
139.7	3.2	10.80	0.439
	3.6	12.10	0.439
	4.0	13.40	0.439
	5.0	16.60	0.439
	6.0	19.80	0.439
	6.3	20.70	0.439
	8.0	26.00	0.439
	10.0	32.00	0.439
168.3	3.2	13.00	0.529
	3.6	14.60	0.529
	4.0	16.20	0.529
	5.0	20.10	0.529
	6.0	24.00	0.529
	6.3	25.20	0.529
	8.0	31.60	0.529
	10.0	39.00	0.529
193.7	12.0	46.30	0.529
	12.5	48.00	0.529
	5.0	23.30	0.609
	6.0	27.80	0.609
	6.3	29.10	0.609
193.7	8.0	36.60	0.609
	10.0	45.30	0.609
	12.0	53.80	0.609
	12.5	55.90	0.609
219.1	5.0	26.40	0.688
	6.0	31.50	0.688
	6.3	33.10	0.688
	8.0	41.60	0.688
	10.0	51.60	0.688
	12.0	61.30	0.688
	12.5	63.70	0.688
	16.0	80.10	0.688
244.5	5.0	29.50	0.768
	6.0	35.30	0.768
	6.3	37.00	0.768
	8.0	46.70	0.768
	10.0	57.80	0.768
	12.0	68.80	0.768
	12.5	71.50	0.768
	16.0	90.20	0.768
273.0	5.0	33.00	0.858
	6.0	39.50	0.858
	6.3	41.40	0.858
	8.0	52.30	0.858
	10.0	64.90	0.858

Outside Diameter (mm)	Wall thickness (mm)	Mass (kg/m)	Superficial area (m <sup>2</sup> /m)	
323.9	12.0	77.20	0.858	
	12.5	80.30	0.858	
	16.0	101.00	0.858	
	5.0	39.30	1.02	
	6.0	47.00	1.02	
	6.3	49.30	1.02	
	8.0	62.30	1.02	
	10.0	77.40	1.02	
	12.0	92.30	1.02	
	12.5	96.00	1.02	
355.6	16.0	121.00	1.02	
	6.3	54.30	1.12	
	8.0	68.60	1.12	
	10.0	85.30	1.12	
	12.0	102.00	1.12	
	12.5	106.00	1.12	
	16.0	134.00	1.12	
406.4	6.3	62.20	1.28	
	8.0	79.60	1.28	
	10.0	97.80	1.28	
	12.0	117.00	1.28	
	12.5	121.00	1.28	
	16.0	154.00	1.28	
	457.0	6.3	70.00	1.44
		8.0	88.60	1.44
10.0		110.00	1.44	
12.0		132.00	1.44	
12.5		137.00	1.44	
16.0		174.00	1.44	
508.0		6.3	77.90	1.60
	8.0	98.60	1.60	
	10.0	123.00	1.60	
	12.0	147.00	1.60	
	12.5	153.00	1.60	
	16.0	194.00	1.60	

**SPACING OF HOLES IN ANGLES**

Nominal Leg Length mm	Spacing of holes						Maximum diameter of bolt or rivet		
	A	B	C	D	E	F	A	B and C	D, E and F
200		75	75	55	55	55		30	20
150		55	55					20	
125		45	60					20	
120									
100	55						24		
90	50						24		
80	45						20		
75	45						20		
70	40						20		
65	35						20		
60	35						16		
50	28						12		
45	25								
40	23								
30	20								
25	15								



**PAVING AND SURFACING**

**Precast Concrete Kerbs to BS 7263**

Straight kerb units: length from 450 to 915 mm

150mm high x 125mm thick bullnosed half battered		type BN type HB3
255mm high x 125mm thick 45° splayed half battered		type SP type HB2
305mm high x 150mm thick half battered		type HB1
Quadrant kerb units		
150 mm high x 305 and 455 mm radius to match	type BN	type QBN
150 mm high x 305 and 455 mm radius to match	type HB2, HB3	type QHB
150 mm high x 305 and 455 mm radius to match	type SP	type QSP
255 mm high x 305 and 455 mm radius to match	type BN	type QBN
255 mm high x 305 and 455 mm radius to match	type HB2, HB3	type QHB
225 mm high x 305 and 455 mm radius to match	type SP	type QSP
Angle kerb units		
305 x 305 x 225 mm high x 125 mm thick bullnosed external angle	type XA	
splayed external angle to match type SP	type XA	
bullnosed internal angle	type IA	
splayed internal angle to match type SP	type IA	
Channels		
255 mm wide x 125 mm high flat	type CS1	
150 mm wide x 125 mm high flat type	CS2	
255 mm wide x 125 mm high dished	type CD	
Transition kerb units		
from kerb type SP to HB	left handed	type TL
	right handed	type TR
from kerb type BN to HB	left handed	type DL1
	right handed	type DR1
from kerb type BN to SP	left handed	type DL2
	right handed	type DR2

**Radial kerbs and channels**

<b>All profiles of kerbs and channels</b>	
<b>External radius</b>	<b>Internal radius</b>
1000 mm	3000
2000	4500
3000	6000
4500	7500
6000	9000
7500	1050
9000	1200
1050	
1200	

**Precast Concrete Edgings to BS 7263**

<b>Round top type ER</b>	<b>Flat top type EF</b>	<b>Bullnosed top type EBN</b>
150 x 50 mm	150 x 50 mm	150 x 50 mm
200 x 50	200 x 50	200 x 50
250 x 50	250 x 50	250 x 50

**Bases**

<b>Cement Bound Material for Bases and Sub-bases</b>	
CBM1:	very carefully graded aggregate from 37.5 - 75µm, with a 7-day strength of 4.5N/mm <sup>2</sup>
CBM2:	same range of aggregate as CBM1 but with more tolerance in each size of aggregate with a 7-day strength of 7.0N/mm <sup>2</sup>
CBM3:	crushed natural aggregate or blastfurnace slag, graded from 37.5mm - 150µm for 40mm aggregate, and from 20 - 75 µm for 20mm aggregate, with a 7-day strength of 10N/mm <sup>2</sup>
CBM4:	crushed natural aggregate or blastfurnace slag, graded from 37.5mm - 150µm for 40mm aggregate, and from 20 - 75µm for 20mm aggregate, with a 7-day strength of 15N/mm <sup>2</sup>

**PAVING AND SURFACING – continued****Interlocking block and other pavings****Sizes of Precast Concrete Paving Blocks to BS 6717: Part 1**

Type R blocks

200 x 100 x 60 mm

200 x 100 x 65

200 x 100 x 80

200 x 100 x 100

Type S

Any shape within a 295 mm space

**Sizes of Clay Brick Pavers to BS 6677: Part 1**

200 x 100 x 50 mm thick

200 x 100 x 65

210 x 105 x 50

210 x 105 x 65

215 x 102.5 x 50

215 x 102.5 x 65

Type PA: 3 kN

Footpaths and pedestrian areas, private driveways, car parks, light vehicle traffic and over-run.

Type PB: 7 kN

Residential roads, lorry parks, factory yards, docks, petrol station forecourts, hardstandings, bus stations.

**Weights and sizes of paving and surfacing**

<b>Description of Item</b>		<b>Quantity per tonne</b>
Paving 50 mm thick	900 x 600 mm	15
Paving 50 mm thick	750 x 600 mm	18
Paving 50 mm thick	600 x 600 mm	23
Paving 50 mm thick	450 x 600 mm	30
Paving 38 mm thick	600 x 600 mm	30
Path edging	914 x 50 x 150 mm	60
Kerb (including radius and tapers)	125 x 254 x 914 mm	15
Kerb (including radius and tapers)	125 x 150 x 914 mm	25
Square channel	125 x 254 x 914 mm	15
Dished channel	125 x 254 x 914 mm	15
Quadrants	300 x 300 x 254 mm	19
Quadrants	450 x 450 x 254 mm	12
Quadrants	300 x 300 x 150 mm	30
Internal angles	300 x 300 x 254 mm	30
Fluted pavement channel	255 x 75 x 914 mm	25
Corner stones	300 x 300 mm	80
Corner stones	360 x 360 mm	60
Cable covers	914 x 175 mm	55
Gulley kerbs	220 x 220 x 150 mm	60
Gulley kerbs	220 x 200 x 75 mm	120



**PAVING AND SURFACING – continued****Weights and sizes of paving and surfacing - continued**

<b>Material</b>	<b>kg/m<sup>3</sup></b>	<b>lb/cu yd</b>
Tarmacadam	2306	3891
Macadam (waterbound)	2563	4325
Vermiculite (aggregate)	64-80	108-135
Terracotta	2114	3568
Cork - compressed	388	24
	<b>kg/m<sup>2</sup></b>	<b>lb/sq ft</b>
Clay floor tiles, 12.7 mm	27.3	5.6
Pavement lights	122	25
Damp proof course)	5	1
	<b>kg/m<sup>2</sup> per mm thickness</b>	<b>lb/sq ft per inch thickness</b>
Paving Slabs (stone)	2.3	12
Granite setts	2.88	15
Asphalt	2.30	12
Rubber flooring	1.68	9
Poly-vinylchloride	1.94 (avg)	10 (avg)

**Coverage (m<sup>2</sup>) per cubic metre of materials used as sub bases or capping layers**

<b>Consolidated thickness laid in (mm)</b>	<b>Square metre coverage</b>		
	<b>Gravel</b>	<b>Sand</b>	<b>Hardcore</b>
50	15.80	16.50	-
75	10.50	11.00	-
100	7.92	8.20	7.42
125	6.34	6.60	5.90
150	5.28	5.50	4.95
175	-	-	4.23
200	-	-	3.71
225	-	-	3.30
300	-	-	2.47

**Approximate rate of spreads**

Average thickness of course mm	Description	Approximate rate of spread			
		Open Textured		Dense, Medium & Fine Textured	
		kg/m <sup>2</sup>	m <sup>2</sup> /t	kg/m <sup>2</sup>	m <sup>2</sup> /t
35	14 mm open textured or dense wearing course	60-75	13-17	70-85	12-14
40	20 mm open textured or dense base course	70-85	12-14	80-100	10-12
45	20 mm open textured or dense base course	80-100	10-12	95-100	9-10
50	20 mm open textured or dense, or 28 mm dense base course	85-110	9-12	110-120	8-9
60	28 mm dense base course, 40 mm open textured or dense base course or 40 mm single course as base course		8-10	130-150	7-8
65	28 mm dense base course, 40 mm open textured or dense base course or 40 mm single course	100-135	7-10	140-160	6-7
75	40 mm single course, 40 mm open textured or dense base course, 40 mm dense roadbase	120-150	7-8	165-185	5-6
100	40 mm dense base course or roadbase	-	-	220-240	4-4.5

**Surface Dressing Roads: Coverage (m<sup>2</sup>) per tonne of Material**

Size in mm	Sand	Granite chips	Gravel	Limestone Chips
Sand	168	-	-	-
3	-	148	152	165
6	-	130	133	144
9	-	111	114	123
13	-	85	87	95
19	-	68	71	78

**PAVING AND SURFACING - continued**

<b>Sizes of Flags to BS 7263</b>		
<b>Reference</b>	<b>Nominal Size</b>	<b>Thickness</b>
A	600 x 450 mm	50 and 63 mm
B	600 x 600	50 and 63
C	600 x 750	50 and 63
D	600 x 900	50 and 63
E	450 x 450	50 and 70 chamfered top surface
F	400 x 400	50 and 65 chamfered top surface
G	300 x 300	50 and 60 chamfered top surface

<b>Sizes of Natural Stone Setts to BS 7533</b>				
<b>Width</b>		<b>Length</b>		<b>Depth</b>
100 mm	×	100 mm	×	100 mm
75	×	150 to 250	×	125
75	×	150 to 250	×	150
100	×	150 to 250	×	100
100	×	150 to 250	×	150

**SEEDING/TURFING AND PLANTING****BS 3882: 1994 Topsoil Quality**

<b>Topsoil grade</b>	<b>Properties</b>
Premium	natural topsoil, high fertility, loamy texture, good soil structure, suitable for intensive cultivation
General Purpose	natural or manufactured topsoil of lesser quality than Premium, suitable for agriculture or amenity landscape, may need fertilizer or soil structure improvement.
Economy	selected subsoil, natural mineral deposit such as river silt or greensand. The grade comprises two subgrades; "Low clay" and "High clay" which is more liable to compaction in handling. This grade is suitable for low production agricultural land and amenity woodland or conservation planting areas.

**Forms of Trees to BS 3936: 1992**

Standards:	shall be clear with substantially straight stems. Grafted and budded trees shall have no more than a slight bend at the union. Standards shall be designated as Half, Extra light, Light, Standard, Selected standard, Heavy, and Extra heavy.	
Sizes of Standards		
Heavy standard	12-14 cm girth x 3.50 to 5.00 m high	
Extra Heavy standard	14-16 cm girth x 4.25 to 5.00 m high	
Extra Heavy standard	16-18 cm girth x 4.25 to 6.00 m high	
Extra Heavy standard	18-20 cm girth x 5.00 to 6.00 m high	
Semi-mature trees:	between 6.0m and 12.0 m tall with a girth of 20 to 75 cm at 1.0 m above ground.	
Feathered trees:	shall have a defined upright central leader, with stem furnished with evenly spread and balanced lateral shoots down to or near the ground.	
Whips:	shall be without significant feather growth as determined by visual inspection.	
Multi-stemmed trees:	shall have two or more main stems at, near, above or below ground.	
Seedlings grown from seed	and not transplanted shall be specified when ordered for sale as:	
1+0 one year old seedling		
2+0 two year old seedling		
1+1 one year seed bed,	one year transplanted	= two year old seedling
1+2 one year seed bed,	two years transplanted	= three year old seedling
2+1 two year seed bed,	one year transplanted	= three year old seedling
1u1 two years seed bed,	undercut after 1 year	= two year old seedling
2u2 four years seed bed,	undercut after 2 years	= four year old seedling
Cuttings:	The age of cuttings (plants grown from shoots, stems, or roots of the mother plant) shall be specified when ordered for sale. The height of transplants and undercut seedlings/ cuttings (which have been transplanted or undercut at least once) shall be stated in centimetres. The number of growing seasons before and after transplanting or undercutting shall be stated.	
	0+1	one year cutting
	0+2	two year cutting
	0+1+1	one year cutting bed, one year transplanted = two year old seedling
	0+1+2	one year cutting bed, two years transplanted = three year old seedling

**SEEDING/TURFING AND PLANTING - continued**

**Grass cutting capacities in m<sup>2</sup> per hour**

Speed mph	Width of cut in metres												
	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.0	2.1	2.5	2.8	3.0	3.4
1.0	724	1127	1529	1931	2334	2736	3138	3219	3380	4023	4506	4828	5472
1.5	1086	1690	2293	2897	3500	4104	4707	4828	5069	6035	6759	7242	8208
2.0	1448	2253	3058	3862	4667	5472	6276	6437	6759	8047	9012	9656	10944
2.5	1811	2816	3822	4828	5834	6840	7846	8047	8449	10058	11265	12070	13679
3.0	2173	3380	4587	5794	7001	8208	9415	9656	10139	12070	13518	14484	16415
3.5	2535	3943	5351	6759	8167	9576	10984	11265	11829	14082	15772	16898	19151
4.0	2897	4506	6115	7725	9334	10944	12553	12875	13518	16093	18025	19312	21887
4.5	3259	5069	6880	8690	10501	12311	14122	14484	15208	18105	20278	21726	24623
5.0	3621	5633	7644	9656	11668	13679	15691	16093	16898	20117	22531	24140	27359
5.5	3983	6196	8409	10622	12834	15047	17260	17703	18588	22128	24784	26554	30095
6.0	4345	6759	9173	11587	14001	16415	18829	19312	20278	24140	27037	28968	32831
6.5	4707	7322	9938	12553	15168	17783	20398	20921	21967	26152	29290	31382	35566
7.0	5069	7886	10702	13518	16335	19151	21967	22531	23657	28163	31543	33796	38302

**Number of plants per m<sup>2</sup> for various planting distances**

mm	0.10	0.15	0.20	0.25	0.35	0.40	0.45	0.50	0.60	0.75	0.90	1.00	1.20	1.50
0.10	100.00	66.67	50.00	40.00	28.57	25.00	22.22	20.00	16.67	13.33	11.11	10.00	8.33	6.67
0.15	66.67	44.44	33.33	26.67	19.05	16.67	14.81	13.33	11.11	8.89	7.41	6.67	5.56	4.44
0.20	50.00	33.33	25.00	20.00	14.29	12.50	11.11	10.00	8.33	6.67	5.56	5.00	4.17	3.33
0.25	40.00	26.67	20.00	16.00	11.43	10.00	8.89	8.00	6.67	5.33	4.44	4.00	3.33	2.67
0.35	28.57	19.05	14.29	11.43	8.16	7.14	6.35	5.71	4.76	3.81	3.17	2.86	2.38	1.90
0.40	25.00	16.67	12.50	10.00	7.14	6.25	5.56	5.00	4.17	3.33	2.78	2.50	2.08	1.67
0.45	22.22	14.81	11.11	8.89	6.35	5.56	4.94	4.44	3.70	2.96	2.47	2.22	1.85	1.48
0.50	20.00	13.33	10.00	8.00	5.71	5.00	4.44	4.00	3.33	2.67	2.22	2.00	1.67	1.33
0.60	16.67	11.11	8.33	6.67	4.76	4.17	3.70	3.33	2.78	2.22	1.85	1.67	1.39	1.11
0.75	13.33	8.89	6.67	5.33	3.81	3.33	2.96	2.67	2.22	1.78	1.48	1.33	1.11	0.89
0.90	11.11	7.41	5.56	4.44	3.17	2.78	2.47	2.22	1.85	1.48	1.23	1.11	0.93	0.74
1.00	10.00	6.67	5.00	4.00	2.86	2.50	2.22	2.00	1.67	1.33	1.11	1.00	0.83	0.67
1.20	8.33	5.56	4.17	3.33	2.38	2.08	1.85	1.67	1.39	1.11	0.93	0.83	0.69	0.56
1.50	6.67	4.44	3.33	2.67	1.90	1.67	1.48	1.33	1.11	0.89	0.74	0.67	0.56	0.44

**Grass Clippings Wet: Based on 3.5 m<sup>3</sup> /ton**

Annual Kg/100 m <sup>2</sup>	Average 20 cuts Kg/100m <sup>2</sup>	m <sup>2</sup> /tonne	m <sup>2</sup> /m <sup>3</sup>
32.0	1.6	61162.1	214067.3

Nr of Cuts	22	20	18	16	12	4
Kg/cut	1.45	1.60	1.78	2.00	2.67	8.00

Area capacity in m <sup>2</sup> of 3 tonne vehicle per load						
	206250	187500	168750	150000	112500	37500
Load m <sup>3</sup>	100 m <sup>2</sup> units / m <sup>3</sup> of vehicle space					
	1	196.4	178.6	160.7	142.9	107.1
2	392.9	357.1	321.4	285.7	214.3	71.4
3	589.3	535.7	482.1	428.6	321.4	107.1
4	785.7	714.3	642.9	571.4	428.6	142.9
5	982.1	892.9	803.6	714.3	535.7	178.6

**FENCING AND GATES****Types of Preservative to BS 5589:1989**

Creosote (tar oil) can be "factory" applied	by pressure to BS 144: 1997 by immersion to BS 144: 1997 by hot and cold open tank to BS 144: 1997
Copper/chromium/arsenic (CCA)	by full cell process to BS 4072: 1999
Organic solvent (OS)	by double vacuum (vac vac) to BS 5707: 1997 by immersion to BS 5057: 1997
Pentachlorophenol (PCP)	by heavy oil double vacuum to BS 5705: 1997
Boron diffusion process (treated with disodium octaborate to BWPA Manual 1986).	
Note: Boron is used on green timber at source and the timber is supplied dry.	

**Cleft Chestnut Pale Fences to BS 1722:Part 4:1986**

Pales	Pale spacing	Wire lines	
900 mm long	75 mm	2	temporary protection
1050	75 or 100	2	light protective fences
1200	75	3	perimeter fences
1350	75	3	perimeter fences
1500	50	3	narrow perimeter fences
1800	50	3	light security fences

**FENCING AND GATES – continued****Close-boarded Fences to BS 1722: Part 5: 1999**

Close-boarded fences 1.05 to 1.8m high

Type BCR (recessed) or BCM (morticed) with concrete posts 140 x 115 mm tapered and Type BW with timber posts:

**Palisade Fences to BS 1722: Part 5:1999**

Wooden palisade fences

Type WPC with concrete posts 140 x 115 mm tapered and Type WPW with timber posts.

For both types of fence:

Height of fence 1050 mm: two rails:

Height of fence 1200 mm: two rails:

Height of fence 1500 mm: three rails:

Height of fence 1650 mm: three rails:

Height of fence 1800 mm: three rails:

**Post and Rail Fences to BS 1722: Part 7: 1999****Wooden post and rail fences**

Type MPR 11/3 morticed rails and Type SPR 11/3 nailed rails

Height to top of rail 1100 mm

Rails: three rails 87 mm 38 mm

Type MPR 11/4 morticed rails and Type SPR 11/4 nailed rails

Height to top of rail 1100 mm

Rails: four rails 87 mm 38 mm.

Type MPR 13/4 morticed rails and Type SPR 13/4 nailed rails

Height to top of rail 1300 mm

Rail spacing 250 mm, 250 mm, and 225 mm from top

Rails: four rails 87 mm 38 mm.

**Steel Fences to BS 1722: Part 9: 2000**

Mild steel fences: round or square verticals; flat standards and horizontals.  
Tops of vertical bars may be bow-top, blunt, or pointed

Round or square bar railings.

	Fence height	Top/bottom rails and flat posts	Vertical bars
Light	1000 mm	40 x 10 mm 450 mm in ground	12 mm diameter at 115 mm centres
	1200 mm	40 x 10 mm 550 mm in ground	12 mm diameter at 115 mm centres
	1400 mm	40 x 10 mm 550 mm in ground	12 mm diameter at 115 mm centres
Light	1000 mm	40 x 10 mm 450 mm in ground	16 mm diameter at 120 mm centres
	1200 mm	40 x 10 mm 550 mm in ground	16 mm diameter at 120 mm centres
	1400 mm	40 x 10 mm 550 mm in ground	16 mm diameter at 120 mm centres
Medium	1200 mm	50 x 10 mm 550 mm in ground	20 mm diameter at 125 mm centres
	1400 mm	50 x 10 mm 550 mm in ground	20 mm diameter at 125 mm centres
	1600 mm	50 x 10 mm 600 mm in ground	22 mm diameter at 145 mm centres
	1800 mm	50 x 10 mm 600 mm in ground	22 mm diameter at 145 mm centres
Heavy	1600 mm	50 x 10 mm 600 mm in ground	22 mm diameter at 145 mm centres
	1800 mm	50 x 10 mm 600 mm in ground	22 mm diameter at 145 mm centres
	2000 mm	50 x 10 mm 600 mm in ground	22 mm diameter at 145 mm centres
	2200 mm	50 x 10 mm 600 mm in ground	22 mm diameter at 145 mm centres

**Gates****Timber field gates to BS 3470: 1975**

Gates made to this standard are designed to open one way only.

All timber gates are 1100 mm high.

Width over stiles 2400, 2700, 3000, 3300, 3600, and 4200 mm.

Gates over 4200 mm should be made in two leaves.

**Steel field gates to BS 3470: 1975**

Heavy duty: width over stiles 2400, 3000, 3600 and 4500 mm

Light duty: width over stiles 2400, 3000, and 3600 mm

All steel gates are 1100 mm high.



**FENCING AND GATES – continued**

**Domestic Front Entrance Gates to BS 4092: Part 1: 1996**

Metal gates: Single gates are 900 mm high minimum, 900 mm, 1000 mm and 1100 mm wide

**Domestic Front Entrance Gates to BS 4092: Part 2: 1996.**

Wooden gates: All rails shall be tenoned into the stiles  
 Single gates are 840 mm high minimum, 801 mm and 1020 mm wide  
 Double gates are 840 mm high minimum, 2130, 2340 and 2640 mm wide

**Timber Bridle Gates to BS 5709: 2001 (Horse Or Hunting Gates)**

Gates open one way only

Minimum width between posts 1525 mm

Minimum height 1100 mm

**Timber Kissing Gates to BS 5709: 2001**

Minimum width 700 mm

Minimum height 1000 mm

Minimum distance between shutting posts 600 mm

Minimum clearance at mid-point 600 mm

**Metal Kissing Gates to BS 5709: 2001**

Sizes are the same as those for timber kissing gates.

Maximum gaps between rails 120 mm

**Categories of Pedestrian Guard Rail to BS 7818: 1995**

Class A for normal use;

Class B where vandalism is expected;

Class C where crowd pressure is likely;

**Squared timber for general fences**

Posts	Fence height	Strut	Straining post
1300 x 75 x 75 mm	600 mm	1200 x 75 x 75 mm	1450 x 100 x 100 mm
1500 x 75 x 75 mm	800 mm	1400 x 75 x 75 mm	1650 x 100 x 100 mm
1600 x 75 x 75 mm	900 mm	1500 x 75 x 75 mm	1750 x 100 x 100 mm
1700 x 75 x 75 mm	1050 mm	1600 x 75 x 75 mm	1850 x 100 x 100 mm
1800 x 75 x 75 mm	1150 mm	1750 x 75 x 75 mm	2000 x 125 x 100 mm

**Timber Posts to BS 1722-2: 2000****Cleft Chestnut Pale Fences to BS 1722: Part 4:1986**

Timber posts for wire mesh and hexagonal wire netting fences.

Round timber for general fences

Posts	Fence height	Strut	Straining post
1300 x 65 mm dia.	600 mm	1200 x 80 mm dia	1450 x 100 mm dia
1500 x 65 mm dia	800 mm	1400 x 80 mm dia	1650 x 100 mm dia
1600 x 65 mm dia.	900 mm	1500 x 80 mm dia	1750 x 100 mm dia
1700 x 65 mm dia.	1050 mm	1600 x 80 mm dia	1850 x 100 mm dia
1800 x 65 mm dia.	1150 mm	1750 x 80 mm dia	2000 x 120 mm dia

**Concrete Posts to BS 1722-1: 2006****Concrete posts for chain link fencing:**

Posts and straining posts	Fence height	Strut
1570 mm 100 x 100 mm	900 mm	1500 mm x 75 x 75 mm
1870 mm 125 x 125 mm	1200 mm	1830 mm x 100 x 75 mm
2070 mm 125 x 125 mm	1400 mm	1980 mm x 100 x 75 mm
2620 mm 125 x 125 mm	1800 mm	2590 mm x 100 x 85 mm
3040 mm 125 x 125 mm	1800 mm	2590 mm x 100 x 85 mm (with arms)

**Concrete Posts to BS 1722-2: 2000****Concrete posts for rectangular wire mesh (field) fencing**

Posts	Fence height	Strut	Straining post
1270 x 100 x 100 mm	600 mm	1200 x 75 x 75 mm	1420 x 100 x 100 mm
1470 x 100 x 100 mm	800 mm	1350 x 75 x 75 mm	1620 x 100 x 100 mm
1570 x 100 x 100 mm	900 mm	1500 x 75 x 75 mm	1720 x 100 x 100 mm
1670 x 100 x 100 mm	600 mm	1650 x 75 x 75 mm	1820 x 100 x 100 mm
1820 x 125 x 125 mm	1150 mm	1830 x 75 x 100 mm	1970 x 125 x 125 mm

**FENCING AND GATES – continued****Steel Posts to BS 1722-1: 2006**

<b>Rolled steel angle iron posts for chain link fencing:</b>			
<b>Posts</b>	<b>Fence height</b>	<b>Strut</b>	<b>Straining post</b>
1500 x 40 x 40 x 5 mm	900 mm	1500 x 40 x 40 x 5 mm	1500 x 50 x 50 x 6 mm
1800 x 40 x 40 x 5 mm	1200 mm	1800 x 40 x 40 x 5 mm	1800 x 50 x 50 x 6 mm
2000 x 45 x 45 x 5 mm	1400 mm	2000 x 45 x 45 x 5 mm	2000 x 60 x 60 x 6 mm
2600 x 45 x 45 x 5 mm	1800 mm	2600 x 45 x 45 x 5 mm	2600 x 60 x 60 x 6 mm
3000 x 50 x 50 x 6 mm with arms	1800 mm	2600 x 45 x 45 x 5 mm	3000 x 60 x 60 x 6 mm

**Rolled Steel Angle Posts to BS 1722-2: 2000**

<b>Rolled steel angle posts for rectangular wire mesh (field) fencing</b>			
<b>Posts</b>	<b>Fence height</b>	<b>Strut</b>	<b>Straining post</b>
1200 x 40 x 40 x 5 mm	600 mm	1200 x 75 x 75 mm	1350 x 100 x 100 mm
1400 x 40 x 40 x 5 mm	800 mm	1400 x 75 x 75 mm	1550 x 100 x 100 mm
1500 x 40 x 40 x 5 mm	900 mm	1500 x 75 x 75 mm	1650 x 100 x 100 mm
1600 x 40 x 40 x 5 mm	1000 mm	1600 x 75 x 75 mm	1750 x 100 x 100 mm
1750 x 40 x 40 x 5 mm	1150 mm	1750 x 75 x 100 mm	1900 x 125 x 125 mm

**DRAINAGE****Weights and dimensions - vitrified clay pipes**

<b>Product</b>	<b>Nominal diameter</b>	<b>Effective length</b>	<b>BS 65 limits of tolerance</b>		<b>Crushing strength</b>	<b>Weight</b>	
			<b>min (mm)</b>	<b>max (mm)</b>		<b>kg/pipe</b>	<b>kg/m</b>
	<b>(mm)</b>	<b>(mm)</b>			<b>(kN/m)</b>		
Supersleve	100	1600	96	105	35.00	14.71	9.19
	150	1750	146	158	35.00	29.24	16.71
Hepsleve	225	1850	221	236	28.00	84.03	45.42
	300	2500	295	313	34.00	193.05	77.22
	150	1500	146	158	22.00	37.04	24.69
	225	1750	221	236	28.00	85.47	48.84
	300	2500	295	313	34.00	204.08	81.63
	400	2500	394	414	44.00	357.14	142.86
	450	2500	444	464	44.00	454.55	181.63
	500	2500	494	514	48.00	555.56	222.22
	600	2500	591	615	57.00	796.23	307.69
700	3000	689	719	67.00	1111.11	370.45	
800	3000	788	822	72.00	1351.35	450.45	

Product	Nominal diameter	Effective length	BS 65 limits of tolerance		Crushing strength	Weight	
			min (mm)	max (mm)		kg/pipe	kg/m
	(mm)	(mm)	(mm)	(mm)	(kN/m)		
Hepline	100	1600	95	107	22.00	14.71	9.19
	150	1750	145	160	22.00	29.24	16.71
	225	1850	219	239	28.00	84.03	45.42
	300	1850	292	317	34.00	142.86	77.22
Hepduct (Conduit)	90	1500	-	-	28.00	12.05	8.03
	100	1600	-	-	28.00	14.71	9.19
	125	1750	-	-	28.00	20.73	11.84
	150	1750	-	-	28.00	29.24	16.71
	225	1850	-	-	28.00	84.03	45.42
	300	1850	-	-	34.00	142.86	77.22

Nominal internal diameter (mm)	Nominal wall thickness (mm)	Approximate weight kg/m
150	25	45
225	29	71
300	32	122
375	35	162
450	38	191
600	48	317
750	54	454
900	60	616
1200	76	912
1500	89	1458
1800	102	1884
2100	127	2619

**DRAINAGE - continued**

Wall thickness, weights and pipe lengths vary, depending on type of pipe required.

The particulars shown above represent a selection of available diameters and are applicable to strength class 1 pipes with flexible rubber ring joints.

Tubes with Ogee joints are also available.

**Weights and dimensions - PVC-U pipes**

	Nominal size	Mean outside diameter (mm)		Wall thickness (mm)	Weight kg/m	
		min	max			
Standard pipes	82.4	82.4	82.7	3.2	1.2	
	110.0	110.0	110.4	3.2	1.6	
	160.0	160.0	160.6	4.1	3.0	
	200.0	200.0	200.6	4.9	4.6	
	250.0	250.0	250.7	6.1	7.2	
Perforated pipes - heavy grade	As above	As above	As above	As above	As above	
	- thin wall	82.4	82.4	82.7	1.7	-
		110.0	110.0	110.4	2.2	-
		160.0	160.0	160.6	3.2	-

**Width of trenches required for various diameters of pipes**

Pipe diameter (mm)	Trench n.e. 1.5 m deep (mm)	Trench over 1.5 m deep (mm)
n.e.100	450	600
100-150	500	650
150-225	600	750
225-300	650	800
300-400	750	900
400-450	900	1050
450-600	1100	1300

**Flow of water which can be carried by various sizes of pipe**

<b>Clay or concrete pipes</b>									
		<b>Gradient of pipeline</b>							
		1:10	1:20	1:30	1:40	1:50	1:60	1:80	1:100
<b>Pipe size</b>	<b>Flow in litres per second</b>								
DN 100 15.0	8.5	6.8	5.8	5.2	4.7	4.0	3.5		
DN 150 28.0	19.0	16.0	14.0	12.0	11.0	9.1	8.0		
DN 225 140.0	95.0	76.0	66.0	58.0	53.0	46.0	40.0		

<b>Plastic pipes</b>									
		<b>Gradient of pipeline</b>							
		1:10	1:20	1:30	1:40	1:50	1:60	1:80	1:100
<b>Pipe size</b>	<b>Flow in litres per second</b>								
82.4mm i/dia	12.0	8.5	6.8	5.8	5.2	4.7	4.0	3.5	
110mm i/dia	28.0	19.0	16.0	14.0	12.0	11.0	9.1	8.0	
160mm i/dia	76.0	53.0	43.0	37.0	33.0	29.0	25.0	22.0	
200mm i/dia	140.0	95.0	76.0	66.0	58.0	53.0	46.0	40.0	

<b>Vitrified (Perforated) Clay Pipes and Fittings to BS EN 295-5 1994</b>			
Length not specified			
	<b>75 mm bore</b>	<b>250 mm bore</b>	<b>600 mm bore</b>
	100	300	700
	125	350	800
	150	400	1000
	200	450	1200
	225	500	

**Precast Concrete Pipes: Prestressed Non-pressure Pipes and Fittings: Flexible Joints to BS 5911-1: 2002**

<b>Rationalised metric nominal sizes: 450, 500</b>	
Length:	500 - 1000 by 100 increments 1000 - 2200 by 200 increments 2200 - 2800 by 300 increments
Angles: length:	450 - 600 angles 45, 22.5, 11.25 ° 600 or more angles 22.5, 11.25 °

**DRAINAGE - continued****Precast Concrete Pipes: Un-reinforced and Circular Manholes and Soakaways to BS 5911-1: 2002**

<b>Nominal Sizes:</b>	
Shafts:	675, 900 mm
Chambers:	900, 1050, 1200, 1350, 1500, 1800, 2100, 2400, 2700, 3000 mm.
Large chambers:	To have either tapered reducing rings or a flat reducing slab in order to accept the standard cover.
Ring depths:	<ol style="list-style-type: none"> <li>1. 300 - 1200 mm by 300 mm increments except for bottom slab and rings below cover slab, these are by 150 mm increments.</li> <li>2. 250 - 1000 mm by 250 mm increments except for bottom slab and rings below cover slab, these are by 125 mm increments.</li> </ol>
Access hole:	750 x 750 mm for DN 1050 chamber 200 x 675 mm for DN 1350 chamber

**Precast Concrete Inspection Chambers and Gullies to BS 5911-1: 2002**

Nominal sizes:	375 diameter, 750, 900 mm deep 450 diameter, 750, 900, 1050, 1200 mm deep
Depths:	from the top for trapped or un-trapped units: centre of outlet 300 mm invert (bottom) of the outlet pipe 400 mm
Depth of water seal for trapped gullies:	85 mm, rodding eye int. diam. 100 mm
Cover slab:	65 mm min.

**Ductile Iron Pipes to BS EN 598 : 1995**

Type K9 with flexible joints should be used for surface water drainage. 5500 mm or 8000 mm long		
80 mm bore	400 mm bore	1000 mm bore
100	450	1100
150	500	1200
200	600	1400
250	700	1600
300	800	
350	900	

**Bedding Flexible Pipes: Pvc-u or Ductile Iron**

Type 1	100mm fill below pipe, 300mm above pipe: single size material
Type 2	100mm fill below pipe, 300mm above pipe: single size or graded material
Type 3	100mm fill below pipe, 75mm above pipe with concrete protective slab over
Type 4	100mm fill below pipe, fill laid level with top of pipe
Type 5	200mm fill below pipe, fill laid level with top of pipe
Concrete	25mm sand blinding to bottom of trench, pipe supported on chocks, 100mm concrete under the pipe, 150mm concrete over the pipe.

**Bedding Rigid Pipes: Clay Or Concrete**

(for vitrified clay pipes the manufacturer should be consulted)	
Class D:	Pipe laid on natural ground with cut-outs for joints, soil screened to remove stones over 40mm and returned over pipe to 150mm min depth. Suitable for firm ground with trenches trimmed by hand.
Class N:	Pipe laid on 50mm granular material of graded aggregate to BS EN 12620, or 10 mm aggregate to BS EN 12620, or as dug light soil (not clay) screened to remove stones over 10mm. Suitable for machine dug trenches.
Class B:	As Class N, but with granular bedding extending half way up the pipe diameter.
Class F:	Pipe laid on 100mm granular fill to BS EN 12620 below pipe, minimum 150mm granular fill above pipe: single size material. Suitable for machine dug trenches.
Class A:	Concrete 100mm thick under the pipe extending half way up the pipe, backfilled with the appropriate class of fill. Used where there is only a very shallow fall to the drain. Class A bedding allows the pipes to be laid to an exact gradient.
Concrete surround	25 mm sand blinding to bottom of trench, pipe surround on chocks, 100 mm concrete under pipe, 150 mm concrete over pipe. It is preferable to bed pipes under slabs or wall in granular material.



**PIPED SUPPLY SYSTEMS**

<b>Identification of service tubes from utility to dwellings</b>			
<b>Utility</b>	<b>Colour</b>	<b>Size</b>	<b>Depth</b>
British Telecom	grey	54 mm outside diameter	450 mm
Electricity	black	38 mm outside diameter	450 mm
Gas	yellow	42 mm outside diameter rigid 60 mm outside diameter convoluted	450 mm
Water	may be blue	(normally untubed)	750 mm

**ELECTRICAL SUPPLY/POWER/LIGHTING SYSTEMS****Electrical Insulation Class EN 60.598 BS 4533**

Class 1:	luminaires comply with class 1 (I) earthed electrical requirements
Class 2:	luminaires comply with class 2 (II) double insulated electrical requirements
Class 3:	luminaires comply with class 3 (III) electrical requirements

**Protection to Light Fittings**

BS EN 60529:1992 Classification for degrees of protection provided by enclosures.  
(IP Code - International or Ingress Protection)

1st characteristic:                      against ingress of solid foreign objects.

The figure	2	indicates that fingers cannot enter
	3	that a 2.5 mm diameter probe cannot enter
	4	that a 1.0 mm diameter probe cannot enter
	5	the fitting is dust proof (no dust around live parts)
	6	the fitting is dust tight (no dust entry)

2nd characteristic:                      ingress of water with harmful effects:

The figure	0	indicates unprotected
	1	vertically dripping water cannot enter
	2	water dripping 15° (tilt) cannot enter
	3	spraying water cannot enter
	4	splashing water cannot enter
	5	jetting water cannot enter
	6	powerful jetting water cannot enter
	7	proof against temporary immersion
	8	proof against continuous immersion

Optional additional codes:            A-D protects against access to hazardous parts;

H	High voltage apparatus
M	fitting was in motion during water test
S	fitting was static during water test
W	protects against weather

Marking code arrangement:            (example) IPX5S = IP (International or Ingress Protection);  
X (denotes omission of first characteristic);  
5 = jetting;  
S = static during water test.

**RAIL TRACKS**

	<b>kg/m of track</b>	<b>lb/ft of track</b>
<b>Standard gauge</b>		
Bull-head rails, chairs, transverse timber (softwood) sleepers etc.	245	165
<b>Main lines</b>		
Flat-bottom rails, transverse prestressed concrete sleepers, etc.	418	280
Add for electric third rail	51	35
Add for crushed stone ballast	2600	1750
	<b>kg/m<sup>2</sup></b>	<b>lb/sq ft</b>
Overall average weight – rails connections, sleepers, ballast, etc.	733	150
	<b>kg/m of track</b>	<b>lb/ft of track</b>
Bridge rails, longitudinal timber sleepers, etc.	112	75

**Heavy Rails**

British Standard Section No.	Rail height mm	Foot width mm	Head width mm	Min web thickness mm	Section weight kg/m
<b>Flat Bottom Rails</b>					
60A	114.30	109.54	57.15	11.11	30.62
70A	123.82	111.12	60.32	12.30	34.81
75A	128.59	114.30	61.91	12.70	37.45
80A	133.35	117.47	63.50	13.10	39.76
90A	142.88	127.00	66.67	13.89	45.10
95A	147.64	130.17	69.85	14.68	47.31
100A	152.40	133.35	69.85	15.08	50.18
110A	158.75	139.70	69.85	15.87	54.52
113A	158.75	139.70	69.85	20.00	56.22
50 'O'	100.01	100.01	52.39	10.32	24.82
80 'O'	127.00	127.00	63.50	13.89	39.74
60R	114.30	109.54	57.15	11.11	29.85
75R	128.59	122.24	61.91	13.10	37.09
80R	133.35	127.00	63.50	13.49	39.72
90R	142.88	136.53	66.67	13.89	44.58
95R	147.64	141.29	68.26	14.29	47.21
100R	152.40	146.05	69.85	14.29	49.60
95N	147.64	139.70	69.85	13.89	47.27
<b>Bull Head Rails</b>					
95R BH	145.26	69.85	69.85	19.05	47.07

**Light Rails**

British Standard Section No.	Rail height mm	Foot width mm	Head width mm	Min web thickness mm	Section weight kg/m
<b>Flat Bottom Rails</b>					
20M	65.09	55.56	30.96	6.75	9.88
30M	75.41	69.85	38.10	9.13	14.79
35M	80.96	76.20	42.86	9.13	17.39
35R	85.73	82.55	44.45	8.33	17.40
40	88.11	80.57	45.64	12.3	19.89
<b>Bridge Rails</b>					
13	48.00	92	36.00	18.0	13.31
16	54.00	108	44.50	16.0	16.06
20	55.50	127	50.00	20.5	19.86
28	67.00	152	50.00	31.0	28.62
35	76.00	160	58.00	34.5	35.38
50	76.00	165	58.50	-	50.18

British Standard Section No.	Rail height mm	Foot width mm	Head width mm	Min web thickness mm	Section weight kg/m
<b>Crane Rails</b>					
A65	75.00	175.00	65.00	38.0	43.10
A75	85.00	200.00	75.00	45.0	56.20
A100	95.00	200.00	100.00	60.0	74.30
A120	105.00	220.00	120.00	72.0	100.00
175CR	152.40	152.40	107.95	38.1	86.92

**Fish Plates**

British Standard Section No.	Overall plate length		Hole diameter mm	Finished weight per pair	
	4 Hole mm	6 Hole mm		4 Hole kg/pair	6 Hole kg/pair
<b>For British Standard Heavy Rails: Flat Bottom Rails</b>					
60A	406.40	609.60	20.64	9.87	14.76
70A	406.40	609.60	22.22	11.15	16.65
75A	406.40	-	23.81	11.82	17.73
80A	406.40	609.60	23.81	13.15	19.72
90A	457.20	685.80	25.40	17.49	26.23
100A	508.00	-	pear	25.02	-
110A (shallow)	507.00	-	27.00	30.11	54.64
113A (heavy)	507.00	-	27.00	30.11	54.64
50 'O' (shallow)	406.40	-	-	6.68	10.14
80 'O' (shallow)	495.30	-	23.81	14.72	22.69
60R (shallow)	406.40	609.60	20.64	8.76	13.13
60R (angled)	406.40	609.60	20.64	11.27	16.90
75R (shallow)	406.40	-	23.81	10.94	16.42
75R (angled)	406.40	-	23.81	13.67	-
80R (shallow)	406.40	609.60	23.81	11.93	17.89
80R (angled)	406.40	609.60	23.81	14.90	22.33
<b>For British Standard Heavy Rails: Bull head rails</b>					
95R BH (shallow)	-	457.20	27.00	14.59	14.61
<b>For British Standard Light Rails: Flat Bottom Rails</b>					
30M	355.6	-	-	-	2.72
35M	355.6	-	-	-	2.83
40	355.6	-	-	3.76	-



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