

PREAMBLE TO PRICING AND METHOD OF MEASUREMENTS

BILL OF QUANTITIES

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PREAMBLE TO PRICING AND METHOD OF MEASUREMENTS

Generally

The Bill of Quantities herein, including all notes and instructions, forms an integral part of the Bid/Contract Documents. However, the descriptions contained in the Bill of Quantities for each item are not necessarily complete. The Contractor is referred to the Conditions of the Contract and other Documents, Specifications and Drawings as well as relevant Standards and Codes of Practice for further information as no claim or variation will be considered on account of the Contractor's failure to do so.

The Contractor is cautioned to familiarize himself with the full content of other Contract Documents including the Instructions to Bidders, Bid Form, General Conditions, Particular Conditions, Bid / Contract Drawings and Specifications or any other information that can be easily inferred from any of them and all obligations contained in the documents shall be included in the item rates and / or contract price.

Drawings, Specifications and Bill of Quantities and all other documents are complementary and if description of any item is included in any of them, it shall be deemed included in all.

The Contractor's bid for the entire work shall provide for supervision of any or all trades that are intended to be performed with his own forces, his domestic sub-contractors and nominated sub-contractors. No extra compensation for services as a General Contractor will be paid.

The Contractor shall not use these Bills of Quantities as the basis for a construction program or for the purposes of ordering materials or arranging sub-contracts. The references for these activities shall be the drawings, specifications and instructions issued by the Engineer.

This is a Measurable type of Contract. The quantities contained within these Bills of Quantities may not accurately reflect the quantities of works as indicated in the drawings, Specification and Package Scope. The contractor is to satisfy himself for the accuracy of all quantities. No claim will be entertained for differences in quantities between the Tender Drawings, Specification and Bills of Quantities.

Items in the Preamble Section of these Bills of Quantities are deemed to qualify and to form part of description of measured work to which they refer including composite description.

All measurements are net and the rates shall include for all laps, waste, working space, etc. and trade or traditional allowances.

Amendments shall not be made to these Bills of Quantities without the authority, in writing of the Engineer.

A price or rate is to be entered against each item in the Bills of Quantities. The cost of any item left un-priced will be deemed to be included for elsewhere in the Bills of Quantities, and the rate for the un-priced item will be taken as nil. Any item of the Day Works if not entered by the Bidder shall have to be carried out at the Rate as decided by the Engineer.

For the general guidance of the bidders the relevant CSI Section numbers have been mentioned in the beginning of each Bill/Division/Section. This does not absolve the Bidder's responsibility to confirm and price according to the appropriate BSI/ASTM/CSI code applicable to any item mentioned in the Bill of Quantities and drawings etc.

Method of Measurement

The quantities in the Bill of Quantities have been prepared generally in accordance with the **Principles of Measurement (International) for works of construction dated June 1979 / Standard Method of Measurement of Building Works (SMM 7) seventh edition year 1988, published by the Royal Institution of Chartered Surveyors, 12 Great George Street, Parliament Square, London SW1P 3AD, U.K. amended to suit the local practice and conditions.** The description of each item (which description shall imply references to any heading, sub-heading, preamble or other clause of item which shall apply) shall be held to include all claims, materials, workmanship, including all taxes, duties, charges, all Government levies, landing charges, transport, profit and overheads and all other incidental costs to complete the Works.

These preambles are to be read in conjunction with the item description in the Bill of Quantities.

"As described" means as directed in the Specifications and / or Drawings.

Unless otherwise described or measured separately, prices for all items shall include for all necessary straight, raking or circular cutting.

The Conditions of Contract applicable to this Contract is as specified in Volume 1 – Tender & Contract Conditions of the Tender and Contract Document.

Pricing

The prices shall be comprehensive and must include for complying in all respects with the instructions to Bidder, Conditions of Contract, Specifications, and Drawings and for all matters and things necessary for the proper construction and completion of the whole of the Works. No claim for additional payment will be allowed for any error or misunderstanding by the Contractor of the work involved.

The rates and sums inserted in the Bills of Quantities are deemed to include for the following:

- (i) Labor and all costs in connection therewith.
- (ii) Materials, goods and all costs in connection therewith (e.g. carriage, freight, delivery, unloading, storing, returning packing handling, Letters of Credit, Bank Guarantees, Bank charges and the like, Customs duties, port dues, import duties, taxes, charges, Insurances and other dues levied by any authority or imposed by the Government, hoisting or lowering, replacing work, goods or materials damaged, broken, lost or stolen until the issue of a Certificate of Completion.
- (iii) Fittings and fixing materials or goods in position.
- (iv) Plant.
- (v) Waste, bulking, shrinkage and overlaps.
- (vi) Land required for tips and stockpiles including all costs for obtaining any necessary licenses and approvals.
- (vii) Allowance for phasing requirements of works, effect on programming of the works of all traffic diversions and construction activity associated with diversion or installation of services.
- (viii) For taking measures for the support and full protection of pipes, cables and other apparatus required during the progress of the Works as required by Service Authority or the Engineer.
- (ix) For working alongside and liaising with other Contractors working on the same site.
- (x) Preparation and submission of shop drawings.
- (xi) Overhead charges and profit.
- (xii) Guarantees and warranties where necessary.
- (xiii) Temporary works, if any.

Lump sums shall not be given where unit rates are applicable.

Where the word "allow" is used, the cost of the item shall be the responsibility of the Contractor.

The amounts set against any items of overhead shall include for all costs in connection with letters of credit, bank charges, interest charges and insurance after the materials come under the control of the Contractor.

The rates inserted will be used to determine the amount of the Contractor's Interim Payments.

The Bidder shall submit the full and detailed rate breakdown of all the BOQ items including spare parts items in the format as per enclosed Annexure-1, together with their Bid submission. The breakdown is to show the actual calculations of the General Items, Labor, Plant and Materials costs for the Works, the build-up of measured rates with on-costs and site and Head Office overheads and any other allowances used to arrive at the Bid Price. In addition the Bidder will be required to provide the Engineer within 48 hours with a full and detailed breakdown/any other information if requested. The purpose of this Breakdown/Rate Analysis is to make sure that (i) the rates used in the analysis of the items of permanent works and those quoted in the Day Works are reciprocal to each other, (ii) the bid is not front loaded, and (iii) the markup of Overheads & profit is uniform throughout the bid.

Where "fix only" items are specified, the rate shall be deemed to include for taking delivery, storing and installation of goods or materials in works where appropriate.

The rates inserted in the Schedule of Day work shall be deemed to be the rates used by the Contractor in making up rates for works items in all Parts of the Bills of Quantities.

Adjustment Item

The adjustment item, if any, addition or deduction, shall apply to all Bill items, excluding provisional sum unless clearly indicated otherwise. The adjustment item shall not be a lump sum, but a percentage of the total Bid amount excluding provisional sum or a percentage of the total for the items indicated. The adjustment items shall be applied to all applicable item rates and sums entered in the Bills of Quantities (including any addenda). The adjusted rates and sums shall be applied for the valuation of Variations.

General Requirements

Standards

Where no reference is made to a code, standard or Specifications in Section "B" Specifications of the SUB-CONTRACT Documents, the Standard Specifications of the American Society of Testing Materials, (ASTM), British Standard Codes of Practice (BSCP) or any other relevant standard as approved by the EMPLOYER shall govern.

Drawings

The WORK shall agree in all particulars with the Drawings or any approved modifications of them or such other drawings as may be issued during the SUB-CONTRACT.

The EMPLOYER will supply two copies of each of the drawings to the CONTRACTOR free of charge.

The CONTRACTOR will make any further copies required by him at his own expense.

The CONTRACTOR will keep one set of all drawings duly mounted with muslin cloth and hanged on the wooden drawings stand when not in use.

CONTRACTOR'S (Drawings & Documents)

The CONTRACTOR shall submit three prints/copies of all drawings, documents and schedules to be prepared by him. These will be of a standard size and format acceptable to the EMPLOYER. All such submission by the CONTRACTOR shall be accompanied by a letter of submittal.

Record Drawings

The CONTRACTOR shall prepare during the progress of the SUB-CONTRACT, drawings showing the WORK "as built" including the positions of all services, plant and equipment. The drawings shall be prepared to a form & detail to the satisfaction of the EMPLOYER and prints shall be submitted to the EMPLOYER'S REPRESENTATIVE for his approval as the WORK proceeds. At the completion of the SUB-CONTRACT the CONTRACTOR shall supply to the EMPLOYER reproducible of each drawing.

Supply of Water and Electricity

The CONTRACTOR shall make his own arrangements for the provision of water & electricity whether for use in the execution and construction of the WORK or otherwise. In the event of the source of water being from any existing piped supply the CONTRACTOR shall comply with any regulations laid down by the Water Authority and shall pay for such supply, stand-pipe connections, meter rents and all other charges as required all at his own expense. Similarly he will be responsible for all costs in providing electricity. Where electricity is not available for 24 hours, diesel/petrol driven electricity generators in good and reliable condition and of sufficient capacity to meet the requirements of construction equipment and lighting and other facilities at Site will be used by the CONTRACTOR.

Disposal of Wastes

The CONTRACTOR shall make adequate arrangements to the satisfaction of the EMPLOYER'S REPRESENTATIVE for disposal of all sewage, rubbish and all other waste material arising from or connected with the execution of the WORK.

Other Services

The CONTRACTOR shall make his own arrangements for and shall provide any service (including telephone) which may require in addition to the foregoing.

Bench Marks and Control Points

All levels, lines, grades and measurements shown on the Drawings shall be measured from a Bench Mark and points to be established by the EMPLOYER within the Points Site of the WORK. The CONTRACTOR shall be responsible for ensuring the levels of all parts of the work are accurately related to this Bench Mark which shall be notified to the CONTRACTOR by the EMPLOYER immediately after commencement of the WORK.

Survey

The CONTRACTOR shall furnish and maintain at his own expense survey instruments stakes and other such materials and give such assistance, including qualified staff as may be required by the EMPLOYER who will establish Bench Marks base lines, grades and other principal control points. The CONTRACTOR shall, however, call the EMPLOYER'S attention to any inaccuracies and discrepancies of such controlling points etc., before proceeding with the work. The CONTRACTOR shall at his own expense, establish working or construction lines and grades as required, which shall be frequently checked by the EMPLOYER'S REPRESENTATIVE but the CONTRACTOR shall be solely responsible for the accuracy thereof.

Safeguarding Bench Marks & Control Points

The CONTRACTOR shall safeguard all points, stakes, grade marks and bench marks made or established on the work. If disturbed he shall bear the cost of re-establishing them and also the entire Points expense of rectifying the work rendered defective due to such disturbance.

Progress Photograph

The CONTRACTOR shall, throughout the construction of the WORK use digital camera for photography and provide the progress photographs in color to the EMPLOYER. He will also submit three prints each of size 5"x7" along with the recorded data at two week intervals. All such photographs will be taken under the direction of the EMPLOYER.

Materials and Workmanship

As soon as possible after the SUB-CONTRACT has been awarded, the CONTRACTOR shall submit to EMPLOYER list of suppliers from whom he proposes to purchase the materials necessary for the execution of the WORK. The information regarding the names of suppliers may be submitted at different times, as may be convenient, but no approved source of supply shall be changed without the prior permission of the EMPLOYER'S REPRESENTATIVE.

Preference shall be given to the use of materials and fittings manufactured in Pakistan which comply with the SUB-CONTRACT and are competitive in price. Foreign materials shall only be used with the consent of the EMPLOYER.

All materials incorporated in the WORK shall be new and of the best quality and description of their respective kinds and shall comply with all relevant specifications. Similarly the workmanship in every case shall be of the best character, and the whole shall be subject to the approval of the EMPLOYER.

Materials whose quality and construction are not covered by the Technical Specifications shall be of equal or better quality than the relevant sample accepted by the EMPLOYER'S REPRESENTATIVE.

Samples

In addition to any special provisions herein for the sampling and testing of materials, the CONTRACTOR shall submit to the EMPLOYER as he may require samples of all materials and goods which he proposes to use or employ in or for the WORK. Such samples, if approved, will be retained by the EMPLOYER'S REPRESENTATIVE, and no materials or goods of which samples have been submitted shall be used on the WORK unless and until such samples have been approved in writing by the EMPLOYER.

The EMPLOYER'S REPRESENTATIVE may reject any materials and goods which in his opinion are inferior to the samples thereof previously approved and the CONTRACTOR shall promptly remove such materials and goods from the Site.

The cost of supplying all such samples and of conveying same to such place of inspection or testing as the EMPLOYER may designate within the country of origin shall be deemed to be included in the tendered rates and prices.

Samples will be retained by the EMPLOYER and when directed by the EMPLOYER'S REPRESENTATIVE the CONTRACTOR shall dispose of the samples. Except for those which may be incorporated into the WORK after approval, such as plumbing and electric fixtures.

Tests Generally, Access to Premises

The EMPLOYER may examine and may require to be tested any materials or goods required in or for the WORK such as he may decide from time to time and shall have unrestricted access to the CONTRACTOR'S, CONTRACTOR'S and supplier's premises for such purpose at all times and the CONTRACTOR shall specify this requirement when placing all orders.

The EMPLOYER will notify the CONTRACTOR whether materials and goods will be inspected at the manufacturer's or supplier's premises or at the Site. No materials or goods shall be dispatched from such premises until such notification is given and, if appropriate, inspection is complete and a release certificate is given to this effect. In both cases the CONTRACTOR is to notify the EMPLOYER when materials and good will be ready for inspection and shall do so adequately in advance for him to make the necessary arrangement for inspection.

The CONTRACTOR shall afford the EMPLOYER all facilities, assistance, labor and appliances necessary for the convenient examination, testing weighing or analysis of all such materials or goods. The CONTRACTOR shall provide and prepare such test pieces of any such materials or goods as the EMPLOYER may require.

Notwithstanding any tests which may have been carried out off the Site the EMPLOYER shall be empowered to order further tests of any materials or goods to be made on the Site and to reject such materials or goods should they fail to pass such test on the Site.

The full cost of providing all facilities, labor, consumable stores and appliances required in connection with all testing on the Site shall be deemed to be included in the tendered rates and prices.

Test Certificates

Should the EMPLOYER not inspect any materials or goods at the place of manufacture, the CONTRACTOR shall, if required, obtain certificates of test from the suppliers of such materials or goods and shall send such certificates to the EMPLOYER. Such certificates shall certify that the materials or goods concerned have been tested in accordance with the requirements of the Technical Specifications and shall show the results of all the tests carried out. The CONTRACTOR shall provide adequate means of identifying the materials & goods delivered to the Site with the corresponding certificates.

Testing at an independent Laboratory

Where tests are specified or directed by the EMPLOYER to be carried out in an independent testing laboratory, the CONTRACTOR shall supply and deliver the samples and shall arrange for the relevant tests to be carried out. The independent testing laboratory shall be nominated by the CONTRACTOR and acceptable to the EMPLOYER. Unless otherwise specified the CONTRACTOR shall arrange for one copy each of the independent testing laboratory's test certificates to be delivered to the EMPLOYER and to the EMPLOYER not less than 3 working days before the materials covered by the relevant test certificates are to be incorporated in the WORK. Each test certificate shall be relatable to the materials from which the sample was taken.

Site Testing

The CONTRACTOR shall carry out such laboratory and field test (including tests to check the accuracy of testing equipment and methods but excluding tests specified to be carried out in an independent testing laboratory) as specified or as can reasonably be inferred from herein, as may be necessary to ensure and satisfy the EMPLOYER that the requirements of the Technical Specifications are met. The type and frequency of testing shall be in accordance with the relevant standards except as otherwise specified herein or directed by the EMPLOYER.

The CONTRACTOR'S attention is drawn to the fact that the frequencies of testing specified in the relevant clauses are intended to represent only a general guide. The EMPLOYER shall be empowered to vary the frequencies at which tests are conducted should he deem this necessary for the proper control of the quality of the WORK. Should the EMPLOYER'S REPRESENTATIVE vary the frequencies stated in the relevant clauses of the Technical Specifications, the CONTRACTOR shall not be entitled to extra payments thereof.

Unless otherwise agreed or directed by the EMPLOYER methods of sampling and test procedures shall be in accordance with the relevant Standard Methods of ASTM, British Standard Codes of Practice or any other relevant standard approved by the EMPLOYERS. Sample will be selected by the EMPLOYER'S REPRESENTATIVE.

The CONTRACTOR shall keep clear, accurate and up-to-date records of tests and immediately any test is completed shall supply two copies and summaries of the results thereof to the EMPLOYER'S REPRESENTATIVE in such form as he may require. Testing equipment operations and records shall be available for inspection by the EMPLOYER'S REPRESENTATIVE at all times.

Removal of Condemned Materials

The EMPLOYER'S REPRESENTATIVE may require the CONTRACTOR to remove and dispose of any materials employed of the EMPLOYER'S REPRESENTATIVE, are unsuitable or have been incorrectly deposited or have suffered damage by exposure to the weather or otherwise are not in accordance with the specified requirements for such materials. The CONTRACTOR shall be entitled to no payment whatsoever in respect of such materials.

Contractor and Engineer's Site Offices

- i- Contractor shall provide and maintain a temporary, weather tight site office for his own use and that for Engineer's use complete with facilities for filing, drawings, specifications correspondence, and other appurtenances necessary for the proper execution of the Work. The Contractor shall make provision for transportation and off-site living accommodation for his personnel and provide necessary power, water, sanitary facilities, necessary for his personnel, equipment cartage and materials operations. Facilities shall be as approved by the Engineer.
- ii- contractor at his own cost shall provide, erect and maintain an office facility at Site for the sole use of the Engineer's/Consultant's Staff. Facility shall be serviced with power, potable filtered water, lighting, air conditioning, telephone connection, sewerage and waste disposal facilities, during the entire construction phase and up to six months from the date of Substantial Completion, of the type as follows:

Office facility shall be temporary type weather-tight construction having a total floor area of not less than 500 sq. ft. And shall be air-conditioned and have attached meeting room as well as a washroom containing W.C., urinal and washbasin. A mobile shipping container designed for the above purpose in accordance to the requirements of the Engineer, shall be acceptable.

Furniture, Equipment etc. for Site Office: All necessary office furniture, including filing facilities for two junior and one senior staff of Engineer/ Consultant should also be provided.

Computer & Printer: The contractor shall provide a latest PENTIUM IV computer with laser color printer with all peripherals as required by the Engineer, printer to be capable of printing A-3 size sheets, fax machine, photo copier capable of copying up to A-3 size sheets (powder copies)

Furniture

One Table Approx. 5' x 3' , two tables of approx. size 4' x 2' 6"

One good quality revolving Chair, and six Nos. Good quality non-revolving chairs.

Drawings Stand for holding 30 drawings.

An Internet/E-mail account

As per the requirement of the Engineer for exclusive use of Engineer/consultant and their staff

Telephone & Fax

A separate telephone line for fax machine shall be provided by the Contractor. The maintenance and the stationary of the entire aforesaid facilities shall solely be the responsibility of the contractor

Transportation facility

The contractor shall provide a minimum 1000 cc brand new vehicle, along with driver and POL, (to be transferred to the employer after successful completion of the project) in connection with performance of official duties exclusively for the Resident Engineer.

The contractor shall also provide adequate transportation facility in connection to performance of official duties, exclusively for the site staff of the Engineer/Consultant during the construction as well as the extended period (if any) as and when required by the Engineer/ Consultant.

For both the above items the Contractor shall furnish, supply and provide, as may be necessary without specific direction of the Engineer, all fuels, lubricants, tires and other supplies, all maintenance, repairs and running costs and suitably qualified drivers at all times.

Security

Contractor shall be responsible for the security of the site offices and its contents at all times

First Aid Box

First Aid Box suitably equipped for a site force of about 20 people.

The foregoing furniture, equipment and miscellaneous items shall be provided and installed by the CONTRACTOR within 15 days of the Letter of Intent from the EMPLOYER.

Sanitary Accommodation for Site

The CONTRACTOR shall also maintain and service a suitable sanitary accommodation facility and provide consumable stores including soap, etc.

Surveying Equipment

The CONTRACTOR shall provide & maintain in an accurate and serviceable condition the following new surveying equipment at Site at all times during the execution of the WORK:

- 1No. Theodolite to read to 20 seconds complete with tripod and accessories.
- 1No. Reversible level complete with tripod and accessories.
- 1No. 14 ft. telescopic leveling staff graduated in feet.
- 1No. 100 ft. steel tapes.
- 1No. 50 ft. steel tapes.
- 1No. 12 Ft. flexible steel tapes.
- 1No. Steel tape repair kit.
- 1No. Plumb bobs.

The foregoing equipment shall be inspected at the Site of WORK by the EMPLOYER'S REPRESENTATIVE within 15 days of the receipt by the CONTRACTOR of the Letter of Intent from the EMPLOYER.

In addition to the specified list of equipment, the CONTRACTOR shall also provide and renew from time to time such miscellaneous materials and equipment as might reasonably be required at the Site.

Traffic Routes to be Maintained

The CONTRACTOR shall not cause unnecessary obstruction of roads, footpaths or waterway at any time during the course of the WORK and in no circumstances shall closure, in whole or in part, of these or any other "right of way" be permitted except with the prior permission of the EMPLOYER'S REPRESENTATIVE in writing. All disturbances to be negotiated with the affected community in advance.

The CONTRACTOR shall maintain adequate, through safe traffic routes for vehicles and pedestrians on public highways within and adjacent to the Site of the WORK, including such diversions of highways as may be required, and make arrangement for watching, signaling, and control of traffic by day and night and for adequate lighting all to the satisfaction of the EMPLOYER'S REPRESENTATIVE.

All temporary diversions shall be constructed to adequate widths and maintained in good condition at all time by the CONTRACTOR to the satisfaction of the EMPLOYER'S REPRESENTATIVE and on completion of the CONTRACT all such road shall be left in a condition approved by the EMPLOYER. The temporary diversions shall be removed and reinstated to the satisfaction of the EMPLOYER/EMPLOYER when no longer required.

The CONTRACTOR shall make arrangements and co-operate with all other CONTRACTORS working in the area for directing, routing, marshalling, controlling and circulating the traffic connected with the WORK in accordance with the EMPLOYER'S REPRESENTATIVE requirement in order that the flow of all traffic may be facilitated, that all obstruction, inconvenience & delay may be minimized and that the interest of all concerned including the general public may be promoted.

The CONTRACTOR shall, before commencing work affect any public highway or right of way, submit to the EMPLOYER'S REPRESENTATIVE his proposals for the control of traffic, access for residents & diversions in respect of the area in which he proposes to work. The EMPLOYER'S REPRESENTATIVE will instruct the CONTRACTOR to make such amendments as are considered necessary.

The CONTRACTOR shall pay all cost and expenses attendant upon the employment of any Police, which the Local Magistrate/Government may appoint for the preservation of peace, or the prevention of trespass and theft, or for any other purpose on or near the site of the WORK.

Protection of Livestock

The CONTRACTOR shall be responsible for protection of livestock against damage or accidents because of the WORK, during day and night. All gaps made in fences and hedges etc. to be closed when WORK are not in progress and all trenches and excavations to be suitably protected.

Haulage Routes

The CONTRACTOR shall submit to the EMPLOYER'S REPRESENTATIVE as soon as possible after the acceptance of the Tender and from time to time thereafter as required, proposals for the routing of traffic in connection with the execution of WORK being the traffic of the CONTRACTOR, his suppliers in the movement or haulage of heavy loads, construction plant, materials and spoil (hereinafter referred to as "the construction traffic") including particulars of the public roads of the public roads which he, the CONTRACTOR, proposes to select as routes to be used by the construction traffic.

The EMPLOYER'S comment on all such proposal as may be submitted by the CONTRACTOR.

Support

The CONTRACTOR shall provide ample shoring to all poles, buildings, walls, roads, railings and structures etc., adjacent to the trenches and shall carry out the trench work in close-timbered lengths near such property at his own expense.

Protection Mains, Services & Apparatus

The information given on the Drawings relating to existing services is given for general guidance only and is not guaranteed and no responsibility & Apparatus whatsoever is accepted by the EMPLOYER for the accuracy thereof. The CONTRACTOR shall refer directly to the concerned authorities for more detailed information on any of the services within the working spaces of the site.

The CONTRACTOR shall not cause or permit interference with mains, services or apparatus whether indicated on the Drawings or not & shall be responsible for their protection. He shall give notice and provide reasonable facilities to the relevant authority and/or their servants to enable them to do alterations, repairs or maintenance WORK if so required.

If during the course of the WORK underground services are uncovered they shall be carefully protected and shall be immediately referred to the EMPLOYER'S REPRESENTATIVE.

Diversion of Mains, Services & Apparatus

The CONTRACTOR shall make arrangements with the appropriate owners/ authorities and pay all costs for any temporary diversions of mains, services and apparatus which may be required in carrying out the WORK.

Dealing with Water

The CONTRACTOR shall take all necessary measures to prevent water from the Site causing a nuisance on or in any neighboring land or property either by causing flooding or by depositing sediment on the surface of the ground or in drains or water-courses. Wherever necessary to prevent this, the CONTRACTOR shall construct temporary drainage channels, layers, sumps and traps in addition to those shown on the Drawings discharging into existing drains, ditches or water-courses. The CONTRACTOR shall remove all sediment which may accumulate on any land or in any drains, ditches or watercourses or in any other property as a result of his operations.

All WORK including those below subsoil standing water level shall be carried out in the dry unless specified otherwise. The CONTRACTOR'S arrangements for controlling the inflow of water into the parts of the excavation being worked and during the placing of concrete and other WORK therein and for the collection and disposal of water shall be to the EMPLOYER'S approval. All costs and charges in dealing with water in anyway whatsoever and effects thereof will be deemed to be included in the several rates in the Bills of Quantities.

Water flowing into excavations shall be carried by trenches, drainage layers or open jointed drains to sumps from which it shall be pumped. Such trenches, drains or sumps shall generally be clear of the WORK unless approved otherwise by the EMPLOYER'S REPRESENTATIVE.

The CONTRACTOR shall keep all surfaces upon or against which concrete is to be deposited free from running water and no concrete shall be placed until such surfaces are properly drained. Suitable precautions shall be taken to prevent running water from washing out cement or concrete while it is setting or from injuring the WORK in any other way. Notwithstanding the approval by the EMPLOYER'S REPRESENTATIVE of the CONTRACTOR'S methods of dealing with water, the CONTRACTOR shall be responsible for and accept all the risks and liabilities of dealing with water from whatever source and of all effects thereof.

WORK to be Water-tight

All WORK, intended to retain or exclude water or through which water is to be passed shall be absolute water-tight, so as not only entirely to prevent loss of water from the WORK, but also so as entirely to prevent the percolation of water into any part or parts of the WORK.

Name Boards / Temporary Signage

The CONTRACTOR shall erect only such name boards as the EMPLOYER may approve. These must be of simple and becoming appearance. They shall display the name of the project, the CONTRACTOR, and such other information as the EMPLOYER may direct or approve.

Materials at Site

Payment for unfixed materials delivered on site shall be included in the Monthly valuations shall and shall be certified as provided for by the Conditions of Contract.

The valuation so certified by the Engineer shall be the invoiced cost of the materials, if the Engineer considers this cost to be realistic, plus any customs duty or other taxes paid together with an allowance for port dues and delivery to and unloading at the Site. The valuation for unfixed materials on site shall be the net reimbursement to the Contractor of the cost of the materials delivered and unloaded at the Site and as such shall be exclusive of any profit or Contractor's overheads mark-up.

Notwithstanding the foregoing, such net reimbursement to the Contractor for unfixed materials on Site shall be less than the total price included by the Contractor in the Bill of Quantities for both supplying fixing and sufficient value shall be retained for payment to the Contractor in subsequent monthly payment for permanently fixing the materials in the Works.

The Contractor shall make due allowance in pricing the Bill of Quantities to take account of these clauses.

Formwork materials including all struts, timber or sheet boarding, all other timber work, waffle moulds, proprietary shuttering and the like shall not be considered as "unfixed materials on site" for the purposes of monthly valuations.

Shop Drawings, Working Drawings, Operations and Maintenance Instructions.

The Contractor is to allow in his rates for the production of all shop drawings, working drawings, operations and maintenance instructions called for in the Specifications.

These shall include but not to be limited to the following:

- (i) The surveyed location of all existing services.
- (ii) A Combined Services Drawing including all surveyed existing and proposed services showing manholes, draw pits, joint boxes, inspection chambers, lighting column bases traffic signal bars, concrete surrounds, pipe diameters, etc. to scale, plus any other possible obstructions.
- (iii) Combined Services Working drawings original and new.
- (iv) Separate sets of working drawings for each individual service showing proposed locations for submission to the service authorities.
- (v) Existing ground levels.
- (vi) Earthworks cross sections.
- (vii) Temporary traffic sign design and fixing details.
- (viii) Proposed traffic sign design and fixing details.
- (ix) Mechanical, electrical and other services drawings, diagrams and instructions as required in the contract and directed by the Engineer.
- (x) Temporary work drawing where requested by the Engineer.

The rates in the appropriate section shall include for design of the civil works as specified in the Contract and for providing working drawings, shop drawings, schedules, specifications, calculations, etc. and for obtaining the Engineer's approval.

Provisional Sums

The Provisional Sums given in the Bill of Quantities may be used in whole or in part, or not at all, on the instruction of the Engineer.

Percentage of adjustment for Provisional Sums as provided in the Conditions of Contract shall not be applicable to any work carried out by other Contractors or Service Authorities employed directly by the Employer. Payments to such Contractors or Service Authorities shall be made directly by the Employer.

The Contractor shall co-ordinate with the Service Authorities and provides all necessary facilities as may be required and as foreseeable by an experienced Contractor. The cost of such co-ordination and facilities is deemed to have been included in the respective item given in Bill No. 1 of the Bill of Quantities.

Bill Item for Conditions of Contract

Payment for this item will be pro-rata to the value of work completed and approved by the Engineer and shall cover all costs and expenses including overhead and profits incurred by the Contractor in carrying out the requirements of the Conditions of Contract, not otherwise, included in the Bills of Quantities. Breakdown of the same shall be submitted together with the Tender Documents.

Abbreviations

In the Specification and Bill of Quantities the following abbreviations have the meanings hereby assigned to them:

B.S.	Means the specification issued by the British Standards Institution (B.S.I.)
C.P.	Means the code of practice issued by the B.S.I.
AASHTO	means the specification issued by the American of State Highways & Transportation Officials.
ASTM	means the specification issued by the American Society for Testing & Materials.
AC	Asbestos Cement
B.S.	British Standards
Cont'd	Continued
DEPT, Dept.	Department
Dia	diameter
Drg.	Drawing
E.O.	Extra Over
F.C.	Fiber Cement
GRP	Glass Fiber Reinforced Plastics
HDPE	High Density Polyethylene
HP	Horse Power
ISO	International Standards Organization
Kg.	Kilograms
Kw/hr	Kilowatt per hour
L.R.B.	Local Regulatory Body
L.S.	Lump Sum
M	meter
mm	millimeter
m ³ , cu.m.	Cubic meter
m ² , sq.m.	Square meter
MDPE	Medium Density Polyethylene
Mic	Micron
Min., min	Minimum
MDD	Maximum Dry Density
MH	MANHOLE
No.	Number
Nos.	Numbers
O.P.C.	Ordinary Portland cement
PE	Polyethylene
P.Q.	Provisional Quantity
PVC	Polyvinyl Chloride
Qty.	Quantity
RHS	Rectangular Hollow Section
Spec	Specifications
S.R.C.	Sulphate Resisting Cement
t, tons	tonne
uPVC	Unplasticised Polyvinyl Chloride
W	Width
P.C. Rate	prime cost rate
> Greater than	
≥ Equal to or Greater than	
< Less than	
≤ Equal to or Less than	
= Equal to	

Rates for various items throughout the Bills of Quantities shall include, unless otherwise stated or measured, for cutting of every description and the consequent waste, for work in girths, widths or heights of less than 300mm and for all short lengths.

Rates for all work shall include for protection, provision of samples and testing.

The pricing of materials shall take account of the following:

- (i) Pricing Preambles and Specifications shall apply reciprocally between sections of the works unless otherwise described.
- (ii) Materials shall be of the quantity specified unless otherwise directed by the Engineer.
- (iii) All materials shall be transported, handled, stored and fixed in accordance with the printed instructions or recommendations of their manufacturer's or suppliers.
- (iv) Protection of completed work, all casings and temporary coverings and making good, cleaning and polishing and clearing away upon completion.

Variations

The rates inserted in the Bills of Quantities with application of adjustment item will be used to value any variations to the work, whether omission or addition. The Contractor shall not be entitled to payment for profit and overheads on the value of work omitted.

Any claim or additional General Requirement costs, General and Special attendance's, Builders work and the like on variation Works, shall be considered only upon receipt of full supporting contemporary substantiation being presented by the Contractor to the Engineer.

Fix only

The expressions "fix only" used in these Bills of Quantities means that the contractor shall provide the following facilities:

- (i) Fixing as defined in Clause GP 7.2 of POM(I).
- (ii) Supplying full size templates.
- (iii) Giving and marking dimensions and taking responsibility for their accuracy.
- (iv) Getting in, protecting, handling, distribution and placing in position.
- (v) Assembling as required.
- (vi) Casing up and protection, including clearing away protection on completion of the works.
- (vii) Full cost of replacement of any items which are damaged, broken, lost or stolen after the acceptance of the items from the supplier or client and until handing over the complete works.
- (viii) Other necessary and usual facilities and documentation.

Supply Only

The expression "supply only" used in these Bills of Quantities means that the Contractor is to provide for everything as defined in Clause GP4.1 of POM(I) in connection with such items except fixing in position. All such items are to be delivered to Site and stored in accordance with the Engineer's instructions.

Sub-Contractors

Any sub-contractors which the Contractor proposes to use for the works are subject to the approval of the Engineer and the Employer.

The Contractor should ascertain from sub-contractors and suppliers before the works put in hand particulars of positions in which chases, holes, mortices and the like will be required to be formed or left. No claim for the extra costs of cutting away work already built due to the Contractor's failure to ascertain these particulars will be admitted.

Any sub-contractor who has not been approved by the Engineer and the Employer shall not be used in connection with the carrying out of the Works.

The Contractor shall allow for any additional costs incurred due to sub-contractors working different hours from and extended hours to those worked by the Contractor.

Prime Cost Rates (PC Rates)

Where Prime Cost (PC) Rates are included, the Contractor is to include in his rate the full amount shown. Such rate is for the material cost only of the particular item so described, delivered to the site. The Contractor is, in addition to those relevant items listed at Clause A, Page 9, to allow in his rates for all auxiliary materials required for fixing such as mortar for bedding and jointing, adhesive and all similar items of a like nature. The Prime Cost will be expended at the discretion of the Engineer and the adjustment to the Contractor's rate will be the net difference between the Prime Cost (PC) Rate stated in the description and the actual price paid (benefit of any discount passing to Employer).

The word "attendance" means the following:

Attendance to be provided by the Main Contractor

The Main Contractor shall be responsible for providing, including but not limited to, the following attendances:

- i) Use of Main Contractors administrative arrangements.
- ii) Use of Constructional Plant.
- iii) Use of Contractor's Mess Room, Sanitary and Welfare Facilities.
- iv) Co-ordination and scheduling of all works related to each sub-contract.
- v) Use of Standing Scaffolding.
- vi) Use of Temporary Works including water and Electricity.
- vii) Supplying full size setting out templates.
- viii) Giving and marking dimensions and taking responsibility for their accuracy.
- ix) Space for Sub-Contractors Office and Stores.
- x) Providing working space.
- xi) Offloading Sub-Contractors materials and placing in Stores.
- xii) Clearing away rubbish.
- xiii) Other necessary and usual facilities, documentation, general intergrades attendances, labor and assistance.

Attendance to be provided by the Sub-Contractor shall include but not be limited to the following

- i) All special scaffolding required by him in the execution of his works.

- ii) Taking from stores, distributing, hoisting and placing in position, all items of plant, equipment and materials required by him in the execution of his works.
- iii) All labor, plant, etc. (other than included in Attendances to be provided by Main Contractor).
- iv) Site offices and stores required by him for the execution of his works.
- v) Obtaining security passes for access of work people to the Site.

Site Work

All quantities for excavations have been measured net with no allowance for increase in bulk or working space.

The method of measurement and any measurement will be entirely at the discretion of the Engineer but generally will be as follows:

- (i) Where there is no reduced level excavation, other excavations will be measured from natural ground level.
- (ii) In instance where there is excavation to reduce levels, other excavations will be measured from the reduced level.

Should the Contractor be able to use any excavated material arising from the works as general filling then it shall be measured as material backfilling in making up levels with a deduction of items for filling and for material removed from Site.

In addition to the provisions of POM (I) Sections B8 rates for excavation shall include for the following -

- (i) Excavation by whatever means are necessary including hand excavation in any kind of ground material including running silt and running sand.
- (ii) Excavation to the Commencing Level to be measured separately.
- (iii) Commencing excavation at any depth.
- (iv) Excavation below the normal water table level.
- (v) Over break and soft spots including filling with mass concrete to the levels required by the Engineer.
- (vi) Forming temporary spoil heaps where required and multiple handling including any charges in connection therewith.
- (vii) Working space.
- (viii) Excavation around existing services and mains.
- (ix) Trimming or grading ground to produce level surfaces or surfaces to falls or slopes.
- (x) Ramming and compacting sides and bottom of excavations.
- (xi) Supporting the sides of excavations.
- (xii) Keeping excavations free from water by whatever means necessary

The rates for items of imported fillings, graded level filling etc, shall include, but not limited, for the following:

- (i) Grading to slopes and falls.

- (ii) Special compacting to form vertical or battering faces.
- (iii) Forming sinking's.
- (iv) Forming earth bunds and grading to gabions as required.
- (v) Leveling, and compacting to formation levels below roads, buildings, paved areas, etc.
- (vi) Compacting in layers.
- (vii) Any loss in volume due to compaction and for any additional materials required due to penetration of the filling materials into the ground or any settlement or compacting of the original ground levels under the weight of materials or due to methods of compaction or construction traffic.
- (viii) Temporary spoil heaps and multiple handling as required.
- (ix) All labors including handpacking and temporary retaining boards where required.
- (x) Blinding with sand or similar approved fine material where required to receive concrete or the like.
- (xi) Costs of testing.

Disposal of excess excavated material

Rates for disposal of excess excavated material shall include for any necessary double handling and the provision of a tip, if necessary, including any charges in connection therewith.

Underground Drainage

The rates for trenches for services pipes, drainage pipes, ducts, cables, etc. shall include for disposal and for bedding and backfilling as specified for each service.

The rate for trenches shall include for backfilling to trenches with approved excavated material. If the excavated material is not suitable imported fill shall be used.

The rates for drains, inspection chambers, etc. are to allow for testing.

Rates for drain pipes generally are to include for all short lengths, back stops, wooden plugs and retaining and alignment pegs required in laying and for the extra involved over normal trench excavating in hand packing and tamping selected fine material around the lower half of the pipes to buttress them against the side of the trench. Rates are to be include for leaving all pipes clean and clear.

Pipes are measured nett as laid and are to include for all cuttings, etc. for laying in trenches of any depth, and building in to sides of inspection chambers.

Rates for drain fittings on all types of drain pipes are to include for extra joints of all types and cutting and waste on all pipes.

Rates for drain accessories shall include for concrete surrounds and any additional excavation and disposal.

The rates for all concrete work shall include for the following:

- (i) Concrete testing and testing cost.
- (ii) All considerations arising from the specification.
- (iii) Mixing, hoisting to any height or lowering to any depth and placing and compacting on the surfaces of any material or on formwork by whatever means necessary.
- (iv) Pouring in hot weather conditions in accordance with the Specification.

- (v) Compacting by vibrators if required.
- (vi) Forming any control and construction joints, locations as agreed by the Engineer.
- (vii) Shuttering to upper surfaces not exceeding 15 degrees from horizontal.
- (viii) Curing, hacking surfaces for key and protecting concrete surfaces from harmful weather conditions.
- (ix) All surface treatment to unset concrete.
- (x) Finishing to floor slabs as Specification.
- (xi) Expanded metal lathing and angle beads.
- (xii) Joint sealing between concrete and plaster.
- (xiii) All costs in connection with the construction of "kickers".
- (xiv) Forming and grouting grooves and mortises and making good to holes and mortises.
- (xv) Water bars and the like.

The rates for plain concrete foundations and concrete blinding shall include for the following:

- (i) Any extra volume of concrete used in lieu of formwork.
- (ii) Forming sloping surfaces where required.

The rates for concrete work laid in trenches as bed or surround to all pipes and ducts shall include for all necessary formwork.

The rates for reinforced concrete shall include for working concrete around reinforcement.

The rates for bar reinforcement shall include for the following:

- (i) Extra material in hooks, laps and the like not required by the Specification.
- (ii) Positioning and protecting starter bars.
- (iii) Straightening (if required) cutting to length and bending reinforcement to required shapes and complying with the Specification.
- (iv) Fixing rods of any diameter in any position including any necessary hoisting.
- (v) All considerations arising from the Specification.
- (vi) Epoxy coating as required and all necessary preparation.
- (vii) Supporting in position during concreting, provision of supports, chairs, block spacers and steel binding wire and approved / proprietary distance pieces.
- (viii) Welding bars to form mesh reinforcement.
- (ix) Additional cutting and bonding in connection with holes, mortises, pockets, grooves, chases and the like.
- (x) Providing bar bending schedules to be checked and approved by the Engineer.

The rates for fabric reinforcement shall include for the following:

- (i) Straight, raking, curved and circular cutting and waste.
- (ii) Bending to profiles.
- (iii) Laps of once full square / rectangular module or as noted.
- (iv) All considerations arising from the Specification.
- (v) Supporting in position during concreting: provision of supports, chairs, block spacers, steel binding wire and approved / proprietary distance pieces.

- (vi) Cutting, bending and notching around all obstructions.

Formwork

The rates for formwork or moulds shall include for the following:

- (i) Small quantities.
- (ii) All cutting and waste including raking curved or circular cutting and notching around pipes, ducting and fittings.
- (iii) Grooves of any sectional areas, all stops, chamfers and splayed angles.
- (iv) Setting up, strutting and supporting at any height above the structure subject to any limitations imposed by the Engineer.
- (v) All considerations arising from the specification.
- (vi) Carefully coating with mould oil ensuring that no shutter oil is applied to surfaces of reinforcement.
- (vii) Easing, striking, removing and cleaning and preparing for re-use and removal when no longer required.
- (viii) The provision of all props, stays, struts, wedges and bolts.
- (ix) Overlaps and passing's at angles and labors at intersections.
- (x) Shortening struts or shapes and re-strutting or reshoring where required.
- (xi) Rubbing down, filling and making good the surface of concrete after removal of shuttering.
- (xii) Cutting or notching shutters or moulds to in-situ or precast concrete around projecting reinforcement.

The rates for wrought formwork to produce a special finish shall include for the following:

- (i) Any necessary rubbing down or filling allowed by the Specification to produce the finish demanded by the specification.
- (ii) Cutting out and re-casting unsatisfactory work or work not fulfilling the requirements of the specification.
- (iii) Carrying out remedial or any other work required by the Engineer as an alternative to cutting out substandard work.
- (iv) All consideration arising from the specification.

Precast Concrete

The rates for precast concrete shall include for the following:

- (i) Reinforcement.
- (ii) The provision of moulds.
- (iii) Forming a fair face in accordance with the specification to all exposed surfaces.
- (iv) Square, rounded and mitred angles.
- (v) Hacking or forming keys to all other surfaces.
- (vi) Holes or notching for pipes.
- (vii) All considerations arising from the specification.
- (viii) Hoisting to any height including the provision of lifting hooks or other devices approved by the Engineer.

- (ix) Setting and bedding in position and jointing in mortar as specified.
- (x) All necessary temporary struts or supports.
- (xi) Sills and copings etc. shall include for plain ends and mitred angles where necessary.

Reinforcement to Masonry

- A. The contents of this section equally apply to reinforcement included within the Masonry section of the Bills of Quantities, unless otherwise stated.

Masonry

The rates for blockwork shall include for the following:

- (i) Block testing at a recognized laboratory, provision of certificates.
- (ii) All considerations arising from the specification.
- (iii) Building at any level or height of slabs or beams.
- (iv) Small quantities and any extra labor in forming kerbs.
- (v) Straight, raking, curved and circular rough or fair cutting.
- (vi) Forming bull nose edges to quoins and the like.
- (vii) All labor and materials necessary for closing wall cavities.
- (viii) Plumbing at angles.
- (ix) Cutting and bonding at angles, openings and intersections.
- (x) Building into and / or against adjacent work.
- (xi) Providing solid course blockwork at still level at all openings and bearings of all in-situ concrete and at the top of all free standing walls.
- (xii) Wedging and pinning up to soffits and all insulation required between tops of concrete block partitions and underside of structure.
- (xiii) Special or concrete filled blocks at angles, openings and intersections, and soffit junction and heads of walls.
- (xiv) Providing any means necessary to prevent concrete cast on hollow blockwork or over cavities from falling into voids or cavities (subject to the approval of the Engineer).
- (xv) All necessary keys for in-situ finishing.
- (xvi) Grouting up at back of walls built against other construction.
- (xvii) All necessary starter bars and cast in wall ties at junctions between blockwork and in-situ concrete and all strap supports and lateral supports in accordance with the Specification and shown on the drawings.
- (xviii) All reinforcement to blockwork in accordance with the Specification and shown on the drawings.
- (xix) All necessary expansion joints, control joints, sealant and termination bars as required by the Specification and shown on the drawings.
- (xx) Fire stopping and smoke seals.
- (xxi) Insulation.

The rates for block walls shall include, for the following additional labors:

- (i) Cutting or forming chases or grooves for slabs, partitions, staircases, etc.
- (ii) Cutting grooves for water bars, flashings and the like and making good and pointing in similar mortar.

- (iii) Bedding and pointing frames, etc., building in door and window frames and the like.
- (iv) Building in or cutting and pinning in and making good ends of lintels, brackets, timbers, steelwork, holder bats and the like.
- (v) Building in or cutting for and making good around pipes, ducting, fittings and the like.

Metal Work

The rates for all steelwork and metalwork shall include for the following:

- (i) Ends, angles, intersection, ramps on frames, bearers, stays and the like.
- (ii) Assembling and jointing together components.
- (iii) Stanchions and rafter restraints, gussets and end places.
- (iv) Allowance for rolling margin.
- (v) The weight of weld metal in welded constructions.
- (vi) Members of any length.
- (vii) Cutting to size and shape and joints in the running length.
- (viii) Notches, holes, slots, miter / angle ends, and for all drilling and splay cut ends.
- (ix) Grinding welds to a smooth finish, unless otherwise required.
- (x) Fixing with appropriate non-corroding countersunk screws including holes unless otherwise described.
- (xi) Riveted and bolted work shall include rivets, bolts and holes and countersunk holes.
- (xii) Approved protection to cut ends or holes in galvanized work or other applied finish.
- (xiii) All considerations arising from the specification.
- (xiv) Metal door frames shall include for assembling, fixing with clamps, filling with mortar, temporary supports and removal of base ties.
- (xv) Floor plates, duct covers and the like shall include narrow widths, laying in position, frames, and for all holes, slots and the like and making good.
- (xvi) All preparation, protection coatings and final decoration with the items to which they relate.
- (xvii) All fittings and fixing required, including grouting in position.
- (xviii) Forming cambers in structural steel beams as indicated on the drawings.
- (xix) Shop drawings.

"Welding" is deemed to be in accordance with the specification and for the material to which it is to be used. Base plates, ends, caps, cleats, brackets, stiffeners, bolts, etc., shall be included in the weights of the associated steelwork in which they occur.

Woodwork

Sizes of sawn timber are basic.

Sizes of milled (wrote) timbers are finished.

Woodwork shall be deemed to be fixed with non-corroding nails unless otherwise described.

Screwed woodwork shall be described and shall be deemed to be fixed with non-corroding screws.

These preambles apply equally to all items measured as composite units.

The rates for woodwork shall include for the following:

- (i) Working to size and shape.
- (ii) Raking, curved or splay cutting.
- (iii) Short lengths, mitres, stops, ends and angles.
- (iv) Rebates, chamfers, grooves, scribed edges, rounded edges and the like.
- (vi) Cross grain and stopped work.
- (vii) All joints in the running length including structural joints.
- (viii) Cutting and fitting to steelwork.
- (ix) All considerations arising from the specification.
- (x) Trimming around openings.
- (xi) Extra timber in joints, horns, etc.
- (xii) Notching, boring and sinking have, rounded curves and splayed edges.
- (xiii) Holes for pipes, tubes, bars, cables, conduits, ducting, trunking and the like.
- (xiv) Treating backs of woodwork in contact with structure.

The rates for framed woodwork shall include for the following:

- (i) Proper framed joints.
- (ii) Glueing joints.
- (iii) Doweling cramps and / or screwing joints.

The rates for milled woodwork shall include for the following:

- (i) Punching, fixings below exposed surfaces and filling flush.
- (ii) Any necessary sanding to remove "rippling" caused by milling machines.
- (iii) Wreaths, ramps and the like.

The rates for wood work described as "selected" shall include for the following:

- (i) Keeping clean and clear finishes.
- (ii) Punching nails and pins below exposed surfaces and filling with an approved colored filler to match the woodwork.
- (iii) Where described also as "screwed" the woodwork shall be fixed with screws recessed and pelleted to match the woodwork.

The rates for doors shall include for fitting and hanging any type.

The rates for frames and linings shall include for bedding in specified mortar where required.

The rates for plywood, blackboard and the like shall include for straight raking curved and circular cutting and all consequent wastage.

The rates for plastic laminate faced manufactured boards shall include for providing plastic laminate edgings and balancing laminates and removal of protective coatings.

The rates for ironmongery shall include for the following:

- (i) Mortises, sinking's and the like.
- (ii) All considerations arising from the specifications.

- (iii) Removing before and replacing after decoration.
- (iv) Fixing to wood or metal doors.
- (v) Testing and easing and adjusting.
- (vi) Oiling and leaving in perfect working order.
- (vii) Adhering strictly to mastering and sub-mastering schemes.
- (viii) Supplying and labeling at least two keys for each and every lock and handing over to the Engineer.
- (ix) Master key if required by the specification or drawings.

The rates for ironmongery described as "fixed to hardwood" shall include for fixing to plywood, blackboard and the like.

Thermal and Moisture Protection

The rates for work in this section shall include for the following:

- (i) Preparation and priming of surfaces to receive membranes.
- (ii) Laps, seams and narrow widths.
- (iii) Straight, raking, curved and circular cutting, notching, bending and all consequent wastage.
- (iv) All considerations arising from this specification.
- (v) Cement sand triangular fillet to returns behind the waterproofing membrane.
- (vi) Holes for pipes, standards and the like.
- (vii) Angles, returned ends and dressed ends on flashings.
- (viii) Dressing up and cover up stands and around and into gargoyles, vent pipes and the like.
- (ix) Tropical grade mastic pointing to all flashings.
- (x) Forming outlets, skirting, aprons, gutters and channels and forming small openings.
- (xi) Flashings and the like to penetrations through waterproofing systems.
- (xii) Clearing rubbish and cleaning areas on completion.
- (xiii) Testing in accordance with the specification and to the approval of the Engineer.
- (xiv) Providing an appropriate warranty / guarantee as required by the specification.
- (xv) Cement sand cant and reinforcing strip at corners.

Applied finishes described in this section are deemed to be measured as the relevant preamble in which they occur.

The cost of the mastic sealant and backer rod to be included in the item for Aluminum flashing.

Doors and Windows

The rates for work in this section shall include for the following:

- (i) Frames.
- (ii) Sub-frames.
- (iii) Architraves.
- (iv) Transoms.

- (v) Stops.
- (vi) Sealant.
- (vii) Weather bars.
- (viii) Thresholds or sills.
- (ix) Glazing.
- (x) Insulation.
- (xi) Ironmongery (except in timber doors where it is measured separately).
- (xii) Decoration.

Sizes referred to are structural opening sizes.

Ironmongery

Matching screens, keys and framing mortises in glass and the like shall be understood to be included.

Finishes

All finishing, screeds and backings have been measured net.

Rates for finishes shall include for the following:

- (i) Well wetting solid surfaces to be plastered or screeded.
- (ii) Preparing surfaces for finishing on backings including raking out joints of blockwork partitions, hacking surfaces of concrete or applying bonding agent to form a key and any necessary dubbing out.
- (iii) All cutting and waste, arises, short lengths, angles, ends, etc., making good or cutting and fitting around pipes conduits trunking pipe brackets and the like and making good up to door and window frames, skirting etc., all temporary rules and working around buried pipes, cables, conduits, etc.
- (iv) Angle beads, plaster stops, control joints, expanded metal strips, furring and lath, glass fibre scrims, aluminum channels and the like to all plasterwork around doors, windows at vertical abutments etc., and securely fixing to backgrounds.
- (v) All narrow widths, small areas and all cuttings.
- (vi) Fair edges, rebated edged, splayed edges, rounded edges, arises, quirks, grooves, flutes and the like.
- (vii) All setting out, temporary rules, screeds, templates and supports.
- (viii) Curing and cleaning off / down upon completion.
- (ix) Dubbing out as necessary to take up tolerances in the structure and cambers in floors and the like.
- (x) Expansion joints and control joints.
- (xi) Expanded metal lathing wherever required.

Rates for screeds and backgrounds shall include for the following:

- (i) Finishing with a tampered floated or trowelled surface as required.
- (ii) Laying level or to falls or slopes as required.
- (iii) Laying in bays where required including formwork to all edges, reinforcement, joint filler and sealant as detailed and specified.

Rates for wall and floor tiles and the like shall include for the following:

- (i) Fixing with an approved adhesive.
- (ii) Pointing up joints with mortar and cleaning off as required.
- (iii) Rounded, beveled and fair edges as required.
- (iv) Metal edge strips, dividers etc.
- (v) Straight, raking and curved cutting.
- (vi) Provision of expansion joints and sealant as indicated on the drawings.
- (vii) Provision of slurry protections or the like including removing same in floor areas subjected to movement of labor and materials.
- (viii) General protection of finished work to the Engineer's approval.

Rates for ceiling finishes shall include for the following:

- (i) Finishing with trowelled surface or other as required.
- (ii) False ceiling to include for all hangers, ceiling grid, tiles and insulation layers, and drop of any height.
- (iii) Bulkheads as shown on drawings.
- (iv) Work to sloping, curved, level soffits as required.
- (v) Straight, raking and curved cutting.
- (vi) Cutting and fitting around light fittings, A/C. equipment, etc.
- (vii) Shop drawings.
- (viii) Supporting framework, angle trims and other accessories.
- (ix) Lining to ceilings, beams and up stands.
- (x) Metal plaster stops, angle beads, etc.

Painting and Decoration

Painting to Structural Steelwork and Metalwork may either be included in this section or within either section to which it occurs and has been measured either as M2 or kg of Steel/Metalwork.

The rates for painting and decorating shall include for the following:

- (i) Painting either internally or externally.
- (ii) All cleaning and preparatory work to the surface to be painted including rubbing down between coats.
- (iii) Priming shall include for using a primer appropriate to the surface to which it is being applied.
- (iv) Preparation of manufactured boards and wood products shall include for surface filling.
- (v) Work on "Woodwork" shall include both softwood and hardwood and for knotting.
- (vi) Extra preparation on metal trims and the like over that of general surfaces in which they are decorated.
- (vii) Unless of a differing specification, work shall be deemed to cover internal or external painting.
- (viii) Work in multi-colors.
- (ix) Work to curved surfaces.

- (x) All cutting into edges.
- (xi) Scaffolding as required and working to or at any height.
- (xii) All narrow widths, cutting to line, opening edges of doors.
- (xiii) Rates for sprayed paint shall include for all masking work.

Mechanical Installations

The rates and prices for plant, equipment and installations are to be all inclusive of supply, installation, testing, commissioning and all associated builders work required for the full operation of such plant, equipment and installations, to comply in all respects with the Specification, Bills of Quantities, Drawings and to the complete satisfaction of the Local Regulatory Body and the Engineer.

The rates for pipework and ductwork shall include for the following:

- (i) All cuttings, short lengths and small quantities.
- (ii) Made bends.
- (iii) Couplers and / or joins in the running length.
- (iv) Splay cut ends.
- (v) All considerations arising from the specification.
- (vi) Fixing with approved holder bats or pipe clips cut and pinned, built in or plugged and screwed.
- (vii) Sleeves through walls.
- (viii) Bends and fittings on pipes whatever the diameter.
- (ix) Fittings to ductwork of all shapes and sizes.
- (x) Rates for cable and duct trench excavation shall include for all excavation, bedding, backfill and disposal as required by the Statutory Authority standard specification.
- (xi) Backfilling to trenches with approved excavated material. If the excavated material is not suitable imported fill shall be used.

The rates for sanitary fittings and the like shall, unless otherwise described or implied, include for the following:

- (i) Assembling component parts including suitable bedding compounds.
- (ii) Flexible connections from the supply point.
- (iii) All necessary plugging and screwing.
- (iv) Joints to water services with straight or bent proprietary connectors.
- (v) Cleaning off all protective wrappers and leaving ready for use.
- (vi) Leaving taps and valves greased, clean and in full working order.

The Contractor shall include for the supply of manufacturers recommended spares as required by the Specification for all mechanical engineering installations and shall submit details of spares to be provided by him on the Schedule of Recommended Spares, including other relevant details.

Rates for Plumbing and HVAC Work

Rates for all pipe work shall include for assembling and joining, pipe supports, pipe sleeves and cover plates and the like. Rates for pipework shall include for all fittings to small pipes (i.e. pipes into an internal dia. of 60mm or less) fittings (except joint in running lengths) to large pipes (i.e.

pipes with internal dia exceeding 60mm) and to gutters shall be enumerated, grouped together for each size of pipe and gutter and described as fittings.

Rates for duct work are to be included all fittings, brackets, hangers and other support.

Rates for insulation are to be included for cutting, waste, joining lap and working around and our ancillaries, fittings, flanges and other obstructions.

Electrical Installations

The rates and prices for plant, equipment and installations are to be all inclusive of supply, installation, testing, commissioning and all associated builders work required for the full operation of such plant, equipment and installations, to comply in all respects with the Specification, Bills of Quantities, Drawings and to the complete satisfaction of the Local Regulatory Body and the Engineer.

The rates in general shall include for the following:

- (i) All cutting, short lengths and small quantities.
- (ii) All joints in the running length and all connections.
- (iii) All considerations arising from the specification.
- (iv) Fixing conduits / cable trays, etc., by approved methods.
- (v) Pipe sleeves through walls.
- (vi) Assembling component parts.
- (vii) Cleaning off all protective wrappers and leaving ready for use.
- (viii) Leaving all equipment etc., clean and in full working order.
- (ix) Draw wires in empty conduits.
- (x) Rates for cable and duct trench excavation shall include for all excavation, bedding, backfill and disposal as required by the Statutory Authority standard specification.
- (xi) Backfilling to trenches with approved excavated material. If the excavated material is not suitable imported fill shall be used.

The Contractor shall include for the supply of manufacturers recommended spares as required by the Specification for all electrical engineering installations and shall submit details of spares to be provided by him on the Schedule of Recommended Spares, including other relevant details.

The cable lengths / routes are measured from point to point on the drawing (horizontal plan distance on the drawing, any cable required for connections, loops, etc., at equipments, appliances, control gear or the like will be deemed to be included.

Multiple Ducts and Cables

The quantity stated in the Bills of Quantities for multiple ducts and cables is the length of a single duct or cable in the particular group of ducts or cables. The contractor will allow the cost of number of ducts or cables in the rate as appropriate. eg., a qty of 50m against a 3 way 200mm dia duct means that a total quantity of $50 \times 3 = 150\text{m}$ of 200mm duct is to be priced for, ditto for cables.

External Services

The rates for all manholes and the like are to be all inclusive of all costs for the complete construction, in accordance with the specifications, drawings and local authority requirements.

External Works

Where external works are analogous to other sections of the work e.g. excavation concrete etc., the clauses elsewhere shall apply equally to this section of the work.

Kerbing – Rates shall include for construction of concrete bed and lacking, supply and laying of precast concrete kerbs either straight or curved, finishing, curing and protecting building in gratings and frame.

Paved areas (footpaths and roadways) – Rates shall include bedding material, supply and laying of paving slabs including all cutting to fit around manhole covers and the like. Allow for forming patterns and designs in the paving stones all as detailed.

The rates for gates and fences in this section shall include for the following:

- (i) Frames including lugs.
- (ii) Sealant.
- (iii) Ironmongery.
- (iv) Decoration.
- (v) Civil works including earthworks, concrete, formwork, reinforcement, protections, etc.

Proprietary Materials

Where manufacturers names or proprietary material names are given against certain items in the Bills of Quantities, the rates and prices inserted shall be for those specified material or other similar and equally approved materials. All proprietary materials shall be installed strictly in accordance with the manufacturer's printed instructions and the Contractor shall be deemed to have allowed for such in his pricing.

Measurable Contract

This Contract is a Measurable type of Contract.

Builder's Work

Drilling, cutting or leaving of holes for pipes, ducts and the like through walls floors, partitions, roofs, etc., and subsequently making good.

Cutting and pinning ends of supports for pipes, equipment, appliances, fittings and the like to walls, floors, partitions, soffits, etc., and making good.

Cutting or leaving mortises, sinking's, etc. for holding down bolts, brackets, supports and the like and grouting in.

Cutting chases for pipes and the like in walls, floors, partitions, etc. and subsequent making good.

Cutting and fitting around, boring holes through and making good of finishing's up to pipes, supports, brackets and the like.

The formation of concrete bases, plinths, etc. for plant, tanks, and equipment, including anti-vibration pads incorporated within the plinth as necessary. The subcontractor shall supply all other vibration isolation.

The painting of exposed pipe work, fittings, equipment etc.

The supply and installation of sub-frames where required for grilles, diffusers, luminaries, sprinkler heads, loudspeakers and the like.

Cutting and making good openings in false ceilings, bulkheads, walls for grilles, diffusers, luminaries, sprinkler heads, loudspeakers and the like.

The Contractor shall be completely responsible for obtaining the requirements for holes, fixings, and any other builders work between trades and ensure that such information as is shown on the drawings is in accordance with his own and the Employer's requirements. Details of builders work which is not shown in the drawings but which are required by the Contractor / Subcontractors shall be forwarded to the Engineer for his written approval before the work is put in hand. Cost of such works shall be borne entirely by the Contractor.

the drilling, cutting or leaving of holes or aperture through structural floors, walls, beams etc., shall be avoided, but where this become a necessity the Contractor must obtain the written approval of the Engineer before such work is put in hand. Cost of such works shall be borne entirely by the Contractor.

Installation of all embeds to be cast to the concrete such as brackets, channels, bolts or plates required for fixing of cladding and curtain walling. Embeds to be provided by the sub-contractor.

Coordination and provision of all necessary holes in the steel structure for fixing of cladding.

"Builders work" will include all the above, but it should be noted that this list is not intended to be exhaustive and everything necessary will be deemed to be included.

The Contractor is referred to the Architectural/Structural Drawings for further information. The Contractor shall allow for any plinths or bases required for MEP equipment installations.

"Builders work" shall include for all penetrations through concrete surfaces for MEP Equipment, including (but not limited to) stair pressurization fans, ventilation openings through skylight up stands, fire barrier seals as required and the like.

Items in respect of general attendance (assistance) to be provided by the Main Contractor to the Nominated Sub-Contractors shall include the following items, free of all charges:

Provision of all site hoardings, fencing, controlled access openings and the like.

Provision of temporary hard standings for vehicular traffic and the like.

Provision of un-hindered access to working areas.

Preparation of the site, including (but not limited to); removal of asphalt road surfacing, kerbs, pavers, lighting poles, bollard, shrubs, signage, telephone kiosks and the termination / relocation of all existing underground and exposed services.

Provision of grid lines / markers and levels, including checking and verification.

Use of Contractor's administrative arrangements including the necessary supervision, coordination and shop drawings as applicable / as required.

Opening and maintaining letters of credit, repayments, etc. as applicable/required.

Unloading, distributing, hoisting and lowering of materials.

Unloading the delivered items to site, checking for damage and processing of insurance claims, as applicable / required.

Use of personnel hoist, stairs, platforms and walkways.

Use of constructional plant.

Use of Contractor's facilities.

Use of Temporary Works.

Space for Sub-Contractor's offices and stores.

Scaffolding, including access scaffolding and mobile platform.

Unloading, distributing, hoisting, lowering and placing in position items of plant, machinery or the like.

Provision of water for the Works and that required for testing and commissioning.

Provision of power and lighting for the Works and power required for testing and commissioning, including fuel and consumption charges.

Lifting, hosting, crange etc.

Insurance of the Works.

Provision of safe and secure space for offices goods and materials.

Programming of the Work including progress reporting and co-ordination of the Works to comply with the Contractor's programme.

Co-ordination of the whole of the works including the work of Sub-Contractors and any relevant authorities etc.

Provision of protection to finished work.

Clearance of all rubbish and debris.

Cleaning the finished work as part of the final cleaning obligations as detailed in the Specification.

Provision of any specialist scaffolding, access scaffolding and mobile platforms.

Provision of all specialist lifting, hoisting, crange etc. For off-loading, positioning and installation of materials and services equipment.

Co-ordination of the whole of the Works including the work of other Nominated sub-contractors as Domestic Sub-Contractors and providing all special attendance as required for the works which are required by sub-contractors and not covered under General Attendance's.

Profit

Where the Contractor is required to add for 'Profit' a percentage figure shall be inserted as indicated. This percentage value shall include all profits for site office, head office and other overheads.

FORMAT FOR RATE ANALYSIS & TENDER BREAKDOWN																														
ID of Analysis	BOQ Ref	Description					Unit	UNIT COST										Quantity	TOTAL COST											
		Per Unit		Material	Labour	T & P		Sub-contract	Wastage/Others	T. Basic Cost	O/H	Profit	W/h Tax	Total Selling	Material	Labour	T & P		Sub-contract	Wastage /Others	T. Basic Cost	O/H	Profit	WH Tax	Total Selling					
		Qty	Rate																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			
ONLY AN EXAMPLE - NOT TO BE QUOTED																														
	X	OP Cem	0.17	340	bags		57.80		2.43	<--- B/Plant																				
		Sand	0.45	6	cft		2.70		6.39	<--- T/Mixer																				
		Agg	0.90	8.5	cft		7.65	1.41	4.05	<--- Placing-Pump																				
		Water	0.6	0.06	ltr		0.03	0.76	1.00	<--- Vib																				
		Admixtures					2.80																							
							70.98	2.17	13.87	-	-	87.0	-	-	-	87	100	7,098	217	1,387	-	-	8,702	-	-	-	8,702			