# Infrastructure & Buildings at Port of Tripoli
# Package 1

## Volume 3 - Method of Measurement and Bill of Quantities

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# *METHOD OF MEASUREMENT & BILL OF QUANTITIES*

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## METHOD OF MEASUREMENT

# *INFRASTRUCTURE AND BUILDINGS*

# *METHOD OF MEASUREMENT*

# A GENERAL RULES

## 1. INTRODUCTION

1.01 The rules contained in this Method of Measurement apply equally to both proposed and executed works.

1.02 The Bills of Quantities are to be read and construed in association with the Drawings, the Specification and this Method of Measurement. Information which is given on the Drawings and/or in the Specification, is identified by cross-references included in the descriptions of work in the Bills of Quantities.

1.03 Where work cannot be fully described or where the quantity of work required cannot be accurately determined, it is given as an item or as a Provisional Sum.

1.04 Unless the term metre, used in this Method of Measurement, is preceded by the words square or cubic it is deemed to be linear.

## 2. QUANTITIES

2.01 Quantities set out in the Bills of Quantities are the estimated quantities and they shall not be taken as the actual and correct quantities for ordering or purchasing of materials.

2.02 Works shall be measured net as fixed in position in accordance with the rules contained in this Method of Measurement or except where otherwise stated in a measurement rule applicable to the work.

2.03 Dimensions used in calculating quantities are taken to the nearest 10 mm (i.e. 5 mm and over is regarded as 10 mm and less than 5 mm is disregarded).

2.04 Quantities measured in tonnes are given to two places of decimals. Other quantities are given to the nearest whole unit except that any quantity less than one unit is given as one unit.

2.05 Unless otherwise stated, where minimum deductions for voids are dealt with in this Method of Measurement they refer only to openings which are within the

boundaries of measured areas. Openings which are at the boundaries of measured areas are always deducted irrespective of size.

## 3. DESCRIPTIONS

3.01 Headings to groups of items in the Bill of Quantities are to be read as part of the descriptions of the items to which the headings apply.

3.02 Dimensions are stated in descriptions generally in the sequence length, width, height. Where ambiguity could arise, the dimensions are identified.

3.03 Dimensions given in descriptions are in millimetres unless otherwise indicated.

3.04 Unless otherwise specifically stated in the Bill of Quantities or herein, the costs of the following are deemed to be included in the rates for measured work:

labour and all costs in connection therewith,

materials, products, goods and all costs in connection therewith,

Contractor's equipment, including but not limited to construction plant, scaffolding, tools, vehicles and the like, and all costs in connection therewith,

assembling, fitting and fixing materials, products and goods in position,

any method of fixing, fixing to any nature of base or background including preparation and providing fixing materials,

breaking down for transport and installation and subsequent re-assembly of composite items manufactured off site,

waste of materials,

square, raking and curved cutting,

work at any location or height,

work in small, isolated quantities,

protection of all work,

protection of all existing structures, utilities, site improvements, trees and vegetation, features, pavements and other facilities on and adjacent to the site, which are to remain upon completion of the work,

all other enabling tasks, associated and subsidiary components and items of work, which are indicated or reasonably inferred from the Drawings and/or Specification, and necessary to perform and complete the work described.

establishment and overhead charges and profit.

3.05 Except where items are included in the Bill of Quantities and are priced separately by the Contractor therein, the costs of the following are deemed to be included in the rates for measured work:

site administration and security,

insurances,

bonds and guarantees,

water for the works,

lighting and power for the works,

temporary accommodation for the use of the Contractor and the Engineer,

temporary telephones for the use of the Contractor and the Engineer, and the cost of calls,

temporary roads, hardstandings, crossings and the like,

temporary fencing, hoardings, screens, fans, foot- ways, guardrails, gantries and the like,

giving notices and making applications, including the payment of fees and charges in connection therewith,

safety, health and welfare of workpeople,

compliance with traffic regulations,

maintenance of public and private roads, services and adjoining property,

control of noise and pollution, prevention of fire and compliance with all other statutory and general obligations,

removing rubbish, protective casings and coverings and cleaning the works on completion,

drying the works,

testing and commissioning of service installations including providing fuel,

samples of materials and testing of materials, including providing equipment for testing,

design, co-ordination, installation and as-built record drawings and the like,

preparation and submittal of reports, records, certificates, notices, proposals, designs, details, calculations and other information and data required by the Specification,

allow in unit rates for all other requirements services, provisions, liabilities and obligations contained in the General Requirements and Conditions of Contract.

Maintaining, adapting, clearing away and making good are deemed to be included with the items for temporary works.

## 4. SYMBOLS, ABBREVIATIONS AND DEFINITIONS

4.01 The following symbols and abbreviations are used in this Method of Measurement and in the Bills of Quantities:

| | | |
|---|---|---|
| m | = | linear metre |
| m2 | = | square metre |
| m3 | = | cubic metre |
| cm | = | centimetre |
| mm | = | millimetre |
| Nr | = | number |
| kg | = | kilogramme |
| T | = | tonne |
| % | = | percentage. |
| dn | = | nominal diameter |
| Qty | = | quantity |
| Drg | = | drawing. |
| Mpa | = | Mega Pascal |

4.02 The following definitions apply to all work:

'horizontal' means level or sloping work not exceeding 15 degrees from the horizontal,

'sloping' means sloping work exceeding 15 degrees but not exceeding 80 degrees from the horizontal,

'vertical' means work exceeding 80 degrees from the horizontal,

'curved' means curved in any direction or in more than one direction and to any radius or radii, and includes curved work to domes, vaults and the like.

4.03 The term 'extra over' means that the work so described involves extra cost over the basic work in which it occurs. No deduction of the quantity of basic work is made for the extra over work.

## 5 PRICE ADJUSTMENT FORMULAE: APPLICABLE ITEMS

5.01 The Bill of Quantity Items listed below are subjected to Price Adjustment in accordance with Clause 13.8 [Adjustments for Changes in Cost] of the Conditions of Contract by adopting the below formulae as stated hereunder.

| Item Description & Applicability | Applicable Formula |
|---|---|
| Reinforcement Steel | $P_1 = P_0 * \{0.15 * L_1/L_o + 0.70 * Lmc_1/Lmc_0 * E_1/E_0 + 0.15\}$<br>Applicable to the cost of completed steel reinforcement works |
| Excavation, Backfilling and Aggregate base and sub-base courses | $P_1 = P_0 * \{0.15 * L_1/L_o + 0.25 * F_1/F_0 + 0.10 * Eqp_1/Eqp_0 * E_1/E_0 + 0.50\}$ |
| Concrete Works | $P_1 = P_0 * \{0.45 * C_1/C_o + 0.15 * L_1/L_0 * F_1/F_0 + 0.30\}$<br>Applicable to the cost of concrete for the concrete rigid pavement |

Where:

$P_1$ : Adopted Price for contractor reimbursement.

$P_0$ : Price as shown in the Original Bill of Quantities

$L_1$ : Weighted Average (Moyenne Pondérée) monthly wage excluding any additional benefits i.e transportation, etc ... , for the Calendar month during the period of executed works included in the monthly statement

$L_0$ : Minimum monthly wage excluding any additional benefits i.e transportation, etc... on bid opening day.

$Lmc_1$ : Weighted Average (Moyenne Pondérée) for "'Barres Crénelées ou nervures pour béton armé" index as issued by the French establishment INSEE during the period of executed works included in the monthly statement

$Lmc_0$ : "Barres Crénelées ou nervures pour béton arme" index as issued by the French establishment INS EE for the Calendar month in which the bid opening took place.

$E_1$ : Weighted Average (Moyenne Pondérée) closing exchange rate for the Euro vs the contract currency as per the bulletin published by the Central Bank of Lebanon, during the period of executed works included in the monthly statement

$E_0$ : Closing exchange rate for the Euro vs the contract currency as per the bulletin published by the Central Bank of Lebanon on bid opening date.

$F_1$ : Weighted Average (Moyenne Pondérée) Gaz Oil (Mazout) Market Price as issued by the Ministry of Industry during the period of executed works included in the monthly statement

$F_0$ : Gaz Oil (Mazout) Market Price as issued by the Ministry of Industry on bid opening day.

$Eqp_1$ : Weighted Average (Moyenne Pondérée) for "Machines agricoles françaises Exportées" and "Vehicules utilitaires" Indices as issued by the French establishment INSEE during the period of executed works included in the monthly statement

$Eqp_0$ : Average for both "Machines agricoles fran9aises exportées" and "Vehicules Utilitaires" Indices as issued by the French establishment INSEE for the Calendar month in which the bid opening took place.

$C_1$ : Weighted Average (Moyenne Pondérée) for the Cement (Ciment en Vrac) ton Price as issued by the Cemeteries during the period of executed works included in the monthly statement

$C_0$ : Cement (Ciment en Vrac) ton Price as issued by the Cementeries on bid opening day.

In case a construction item includes more than one material/trade subject to price adjustment, then this item is subject to adjustment using the corresponding formulas for the major materials and applied to their respective shares in the unit price of this item.

Unit Price adjustment will be calculated up to five decimal places.
The price adjustment formulae shall apply on the monthly payment certificates and the cumulative increases "A" that occurred (or the cumulative decreases "B" that occurred) and shall be calculated on the value of the works in the successive monthly payment certificates, according to the following:

a) a price adjustment formula shall apply only if the amount of the cumulative increase (or the cumulative decrease) of an adjusted Contract price exceeds 3% of the original contract amount "C".

b) when A>0.03C, indemnities for the increase of prices equivalent to A-0.03C shall be paid to the Contractor in the successive monthly payment certificates.

c) when B>0.03C, an amount equivalent to B-0.03C shall be deducted from the Contractor's monthly payment certificates, due to the decrease of prices.

d) the Employer has the right to recover any increase paid to the Contractor if the cumulative increase of an adjusted Contract price falls below 3% of the original contract amount; also the Employer has the obligation to return to the Contractor any deduction already applied on the monthly payment certificates, if the decrease falls below 3% of the original contract amount.

# B DEMOLITION AND ALTERATION

## B13 SELECTIVE DEMOLISHING, ALTERING AND REPAIRING

### 1. Demolishing

1.01 Demolition of each of the following kinds is given separately:

demolition and/or alterations of selected portions of a building and/or structure,

demolition and/or alterations of selected site elements,

demolition of parts of structures.

1.02 The following are stated in descriptions as applicable:

location, type and extent of existing building and/or structures to be demolished, and drawing reference,

levels to which structures are to be demolished,

materials to remain the property of the Employer,

materials required for re-use,

toxic or other special waste.

1.03 Demolition is given as an item or enumerated or where appropriate, in metres or square metres.

1.04 Rates for measured work are deemed to include the costs of:

disposal of materials other than those remaining the property of the Employer or those for re-use,

setting aside, cleaning, storing and protecting materials remaining the property of the Employer or those for re-use,

temporary support incidental to demolition which is at the discretion of the Contractor,

leaving parts of existing walls temporarily in position to act as buttresses,

provision of plant and equipment,

survey report and method statement governing demolitions,

visual recorded evidence (photographs/videotape) of the existing condition of the all adjoining, properties prior to commencing demolitions,

temporarily diverting, maintaining or sealing off existing services,

protection of adjoining properties and existing retained facilities,

making good existing buildings and or structures not demolished where adversely affected by demolition works,

record drawings, identifying and accurately locating existing below ground utilities.

2. Altering

2.01 Alteration of each of the following kinds is given separately:

removing fittings and fixtures,

removing mechanical installations,

removing electrical installations,

removing finishes,

removing coverings,

cutting openings or recesses,

cutting back projections,

cutting to reduce thickness,

filling in openings.

2.02 The following are stated in descriptions as applicable:

location, and drawing reference,

nature of materials to be removed,

type and thickness of existing structure to be cut,

new work to be inserted, including re-fixing or re-using removed materials,

associated dimensions or quantities,

materials to remain the property of the Employer,

materials required for re-use,

toxic or other special waste.

2.03 Alteration is given as an item or enumerated or, where appropriate, in metres or square metres.

2.04 Rates for measured work are deemed to include the costs of:

carrying out a structural dilapidation survey,

shoring and scaffolding incidental to the work and making good all work disturbed by such shoring and scaffolding,

work incidental to alterations which is at the discretion of the Contractor,

locating and marking services affected by the work,

removing accessories, fastenings, linings and bedding materials in connection with removing existing work,

disposal of materials other than those remaining the property of the Employer or those for re-use,

setting aside, cleaning, storing and protecting materials to remain the property of the Employer and those for re-use,

protecting existing work which is to be retained,

protecting and illuminating dangerous openings,

reducing dust,

making good existing structure and extending and making good existing finishings and coverings affected by alterations,

cutting and bonding new work to existing and extra material in bonding,

preparation of existing surfaces to receive new finishings and coverings and making good new finishings and coverings to existing,

all new fixing and joining materials required,

provision of temporary services.

# E CONCRETE WORK

## E12 CONCRETING

### 1. In situ concrete

1.01 Each class of in situ concrete is given separately, stating the kind of cement and whether plain or reinforced.

1.02 Work of each of the following types is given separately:

foundations (including attached column bases, pedestals, wall bases and peripheral upstand),

machine bases,

ground beams,

Slab on grade

channels, pits and the like (including bottoms and sides),

slabs (including flat beams and landings occurring at floor levels),

attached drop beams (drop part below slab only)

attached drop panels or column drop heads (drop part below slab only)

walls (including retaining walls),

isolated beams (including isolated beam casings),

isolated columns (including isolated column casings),

staircases (including steps, landings occurring between floor levels and strings),

upstands

1.03 Wall and column kickers are included with the measurement of walls and columns respectively.

1.04 Columns and column casings which are attached to walls are included with the measurement of the member to which they are attached.

1.05 Projections, nibs and the like are included with the measurement of the adjacent member.

1.06 Details of each type of composite or complex unit and feature are stated in descriptions.

1.07 In situ concrete (except slab on grade in $m^2$) is given in cubic metres measured net except that deductions are not made for the following:

reinforcement,

steel sections of area not exceeding 0.05 $m^2$,

cast in accessories,

voids not exceeding 0.05 $m^3$ in volume.

Deductions are made for the voids in coffered and troughed slabs and for the volume of filler block permanent formwork.

1.08 Rates for measured work are deemed to include the costs of:

designing mixes, (including all tests and quality control procedures),

any method of pouring, placing, compacting and curing,

pouring on or against earth or unblinded hardcore,

any thickness, cross-sectional area or number of members,

horizontal, sloping, vertical and curved work,

placing or finishing to falls and cross falls,

basic finish as struck from formwork (including coffered or troughed formwork) and tamped worked finish,

extra width of concrete or formwork to edges of blinding beds,

Concrete works around congested reinforcement of any percent,

Water bars and water stops,

Testing of water retaining structures,

temporary formwork or other form of temporary support to all surfaces, including design, construction, supports, fixing, striking, removing, re-propping and all formwork requirements mentioned in Section E33,

day joints (construction joints), contraction joints and joints required in the forming of bays including formwork and treatment of reinforcement crossing the joint, column and wall kickers and construction joints, expansion joints including joint sealant and joint filler.

Insulation and anti-vibration materials for concrete pads,

all labours on concrete including working around pipes or cables, cutting channels, chases, mortices, pockets and holes and including subsequent grouting or filling and making good.
Water stop.

Vapor retarders/polyethylene sheets under slab on grade including 30mm sand cement protection.

## E21 REINFORCEMENT FOR IN SITU CONCRETE

### 1. Bar reinforcement

1.01 Mild steel and high yield steel bar reinforcement are each given separately.

1.02 Bar reinforcement is given in tonnes.

1.03 Rates for measured work are deemed to include the costs of:

preparing schedules for bar bending,

fixing bars in any position and in any member,

fixing bars horizontally, vertically and sloping,

any diameter, section and length of bars,

forming straight, bent and curved bars and links,

cutting, lapping and jointing (including special joints),

hooks, tying wire, spacers, chairs and the like,

the weight of surface treatments and rolling margin,

tests and quality control procedures.

## E31 FORMWORK FOR IN SITU CONCRETE

## E32 FORMED FINISHES FOR IN SITU CONCRETE

## E33 WORKED FINISHES FOR IN SITU CONCRETE

### 1. Formwork

1.01 Temporary formwork to produce basic finish, is deemed to be included within the price of concreting. Permanent formwork is that which is designed to remain in position. Type of permanent formwork is stated.

1.02 Basic Tamped Finish to surfaces of concrete is not measured, it is deemed to be included within the price of concreting.

### 2. Formed finishes

2.01 Formed finishes to the surface of in situ concrete is not given separately, it is deemed to be included within the price of concreting.

### 3. Worked finishes

3.01 Worked finishes to the surface of in situ concrete is not given separately, it is deemed to be included within the price of concreting.

# E71 DAMP-PROOF MEMBRANES AND COATINGS

## 1. Damp-proof membranes and coatings

1.01 Each kind of damp-proof membrane and coating is given separately, irrespective of the shape of member to which membrane will be applied whether curved, sloped of flat etc…

1.02 Work to each of the following is given separately:

foundations (including walls, isolated columns, column bases, machine bases, ground beams, edges of slab on grade, and thickenings of slab on grade),

Internal surfaces of water tank

1.03 Work to foundations includes work to bottoms, sides and tops.

1.04 Work to sides of openings, to projections, nibs, recesses and rebates, and to steps in surfaces is included with the measurement of work to the adjacent surface.

1.05 Damp-proof membranes and coatings are given in square metres measured the area in contact with the base. No deduction is made for voids not exceeding 1.00 $m^2$.

1.06 Rates for measured work are deemed to include the costs of:

Protection of waterproofing systems,

primers, bonding compounds, adhesives and keying mixes,

applying coatings by brush or spray,

sloping and curved work to coatings,

work of any width, height or girth,

work laid to falls and crossfalls, and intersections on sloping work,

extra material for lapping membranes including adhesive tape,

internal and external angles, fillets and the like,

edges, arrises and turning into grooves or channels and sealing,

cutting, notching and bending membranes,

holes for pipes and the like, forming collars and sealing.

# F STRUCTURAL FRAMING

## F11 STRUCTURAL STEELWORK

### 1. Structural steelwork

1.01 Work includes but not limited to the following:

columns,

beams,

bracings,

purlins and cladding rails,

grillages,

trestles, towers and built up columns,

trusses and built up girders,

wires, cables, rods and bars (including sag rods, ties and the like),

anchor bolts including grouting,

protective coating.

1.02 Structural steelwork is given in tonnes. The weight includes all components, elements and fittings. The weight is measured from the overall lengths of components and fittings with no deductions for splay cuts or mitred ends or for the weight of metal removed to form notches and holes each less than 0.10 m2 in area measured in the plane. No allowance is made for the weight of weld fillets, bolts, nuts, washers, rivets and protective coatings. The weight of steel is taken for measurement as 7.85 T/m3.

1.03 The term 'fittings' includes caps, bases, haunches, gussets, end plates, splice plates, cleats, brackets, stiffeners, distance pieces, separators, diaphragms, packings and the like.

1.04 Rates for measured work are deemed to include the costs of:

supply, fabrication transportation, storing and erection,

any number, section type, size and length of components and fittings,

weight of weld fillets, bolts, nuts, washers, rivets and weight of protective coatings,

holes required for other trades, including required stiffeners,

temporary erection bracing and removal

trial assemblies,

protective coating.

# G MASONRY

## G11 BRICK AND BLOCK MASONRY

### 1. Generally

1.01 Each kind of block and brick is given separately. Those used in work constructed as formwork and with joint reinforcement are each so described.

1.02 Work of each of the following types is given separately:

walls (including skins of hollow walls),

isolated piers,

isolated casings,

projections (including attached piers, plinths, oversailing courses and the like),

1.03 Work is deemed to be vertical unless otherwise described.

1.04 Isolated piers are only measured as such when their length on plan is not exceeding four times their thickness.

1.05 Thickness of walls, isolated piers and isolated casings is stated in descriptions. Thickness stated is the nominal thickness unless otherwise described.

1.06 Width and depth of projections are stated in descriptions.

1.07 Work built tapering one side and tapering both sides are each so described. Tapering work is work of diminishing thickness. Thickness stated for tapering walls is the mean thickness.

1.08 Work with facework to one side and to both sides are each so described. Facework is any work finished fair.

1.09 Work bonded at back to other work (i.e. either existing work or work of a differing material) is so described.

1.10 Projections which are horizontal and raking are each so described.

1.11 Curved work is so described.

1.12 Walls, isolated piers and isolated casings are given in square metres measured on the centre line of the material. No deduction is made for voids not exceeding 0.10 m2. Deductions for lintels, sills, and the like are measured as regards height to the extent only of the full block or brick courses displaced, and as regards depth to the extent only of the full block or brick thickness displaced.

1.13 Projections are given in metres.

1.14 Rates for measured work are deemed to include the costs of:

mortar for bedding and jointing,

type of bond and method of pointing,

raking out joints or leaving rough joints to form key,

battering work (i.e. sloping with parallel sides),

extra materials for curved work, tapering work and for work bonded at back to other work,

building against or tying to other work (i.e. not bonded), including extra materials,

temporary strutting to work used as formwork,

joint reinforcement in reinforced work,

building overhand,

forming cavities in hollow walls and between walls and other work, including providing wall ties, and closing cavities at ends, tops and around openings, including extra materials,

bonding ends of walls to other work including providing ties or other fixings and extra material in bonding,

pinning up load bearing walls to structural soffits and filling solid with mortar,

reveals, angles and intersections,

firestopping,

rough and fair cutting,

grooves, throats, mortices, chases, rebates, holes, stops, mitres and the like,

weather fillets, angle fillets and the like and pointing in flashings including cutting grooves or chases,

labours in returns, ends and angles,

building in or cutting and pinning ends of lintels, sills, bearing bars, steps, timbers, steel sections and the like,

templates for forming openings and lift shafts, centering, and temporary support and protection to built-in frames.

# H WALL AND ROOF CLADDING AND COVERING

## H31 PROFILED SHEET CLADDING AND COVERING

## H32 METAL SHEET CLADDING

### 1. Generally

1.01 Each kind of cladding and covering is given separately stating the finish as delivered. Work which includes insulation, vapour barriers and integral underlay are each so described.

1.02 Roof covering and wall cladding are each given separately.

1.03 Sloping and curved work are each so described.

1.04 Translucent sheets, rooflight units, sheets with louvre blades, ventilators and the like units are each given separately as extra over the cladding or covering in which they occur, stating the type or dimensions.

1.05 Roof covering and wall cladding are given in square metres measured on the exposed face. No deduction is made for voids not exceeding 1.00 m2

1.06 Translucent sheets, rooflight units, sheets with louvre blades, ventilators and the like units are enumerated .

1.07 Rates for measured work are deemed to include the costs of:

method of fixing and type and spacing of fixings,

fixing through underlinings,

side and end laps,

jointing and sealing including movement joints,

any pitch of roof covering,

insulation, vapour barriers and integral underlay,

work in forming voids not exceeding 1.00 m2,

abutments, eaves, vertical angles, skirtings, flashings, aprons, sills, gutters and linings, jambs and filler pieces,

fire stops,

all cutting and holes for pipes and the like, including soaker flanges and collars,

warning notices.

## H51 NATURAL STONE SLAB CLADDING AND FEATURES

### 1. Generally

1.01 Each kind of stone is given separately.

1.02 Work of each of the following types is given separately

walls (including attached columns),

ceilings (including attached beams and soffites of staircase and landings),

isolated beams,

isolated columns.

1.03 Mullions, transoms, quoin stones, jamb stones, architraves and the like features are each given separately.

1.04 Band courses, mouldings, cornices, moukarnas, copings, cappings, balustrades, handrails, upstands and the like features are each given separately.

1.05 Ornamental panels, corbels, column bases, column caps, newels, finials, surrounds to openings, arches, domes and other special features are each given separately.

1.06 Work to sides of openings, to projections, nibs, recesses and rebates and to steps in surfaces are included with the measurement of work to the adjacent surface.

1.07 Work to isolated beams and to isolated columns includes attached beams and attached columns where the work is different from the abutting ceiling and walls.

1.08 Work to isolated columns is only measured as such when their length on plan is not exceeding four times their thickness.

1.09 The thickness stated in the description is exclusive of keys, grooves and the like.

1.10 Dimensions, types and details of features are stated in descriptions, where necessary, to identify the work.

1.11 Work with joints set out to layout pattern and work in multi-stone to patterns are each given separately and are so described stating the nature of the works.

1.12 Sloping or curved work is so described (concave or convex work shall be defined as curved).

1.13 Band courses, mouldings, cornices, moukarnas, copings, cappings, balustrades, handrails, upstands and the like features which are vertical and raking are each so described.

1.14 Work is given in square metres, measured on the exposed face. No deductions are made for voids not exceeding 0.50 m2.

1.15 Mullions, transoms, quoins, jamb stones, architraves, band courses, mouldings, cornices, moukarnas, copings, cappings, balustrades, handrails, upstands, and the like features are given in metres.

1.16 Ornamental panels, corbels, column bases, column caps, newels, finials, surrounds to openings, arches, domes and other special features are enumerated.

1.17 Rates for measured work are deemed to include the costs of:

non standard slabs and special slabs,

surface finish,

work at any height above floor level,

any width, height, girth, size or shape of stone or feature,

mortar or adhesive for bedding and mortar in jointing,

cramps, dowels and the like mechanical anchorage system one end secured to the backing material, in tying the slab to other works,

type of bond and method of pointing including raking out joints,

joint reinforcement including scratch coat to backing material,

water repellent coating to backs of stone,

extra labour and material for curved work,

extra labour and material in joint layout and work in multi stone,

all cutting at internal and external angles, intersections and joints,

rough and fair cutting,

rounded arrises and the like,

grooves, throats, flutes, rebates, chases, mortices, holes, stops, mitres, and the like,

cutting grooves or chases and pointing in flashings,

labour in fair returns, ends, angles and the like,

selecting slabs for size and consistency of quality, boasting, working mouldings and similar special features,

jointing, grouting, cleaning and sealing including working overhand and working over and around obstructions,

temporary centring for arches, projecting corbels and the like including all necessary temporary support, easing, striking and removal,

movement joints including joint filler, pointing with sealant,

protection during execution and cleaning on completion,

samples and mock up samples (as specified),

shop drawings (as specified).

# J THERMAL AND MOISTURE PROTECTION

## J12 ELASTOMERIC MEMBRANE ROOFING (Including sheets and coatings)

## J14 LIQUID APPLIED WATERPROOFING COATING

### 1. Waterproofing membrane, other membranes and coatings

1.01 Each kind of waterproof membrane, other membranes, and coatings is given separately.

1.02 Work to each of the following is given separately:

roofs,

upstands (including sides and tops of plinths, kerbs and upstand beams),

floors,

channels, pits and the like (including bottoms and sides).

1.03 Work to skirtings, aprons, abutments and the like are each given separately. Dimensions are stated in descriptions.

1.04 Sloping and curved work are each so described, except where otherwise required.

1.05 Work to roofs, upstands, floors, channels, pits and the like is given in square metres, measured the area in contact with the base. No deduction is made for voids not exceeding 1.00 m2.

1.06 Work to skirtings, aprons, abutments and the like is given in metres, measured the length in contact with the base.

1.07 Rates for measured work are deemed to include the costs of:

preparation of surfaces to receive membranes and coatings,

primers, bonding compounds, underlays, adhesives, keying mixes and mechanical fastenings,

hot and cold bonding applications, and mechanical fixing applications,

applying coatings by brush or spray,

sloping and curved work to coatings,

work of any width, height or girth,

work laid to falls and cross falls, and intersections on sloping work,

cutting, notching, bending, fair edges, jointing, bonding and sealing including extra material for laps to sheet work,

raking, stepped and vertical work to skirtings, aprons, abutments and the like,

edges, angles, arises, intersections and the like, turning into grooves including extra material, wedging and sealing, and working into channels and the like,

angle fillets, battens and nailing strips,

linings to sumps, outlets, gargoyles, dishing to gullies and the like,

flashing materials other than metal flashings,

holes for pipes and the like, forming collars and sealing,

flood tests,

provision of guarantees and warranties.

2. Roof screeds

2.01 Each kind of roof screed is given separately, stating the type of surface finish.

2.02 Work is measured and given in accordance with the rules contained in SECTION "P" for "SURFACE FINISHES", sub section "P12" for SCREEDS AND TOPPINGS.

2.03 Minimum thickness of roof screeds is stated in descriptions.

2.04 Sloping and curved work is so described.

2.05 Rates for measured work are deemed to include the costs of forming shallow channels within the thickness of screeds or toppings, fabric reinforcement, anti-crack strips, cover strips and movement joints except designed expansion joints, surface finish, working into recessed covers and the like and overhand work.

3. Flashings and the like

3.01 Each kind of metal is given separately.

3.02 Cover flashings, aprons, weatherings, sills, covering to upstands, cappings and the like are each given separately.

3.03 Width or girth of work is stated in descriptions.

3.04 Curved work is so described.

3.05 Flashings and the like are given in metres.

3.06 Rates for measured work are deemed to include the costs of:

laps, seams, ends, angles, intersections and movement joints,

raking, stepped and vertical work,

clips and tacks, dressing or wedging into grooves, hollows, recesses and the like, sealing and securing,

painting backs.

4. Sundries

4.01 Each kind of material is given separately.

4.02 Channel (reglet), pressure plates, edge trims and the like are each given separately.

4.03 Rainwater outlets, gargoyles, vents and the like are each given separately.

4.04 Types and dimensions are stated in descriptions, where necessary, to identify the work.

4.05 Curved work is so described.

4.06 Channel (reglet), pressure plates, edge trims and the like are given in metres.

4.07 Rainwater outlets, gargoyles vents and the like are enumerated.

4.08 Rates for measured work are deemed to include the costs of:

raking, stepped and vertical work,

firestopping work,

ends, angles and intersections.

## J21 THERMAL INSULATION

### 1. Insulation

1.01 Each kind of insulation is given separately.

1.02 Each thickness of insulation is given separately.

1.03 Curved work is so described.

1.04 Work to insulation is given in square metres. No deduction is made for voids not exceeding 0.10 m2.

1.05 Rates for measured work are deemed to include the costs of method of fixing, all cutting, notching, bending, edges and jointing, working between wall ties and extra materials for laps and for curved work.

### 2. Protective coverings

2.01 Each kind of work is given separately, stating the type of material.

2.02 Thickness, dimensions, types and details are stated in descriptions where necessary to identify the work.

2.03 Curved work is so described.

2.04 Work to roof protective coverings is given in square metres, measured the area in contact with the base. No deduction is made for voids not exceeding 1.00 m2.

2.05 Work to skirtings and the like is given in metres , measured the length in contact with the base.

2.06 Rates for measured work are deemed to include the costs of:

work laid to falls and cross falls

keying mixes, bonding agents, bedding and backing mortars, and other fixing materials including cement-sand levelling beds,

vertical, horizontal and sloping work,

jointing, grouting, sealing and cleaning,

extra material for curved work,

firestopping,

supports for roof paving.

## J31 MOVEMENT JOINTS

### 1. Joints and trims

1.01 Each kind of designed movement joint and trim is given separately.

1.02 Each type or size is given separately.

1.03 Curved work is so described.

1.04 Joints and trims are given in metres.

1.05 Rates for measured work are deemed to include the costs of:

all components including metal and timber sections, sheet material filler, fire barriers, backing cord, bond-breakers, joint seals, flashings and accessories, sealants, and joint covers,

preparation including primers and sealers,

horizontal, slopping and vertical work,

ends, angles and intersections.

# K DRY LININGS, FLOORING AND PARTITIONS

## K31 PLASTERBOARD LININGS, PARTITIONS AND CEILINGS

### 1. Generally

1.01 Each kind of lining is given separately. Work which includes integral insulation, vapour barriers, fire barriers, isolating membranes, moisture resistant treatment and the like are each so described.

1.02 Work of each of the following types is given separately:

lining to walls (including attached columns),

lining to ceilings (including attached beams and soffits of staircases and landings),

lining to isolated beams,

lining to isolated columns,

partitions.

1.03 Band courses, coves, mouldings, cornices, architraves and the like features are each given separately.

1.04 Panels, arches and other special features are each given separately.

1.05 Lining to sides of openings, to projections, nibs, recesses and rebates, and to steps in surfaces is included with the measurement of work to the adjacent surface.

1.06 Lining to isolated columns is only measured as such when their length on plan is not exceeding four times their thickness.

1.07 Lining to isolated beams and isolated columns include attached beams and attached columns where the work is different from the abutting ceilings and walls.

1.08 Thickness and height of partitions are stated in descriptions. Partitions boarded one side and boarded both sides are each so described.

1.09 Dimensions, types and details of features are stated in descriptions, where necessary, to identify the work.

1.10 Band courses, coves, mouldings, cornices, architraves and the like features which are vertical and raking are each so described.

1.11 Sloping and curved work are each so described.

1.12 Linings are given in square metres measured on the external face and over obstructions. No deduction is made for voids not exceeding 0.50 m2. No allowance in the measurement is made for lapped joints.

1.13 Partitions are given in metres measured the mean length and over obstructions. No deduction is made for voids which do not extend the full height.

1.14 Band courses, coves, mouldings, cornices, architraves and the like features are given in metres.

1.15 Panels, arches and other special features are enumerated.

1.16 Rates for measured work are deemed to include the costs of:

fixings including head and sole plates, studs, stiffening sections, firings and channels, fixings for heavy fittings, and other fixing materials,

jointing including fair joints, jointing battens, fillets, beads and the like, joint and reinforcing tape,

finishing including plaster for dabs, filling and finishing,

work at any height above floor level,

work of any width, height or girth,

working overhand,

working over and around obstructions, integral services, into recesses and the like, including additional materials,

angles, junctions, abutments and ends of linings of partitions,

access panels and holes for pipes services and the like.

1.17 Rates for precast fibrous linings and mouldings are deemed to include the costs of:

moulds, reinforcement and cast in accessories,

any size or shape of unit,

temporary support.

## K41 METAL AND WOOD PARTITIONS

### 1. Generally

1.01 Each kind of partition is given separately. Partitions which include integral insulation, fire barriers and the like are each so described.

1.02 Partitions of each thickness are given separately. Height is stated in descriptions.

1.03 Curved work is so described.

1.04 Blank openings, door openings, window openings and the like are each given separately as extra over the partition in which they occur. Type or dimensions are stated in descriptions.

1.05 Partitions are given in metres measured the mean length and over obstructions.

1.06 Blank openings, door openings, window openings and the like are enumerated.

1.07 Rates for measured work are deemed to include the costs of:

all integral components including trim,

fixing and jointing,

factory applied finish,

working over and around obstructions and integral services, including additional materials,

angles, junctions, abutments and ends of partitions,

all additional integral components of openings including ironmongery, linings and trim,

access panels and holes for pipes, services and the like.

## K51 SUSPENDED CEILINGS

### 1. Generally

1.01 Each kind of suspended ceiling is given separately. Ceilings which include integral insulation and vapour barriers are each so described.

1.02 Work to ceilings, beams and upstands are each given separately.

1.03 Sloping and curved work are each so described.

1.04 Work to ceilings, beams and upstands is given in square metres, measured between boundaries. No deduction is made for voids not exceeding 0.50 m2.

1.05 Rates for measured work are deemed to include the costs of:

suspension system and framed members including method of fixing, and any depth of suspension system,

support work and accessories for fittings including bridgings,

layout and treatment of joints including expansion joints,

edge trims, angle trims and timber edge battens,

sound barriers and/or fire barriers including firestopping,

work of any width, height or girth,

working over and around obstructions and integral services including additional materials,

access panels and holes for pipes, services and the like including collars,

protection.

# M METALWORK AND WOODWORK

## M21 WINDOWS AND SCREENS

## M22 DOORS AND HATCHES

## M23 SHUTTERS, GRILLES AND OPERABLE PARTITIONS

### 1. Generally

1.01 Each kind of work is given separately, stating the kind of material and finish as delivered. Doors, access hatches and the like which include associated frames or linings and ironmongery are each so described.

1.02 Each type of unit is given separately. Dimensions and details are stated in descriptions, where necessary, to identify the work. Dimension stated for wood are deemed to be finished sizes unless stated as nominal.

1.03 Multi-leafed doors are counted as one door type.

1.04 Curved door frames and linings are so described.

1.05 Windows, doors and the like are enumerated.

1.06 Door frames, architraves and linings are given in metres.

1.07 Rates for measured work are deemed to include the costs of:

frames, mullions, transoms, sills, louvres, doors, opening portions and insect screens, where supplied with the unit,

glazing beads, gaskets, weatherstrips, flashings, architraves, trims and the like accessories, where supplied with the unit,

glass and glazing, where supplied with the unit,

ironmongery and operating equipment, where supplied with the unit,

hardware sets and all sundry ironmongery, where supplied with the unit,

fitting and hanging doors,

surface treatments and preservative treatments applied as part of the production process,

finishes, where part of the unit as delivered,

priming backs of frames and the like,

rebates, grooves, splays, chamfers, mouldings and the like labours on wood including ends, angles and mitres,

sub-frames, packings, bearers, grounds and the like,

fixing and fastening, bedding, jointing and pointing including providing materials,

cutting and fitting around obstructions,

firestopping to door frames and doors.

## M31 STAIRS, BALUSTRADES AND SUNDRY ITEMS

### 1. Stairs, balustrades and the like

1.01 Each kind of work is given separately, stating the kind of material and finish as delivered. Staircases and the like which include integral balustrades are so described.

1.02 Each type of stair and the like is given separately.

1.03 Each type of step rung and the like is given separately.

1.04 Each height of balustrade and the like is given separately. Raking and curved work are each so described.

1.05 Opening portions in balustrades and the like are given separately as extra over the work in which they occur.

1.06 Dimensions and details are stated in descriptions, where necessary, to identify the work. Dimensions stated for wood are deemed to be finished sizes unless stated as nominal.

1.07 Stairs and the like are enumerated.

1.08 Step rungs and the like are enumerated.

1.09 Balustrades and the like are given in metres.

1.10 Opening portions in balustrades and the like are enumerated.

1.11 Rates for measured work are deemed to include the costs of:

linings, nosings, cover moulds, trims, ironmongery and the like, where supplied with the unit,

soffit lining, spandrel panels and the like, where supplied with the unit,

infill panels, glazing and the like, where supplied with the unit,

surface treatments and preservative treatments applied as part of the production process,

finishes, where part of the unit as delivered,

rebates, grooves, splays, chamfers, mouldings and the like labours on wood including ends, angles and mitres,

ends, ramps, wreaths, bends and the like in balustrades and the like,

fixings and fastenings including blockings, wedges, bolts, brackets, cleats and the like,

spliced connections, including material,

cutting and fitting around obstructions,

protection.

2. Sundry items

2.01 Each kind of work is given separately, stating the kind of material and finish as delivered.

2.02 Each type of sundry item is given separately. Dimensions and details are stated in descriptions, where necessary, to identify the work. Dimensions stated for wood are deemed to be finished sizes unless stated as nominal.

2.03 Curved work is so described.

2.04 Walkways, floor covers and the like are given in square metres.

2.05 Duct covers and gratings, shelves, pipe casings, and the like framing, trims and finishings are given in metres.

2.06 Corner guards, bollards, access panels, louvre vents, roof scuttles and the like are given in square metres or enumerated.

2.07 Rates for measured work are deemed to include the costs of:

surface treatments and preservative treatments applied as part of the production process,

finishes, where part of the item as delivered,

rebates, grooves, splays, chamfers, mouldings and the like labours on wood including ends, angles and mitres,

fixings, fastenings and gaskets,

cutting and fitting around obstructions,

protection.

# P SURFACE FINISHES

## P11 PLASTER AND DECORATIVE RENDER COATINGS

### 1. Plastered and rendered coatings

1.01 Each kind of plastered and rendered coatings is given separately, stating the surface finish. Thickness stated for coatings is the nominal thickness.

1.02 Plaster and render coatings to metal lath suspended ceilings is so described.

1.03 Work to each of the following is given separately:

walls (including attached columns),

ceilings (including attached beams and soffits of staircases and landings),

isolated beams,

isolated columns,

upstands (including sides and tops of plinths, kerbs and upstand beams),

1.04 Work to seats, panels, arches and other special features are each given separately.

1.05 Work to sides of opening, to projections, nibs, recesses and rebates, and to steps in surfaces is included with the measurement of work to the adjacent surface.

1.06 Isolated columns are only measured as such when their length on plan is not exceeding four times their thickness.

1.07 Upstands are only measured as such when their height is not exceeding four times their thickness.

1.08 Thickness, dimensions, types and details are stated in descriptions, where necessary, to identify the work.

1.09 Sloping and curved work are each so described.

1.10 Work to walls, ceilings, isolated beams, isolated columns, upstands, and the like is given in square metres. No deduction is made for voids not exceeding 0.50 m2.

1.11 Work to panels, arches and other special features is enumerated.

1.12 Rates for measured work are deemed to include the costs of:

work at any height above floor level,

work of any width, height or girth,

extra work involved in decorative coating and work of multi-coats,

raking and vertical work to strings, aprons, and the like,

working over and around obstructions, pipes and the like,

overhand working,

keying mixes, bonding agents, plasticisers and other bonding materials,

metal mesh strips and fabric reinforcement across dissimilar backgrounds, service chases, conduits and the like,

anti-crack strips, cover strips and movement joints, except designed expansion joints,

fair joints, edges, keys, internal and external angles, grooves, coves, intersections, ends, wreaths and outlets, metal angle beads, stop beads and the like including working there to,

preparation of backing surfaces to receive plaster or render,

dubbing out and preparation of coats between coats,

sample panels,

protection.

2. Metal lath suspended ceilings

2.01 Work to ceilings, beams and upstands are each given separately.

2.02 Sloping and curved work are each so described.

2.03 Work to ceilings, beams and upstands is given in square metres, measured between boundaries. No deduction is made for voids not exceeding 0.50 m2.

2.04 Rates for measured work are deemed to include the costs of:

suspension system, framed members and lathing, including any method of fixing, and any depth of suspension system,

support work and accessories for fittings including bridgings,

layout and treatment of joints and expansion joints, including extra material for laps,

edge trims, angle trims and fire barriers,

work of any width, height or girth,

working over and around obstructions and integral services including additional materials,

access panels and holes for pipes, services and the like.

## P12 SCREEDS AND TOPPINGS

### 1. Screeds and toppings - generally

1.01 Each kind of screed, topping and the like is given separately stating the surface finish. Reinforced work and monolithic work (i.e. work laid in one operation with the base) are each so described.

1.02 Thickness stated for screeds and toppings is the nominal thickness.

1.03 Sloping work is so described

1.04 Work to roofs, floors, channels and the like is given separately in square meters measured overall the area in contact with the base. No deduction is made for voids not exceeding 0.50 m2.

1.05 Work to skirtings , angle fillets and the like is given in metres, measured the length in contact with the base

1.06 Rates for measured work are deemed to include the costs of:

work laid to falls and crossfalls, and intersections on sloping work,

work laid in bays,

forming shallow channels within the thickness of screeds or toppings,

fabric reinforcement, metal mesh strips across dissimilar backgrounds, service chases, conduits and the like,

dividing strips, anti-crack strips, cover strips and movement joints except designed expansion joints,

temporary support work to face of risers and the like,

bonding agents,

samples and tests,

protection.

## P21 RIGID FLOOR AND WALL TILING AND SLABS

### 1. Rigid floor and wall tiling and slabs - generally

1.01 Each kind of tiling and slab is given separately. Patterned work and work in multi-colours are each so described stating the nature of the work.

1.02 Works to each of the following is given separately:-

floors including roofs,

treads,

risers,

channels,

skirtings,

saddles,

walls, including attached columns,

isolated columns,

upstands, including sides and tops of plinths, kerbs and upstand beams, isolated beams,

ceilings, including soffites, sides and soffites of attached beams, and soffites of staircases and landings.

1.03 Works to arches and other special features are each given separately.

1.04 Works to side of openings, to projections, nibs, recesses, and rebates and the like is included with the measurement of works to the adjacent surface.

1.05 Isolated columns are only measured as such when their respective length on plan is not exceeding four times their thickness.

1.06 Upstands are only measured as such when their height on elevation is not exceeding four times their thickness.

1.07 Thickness, dimensions, types and details are stated in descriptions where necessary to identify the work.

1.08 Sloping and curved works are so described. (work to slope is measured when the incline from horizontal exceeds 15 degrees).

1.09 Thickness stated for tiles and slabs is the thickness exclusive of keys, grooves and the like.

1.10 Work to floors, walls, ceilings, isolated columns, isolated beams, upstands and the like is given in square metres measured on the exposed face. No deduction is made for voids not exceeding 0.50m2.

1.11 Work to skirtings, saddles, treads, risers, nosings and the like is given in metres.

1.12 Work to treads (as winders) are enumerated stating the maximum dimensions.

1.13 Work to arches and other special features is enumerated or is given in metres as appropriate.

1.14 Rates for measured work are deemed to include the costs of:

work at any height above floor level,

setting out,

extra work involved in patterned work and work in multi-colours,

work of any width, height and girth,

special and non-standard tiles and slabs,

slabs and tiling laid to falls and cross falls (where the incline from horizontal does not exceed 15 degrees),

raking and vertical work to string, aprons and the like,

sand leveling bed,

cement-sand screeds,

adhesive and fixing materials and/or devices,

bedding and fixing including bedding and backing mortars, all cutting including circular cutting, internal and external angles, intersections, joints, division strips and anti slip nosings,

jointing, grouting, cleaning, sealing, grinding and polishing including working overhand and working over and around obstructions,

temporary support,

supports for roof paving,

shop drawings, samples and test results,

protection.

# R GLASSWORK

## R11 GENERAL GLAZING

### 1. Generally

1.01 Each kind of glass and plastics sheet is given separately, stating the thickness. Glass with ground, sandblasted, embossed and engraved surfaces are each so described.

1.02 Glazing, louvres and mirrors are each given separately.

1.03 Nature of the surround is stated in descriptions.

1.04 Dimensions of louvres and mirrors are stated in descriptions.

1.05 Curved work is so described.

1.06 Glazing is given in square metres. Panes of irregular shape are measured according to the smallest rectangle from which the pane can be obtained. Each pane is measured separately for multiple glazed panes where not in sealed units.

1.07 Louvres and mirrors are enumerated.

1.08 Rates for measured work are deemed to include the costs of:

internal and external work,

any method of glazing, including providing glazing compounds, tapes, strips, gaskets, sealants, beads, channels and the like,

any size of panes, any number of identical panes and panes of irregular shape,

aligning adjacent panes of wired, patterned and decorative glass,

polished and bevelled edges and drilling holes.

# V PAINTING AND DECORATING

## V11 PAINTING AND CLEAR FINISHING

### 1. Generally

1.01 Each kind of paint, coating and clear finish is given separately, stating the general nature of the base.

1.02 Work to each of the following is given separately:

general surfaces (i.e. surfaces not included in other classifications),

surfaces of glazed windows and the like (including glazed screens and glazed doors),

surfaces of structural steelwork,

surfaces of balustrades and the like (including railings, fences and gates),

line marking, signing and the like.

1.03 Work to irregular surfaces (including corrugated, fluted, panelled, carved or ornamental surfaces) is so described.

1.04 Work to surfaces of plain open type, closed type and ornamental type balustrades and the like are each so described.

1.05 Painting and clear finishing are given in square metres measured the area covered and measured flat. No deduction is made for voids not exceeding 0.50 m2. Work to surfaces of glazed windows and the like is measured each side and overall glass. Work to surfaces of balustrades and the like is measured each side and overall voids.

1.06 Rates for measured work are deemed to include the costs of:

internal and external work,

work of any girth,

work at any height above floor level,

preparatory work,

method of application,

rubbing down between coats,

easing,

work required to be carried out before fixing, whether on or off site,

stopping, filling and priming,

priming backs of frames, edges of rebates and beads and bottoms of doors,

work in multi-colours, defined as the application of more than one colour on an individual surface or in one room,

extra girth of edges, mouldings, panels, sinkings, corrugations, flutings, carvings, enrichments and the like,

panes of any size in work to glazed surfaces,

work to edges of opening lights and surrounding frame caused by opening lights, cutting in next to glass, work on beads, hinges and fastenings in work to glazed surfaces,

work on hinges and fastenings to doors, frames and linings in work to general surfaces,

work to attached hookbolts, clips and the like in work to surfaces of structural steelwork,

removing ironmongery from surfaces to be decorated and refixing,

masking adjacent surfaces,

samples and product data,

protection.

# X FITTINGS, SPECIALTIES AND EQUIPMENT

X10 FITTINGS

X70 PREFABRICATED BUILDINGS

X80 TOILET AND BATH ACCESSORIES

## 1. Generally

1.01 Each kind of fittings, toilet accessories and equipment is given separately.

1.02 Each type of fittings and unit of toilet accessories and equipment is given separately.

1.03 Dimensions, types and details are stated in descriptions, where necessary, to identify the work.

1.04 Fittings, toilet accessories and equipment are enumerated.

1.05 Rates for measured work are deemed to include the costs of:

all component parts, finishings including applied finishes, ironmongery and accessories,

providing everything necessary for jointing,

sealant and pointing,

adjusting, easing and lubricating,

cleaning on completion,

placing and fixing in final position, extra material and labour in secure anchorage.

lightning protection connectors for flagpoles,

product data, shop drawings and samples,

protection.

# X45 GRP FABRICATIONS

## 1. Generally

1.01 Each kind of work is given separately, stating the kind of material and finish as delivered.

1.02 Each type of unit is given separately. Dimensions and details are stated in descriptions, where necessary, to identify the work.

1.03 Ladders, gratings, domes and the like are enumerated.

1.04 Rates for measured work are deemed to include the costs of:

linings, nosings, cover moulds, trims, ironmongery, fittings, accessories and the like, whether or not supplied with the unit.

surface treatments and preservative treatments applied as part of the production process,

finishes, where part of the unit as delivered,

rebates, grooves, splays, chamfers, mouldings and the like labours including ends, angles and mitres,

fixings and fastenings including blockings, wedges, bolts, brackets, cleats and the like,

cutting and fitting around obstructions.

# Y EXTERNAL WORKS

## Y11 SOILING, CULTIVATING AND GRADING

## Y12 GRASS PLANTING AND SEEDING

## Y13 PLANTING

### 1. Soiling, cultivating and grading

1.01 Excavation, filling, fabrics and membranes are measured and given in accordance with the rules contained in Division C of the Method of Measurement.

1.02 Rates for measured work are deemed to include the costs of:

marking boundaries of planting areas,

applying fertilizers and herbicides to surfaces to receive filling,

cultivating and final grading of in situ topsoil and topsoil filling,

additional cultivation and application of herbicides during the fallow period,

prevention of erosion.

### 2. Grass planting and seeding

2.01 Each kind of grass is given separately.

2.02 Planting and seeding are each given separately.

2.03 Grass planting and seeding are given in square metres.

2.04 Rates for measured work are deemed to include the costs of:

final cultivation and weeding of soil,

applying fertilizer after planting or seeding,

watering during establishment of grass,

first and subsequent cuts, including fertilizing and watering,

temporary protection,

maintenance and making good defects.

3. Planting

3.01 Trees, palms and plants are each given separately, stating the height or size where appropriate.

3.02 Each species of tree, palm and plant is given separately. Botanical names are given in descriptions.

3.03 Trees, palms and plants are enumerated.

3.04 Rates for measured work are deemed to include the costs of:

recultivating topsoil in planting areas,

setting out planting beds,

drainage of planted areas,

excavating pits and holes including disposal and breaking up bottoms,

cutting and treating roots, pruning and the like, including anti-dessicant and tree wound dressings,

planting including backfilling hole with planting soil and firming,

watering and fertilizing after planting,

supports to trees and palms including stakes, guys, ties and chafing guards,

trunk wrapping,

labelling,

forking and/or raking soil at completion,

temporary protection,

maintenance and making good defects.

Y21 BASES TO PAVINGS

Y22 KERBS, EDGINGS AND CHANNELS

Y23 BLOCK AND SLAB PAVINGS

1. Bases to pavings

1.01 Excavation and filling are measured and given in accordance with the rules contained in Division 60 of the Method of Measurement.

1.02 In situ concrete, reinforcement, formwork, finishes and joints are measured and given in accordance with the rules contained in Division E of the Method of Measurement.

1.03 Granular sub-base for vehicular and pedestrian areas are given in cubic meters of granular material furnished, screened, crushed if so specified, mixed with water, placed, spread, compacted and finished, completed and accepted.

1.04 Aggregate base course for vehicular areas are given in cubic meters of aggregate materials furnished, crushed and screened, mixed with water, placed and spread, compacted and finished, completed and accepted.

1.05 Rates for measured work are deemed to include the costs of preparation and compaction of sub grade.

2. Kerbs, edgings and channels

2.01 Each kind of material is given separately.

2.02 Kerbs, edgings and channels are each given separately, stating the dimensions or type.

2.03 Curved work is so described.

2.04 Kerbs, edgings and channels are given in metres.

2.05 Rates for measured work are deemed to include the costs of:

excavation, backfilling and disposal,

concrete foundations and haunching including reinforcement and formwork,

bedding and jointing,

ends, angles and intersections including special units.

3. Block and slab pavings

3.01 Each kind of block and slab is given separately. Patterned work and work in multi-colours are each so described, stating the nature of the work.

3.02 Work to each of the following is given separately:

pavings,

treads,

risers (including undercut risers),

upstands (including sides and tops of plinths, kerbs and upstand beams),

channels, pits and the like (including bottom and sides).

3.03 Skirtings, strings and the like are each given separately.

3.04 Work to seats, planters, pools and other special features are each given separately.

3.05 Thickness, dimensions, types and details are stated in descriptions, where necessary, to identify the work. Thickness stated is the thickness exclusive of keys, grooves and the like.

3.06 Sloping and curved work are each so described.

3.07 Work to pavings, treads, risers, upstands, channels, pits and the like is given in square metres measured on the exposed face. No deduction is made for voids not exceeding 0.50 m2.

3.08 Skirtings, strings and the like are given in metres.

3.09 Work to seats, planters, pools and other special features is enumerated.

3.10 Rates for measured work are deemed to include the costs of:

work of any width, height or girth,

extra work involved in patterned work and work in multi-colours,

work laid to falls and crossfalls, and intersections on sloping work,

raking and vertical work to skirtings, strings and the like

working over and around obstructions, pipes and the like and into recesses and shallow channels,

bedding mortars and other fixing materials,

jointing, grouting and cleaning,

fair joints, edges, internal and external angles, ends and outlets,

special and non-standard blocks and slabs.

4. Paving accessories

4.01 Each kind of paving accessory is given separately, stating the kind of material.

4.02 Each type or size is given separately.

4.03 Curved work is so described.

4.04 Movement joints and the like are given in metres.

4.05 Tree grilles and the like are enumerated.

4.06 Rates for measured work are deemed to include the costs of:

all components of composite units,

ends, angles and intersections.

## Y31 PAVEMENT MARKINGS

### 1. Generally

1.01 Each kind of paint is given separately.

1.02 Pavement marking lines and painted pavement markings are given in square metre of reflectorized paint of each type furnished.

1.03 Rates for measured work are deemed to include the costs of surface preparation, application and curving.

## Y32 TRAFFIC SIGNS

### 1. Generally

1.01 Triangular, circular and small rectangular signs (up to 1 square metre in surface area) are given by number furnished, installed and accepted.

1.02 Rectangular and trapezoidal signs over 1 square metre are given in square metre furnished, installed and accepted.

1.03 Single post sign supports are given by the number of each type furnished, installed and accepted.

1.04 Multiple post sign supports assemblies are given by number of each type furnished, installed and accepted.

1.05 Rates for measured work are deemed to include the costs of:

excavation,

backfilling,

concrete,

reinforcement and other ancillary items.

## Y41 CHAIN LINK FENCING AND ASSOCIATED GATES

1. Fencing

1.01 Each kind of fencing is given separately.

1.02 Each height of fencing is given separately. The height is measured from the level of the ground or other base to the top of the infilling, or where there is no infilling, to the top wire or rail.

1.03 Work to sloping ground is so described.

1.04 Curved work is so described. Curved work includes work set out to a curve but straight between posts.

1.05 Fencing is given in metres measured over supports and special supports.

1.06 Rates for measured work are deemed to include the costs of:

any length of fencing,

fencing supports including end posts, angle posts, straining posts, integral gate posts, struts and the like and method of fixing,

driving supports into the ground or excavating holes and backfilling with concrete or other material, including disposal of surplus excavated material and earthwork support.

# Y51 LANDSCAPE AND STREET FURNITURE AND EQUIPMENT

## 1. Generally

1.01 Each kind of furniture and equipment is given separately.

1.02 Each type or size of unit of furniture and equipment is given separately.

1.03 Furniture and equipment are enumerated.

1.04 Rates for measured work are deemed to include the costs of:

all component parts, finishings, ironmongery and accessories,

providing everything necessary for jointing,

excavating holes and backfilling with concrete or other material, including disposal of surplus excavated material and earthwork support,

temporary support.

# Z WATER SUPPLY, DRAINAGE AND SEWERAGE

## Z11 PIPES, FITTINGS AND ACCESSORIES

### Generally

1.01 Rate for pipelines shall include the costs of earthworks, pipe supply and installation, testing and surface reinstatement.

### Earthworks

2.01 Earthworks shall cover:

- Setting out as directed.
- Excavation in materials encountered.
- Excavation at any level and to any depth.
- Excavation to any trench width and along curves.
- Allowance for working space and for variations to bulk.
- Excavation below water table and keeping excavations free from water.
- Leveling ramming trimming and grading bottoms and sides of excavation as required.
- Planking strutting and all temporary support as required.
- Excavating next to, and around existing services, crossings including temporary support, temporarily re-routing, sealing and removing services as required.
- Breaking out existing materials and hard pavings including concrete, reinforced concrete, brickwork, blockwork, stonework, drains, and coated macadam or asphalt and the like.
- Haunching and concrete encasement as appropriate.
- Segregation of the various classes of excavated material and stock piling as may be directed by the Engineer.

- Returning, filling and ramming selected excavated material in trenches and around foundations, multiple handling of excavated material and excavation from borrows and transporting about the Site.

- Disposal of surplus excavated material including depositing and consolidating where directed on Site or removing from Site and depositing at a tip to be provided and paid for by the Contractor.

- Pipe bedding and backfilling to excavations with material arising from excavations or imported filling material including depositing and compacting in layers and multiple handling.

- Filling over-excavation.

- Consolidation of primary backfill (initial backfill) material using water or hand tamping.

- Compaction of secondary backfill (main backfill) material.

- Reinstatement of surfaces at road crossings, and wherever required.

Pipes and Accessories

3.01 Pipes for every trade are measured separately.

3.02 Every diameter of pipe is measured separately. Diameters stated are nominal diameters.

3.03 Sewage house connection pipes and pipes connecting gullies/inlets to collection network are measured separately.

3.04 Pipes and accessories shall include for the following as applicable for pressure and/or gravity pipes.

- Supply of pipes, coupling, and all appropriate fittings, specials and jointing materials.

- Transportation and hauling about the Site, loading, unloading and laying in the trench or fixing to appropriate structure.

- Cutting, machining, chamfering, etc. of standard length pipes.

- Assembling the pipes and couplings and connecting to fittings and valves, or manholes as appropriate.

- Bolts, nuts, gaskets and other materials for flanged fittings.
- Concrete thrust blocks including associated over excavation and anchors.
- Testing as per specification.
- All ancillary works and materials.
- Flushing cleaning, lining and coating.
- Flushing and disinfection of water supply pipes.
- Pipe sleeves

3.05 Pipelines shall be paid for per linear meter covering earthworks, supply of materials installation, testing and surface reinstatement. The pipe length shall be measured as a straight line between the centers of consecutive coupling sections, valves or manholes. Pipes within manholes shall be included as pipe length. No allowance will be made for cut ends and waste.

Water Supply Service Connections

4.01 Building connections are enumerated. Rates for connections are to include the costs of excavation, bedding, backfilling, supply and erection of service connection pipe, service cock valve, end cap, all fittings and accessories, connection to main line and public network, and reinstatement of surfaces.

Building connections for provisional buildings not included in the scope of work are enumerated separately. Rates for connections are to include the costs of excavation, bedding, backfilling, supply and erection of service connection pipe, end cap, all fittings and accessories, connection to main line, and reinstatement of surfaces.

Service connections are paid for per unit installed.

## Z13 VALVES, IRRIGATION EQUIPMENT AND ACCESSORIES

### Valves and Accessories

1.01 Valves, and the like are enumerated or given as an item as appropriate and shall be paid per unit installed.

1.02 Rates for valves are to include the costs for:

- Supply of valve fittings couplings and specials for connection to adjacent network.
- Additional excavation, backfilling, bedding, concrete supports, service box with protective tube complete with cover, lock and key, valve chamber including concrete, reinforcement couplings, puddle flanges, rungs, bolts, nuts, gaskets, handweel, cover and frame, painting and protective coating.
- Air valves are deemed to include associated isolating valves.
- Fire hydrants are deemed to include associated isolating valves.
- Washout are deemed to include drainage hose 80 mm diameter and 25 meters long.
- All other ancillary works.

### Water Meter at the Main Transmission

1.01 Water meters, and the like are enumerated. they shall be paid per unit installed.

1.02 Rates for water meter are to include the costs for:

- Supply of valve fittings couplings and specials for connection to adjacent network.
- Additional excavation, backfilling, bedding, concrete supports, service box with protective tube complete with cover, lock and key, water meter chamber including concrete, reinforcement couplings, gaskets, handweel, cover and frame, painting and protective coating.
- Integrated remote reading network (wired or wireless) based on manufacturer’s recommendations, complete with all necessary equipment, tools, accessories, etc.

- Water meters are deemed to include associated valves and accessories.
- All other ancillary works.

## Z25 MANHOLES, GULLIES, INLETS, CHAMBERS AND CHANNELS

1.01 Rates for manholes, gullies, curb inlets and inspection chambers shall include the costs for:

- Excavation in any natural material in accordance with the preambles for "Earthworks".
- Concrete, blinding, reinforcing steel, beds, surrounds, benching and flexible couplings.
- Protective coating of exposed faces of concrete.
- Concrete or brick blockwork corbelling as required.
- Covers, grates and frames with all ancillary work.
- Testing structures for water tightness and any subsequent re-testing.
- Ladders, rungs and puddle flanges built into walls.
- All ancillary items.

1.02 Manholes, gullies, catch basins/curb inlets and inspection chambers shall be paid for per unit and according to the depth categories shown in the Bill of Quantities.

1.03 Reinforced / Lining concrete channel shall be paid for per linear meter as shown in the Bill of Quantities.

REPLACING ABOVE GROUND FIRE HYDRANTS BY UNDERGROUND FIRE HYDRANTS

1.01 Work is measured and shall be paid as an Item.

1.02 The rates of such work are deemed to include the following:

- Temporary diversion or stopping of flow in existing networks if applicable.
- All earthworks including excavation, bedding and backfilling.
- Preparing existing work for replacement of hydrants, work including any hand excavation to expose pipe and subsequent backfilling, removing above ground hydrant, installing new underground hydrant, connecting to existing water main, etc…
- All cutting and machining required to facilitate the connection.
- All pipe works, fittings, fixing and jointing materials.
- Making good all work disturbed and reinstating surfaces as per directions of the Engineer.
- All works needed for connecting to existing pipe
- Disposal of materials arising.
- Testing and inspection.
- All co-ordination required with authorities as needed., all ancillary items and all costs associated.

## CONNECTING WORKS TO EXISTING NETWORKS

1.01 Work is measured and shall be paid as an Item.

1.02 The rates of such work are deemed to include the following:

- Temporary diversion or stopping of flow in existing networks.
- All earthworks including excavation, bedding and backfilling.
- Preparing existing work to receive or discharge to new work including any hand excavation to expose pipe and subsequent backfilling.
- All cutting and machining required to facilitate the connection.
- All pipe works as listed above, fittings, fixing and jointing materials.
- Making good all work disturbed and reinstating surfaces as per directions of the Engineer.
- All works needed for connecting to existing pipe, chamber or manhole including cutting in reinforced concrete, providing reinforced concrete support and encasement for the pipe
- Disposal of materials arising.
- Testing and inspection.
- All co-ordination required with utility authorities, all ancillary items and all costs associated with authorities' requirements and procedures for maintaining uninterrupted service.

# 2 ELECTRICAL WORKS

## 1. GENERAL RULES FOR ELECTRICAL WORK

1.01 Rates for electrical work are deemed to include the costs of:

supply, installation, testing, commissioning, putting into satisfactory operation and handing over complete systems,

provision of maintenance and operation manuals and spare parts lists and submitting required number of copies,

co-ordination with other trades including minor approved modifications and additions to ensure compatibility,

connection to the utility medium voltage network and telecommunications network, including necessary on site coordination with local authorities, for incoming MV and telephone cables routing in addition to needed civil works as required.

minor items and accessories required for normal operation and maintenance,

marking the positions of and cutting or forming holes, mortices, chases and the like in any surface and making good all work disturbed,

assembling and jointing together component parts of composite units and providing any necessary jointing materials,

patterns, moulds, templates and the like,

priming or painting off site and proprietary finishes or surface treatments applied as part of the manufacturing process,

corrosion protective treatments and coatings to fixings, hangers and supporting materials,

sleeves through walls, ceilings and floors including cover plates,

fire sealants,

brackets and supports,

temporary works and removing and making good after,

loose keys, tools and spares and the like, except where required to be given separately,

plates, labels and tags for the identification of plant, equipment, cables, switches and the like,

temporarily operating each installation, including attendants, special insurance and providing power supply,

cutting and pinning ends of supports for equipment, ancillaries, fittings, trunking, trays and the like,

painting on site including color coding,

builder's work in connection, except where required to be measured separately,

training Employer's personnel in operation and maintenance of systems.

Any necessary provisions and ancillaries for future equipment connection/interface to BMS.

1.02 Dismantling and demolition work rate is generally deemed to include all works described on drawings including the provision of all necessary equipment, tools and manpower to successfully accomplish the required tasks.

## 212 TRANSFORMER SUBSTATION

### 1. Generally

1.01 Each kind of transformer substation is given separately. Type, reference, number and arrangement of medium voltage switchgear cubicles and transformers number and ratings are stated in descriptions, where appropriate.

1.02 Transformer substations are enumerated.

1.03 Rates for measured work are deemed to include the costs of:

ac/dc power supply for switchgear control and operation,

supports required for installation of switchgear on bases and/or trenches,

concrete bases, where not forming an integral part of the building structure

termination of incoming and outgoing cables including cable terminal boxes and accessories,

medium voltage cables and cable accessories between medium voltage switchgear and transformers for indoor substations,

interconnection control cables and other interfaces including BMS interfaces, if any.

spare parts, tools and instruments to include normally supplied replaceable items including fuses, cords, connectors, bulbs and LEDs and emergency stock to keep the system operating for at least one year, and testers, test and adjusting kits.

## 214 STATIC UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEM

### 1. Generally

1.01 Each kind of static UPS system is given separately, stating the capacity and reference, where appropriate.

1.02 Static UPS system is enumerated.

1.03 Rates for measured work are deemed to include the costs of:

batteries and battery cabinet and racks and interconnecting cables and accessories,

termination of incoming and outgoing cables including cable terminal boxes and accessories,

remote control and indicating panels and interconnects.

## 215 MAIN DISTRIBUTION BOARDS

## 216 DISTRIBUTION, SUBDISTRIBUTION AND FINAL BRANCH CIRCUIT PANELBOARDS

### 1. Generally

1.01 Each kind of distribution board is given separately, stating the reference of equipment.

1.02 Distribution boards are enumerated.

1.03 Rates for measured work are deemed to include the costs of:

termination of incoming and outgoing cables to equipment including cable glands, terminations and accessories,

fixing and support structures and materials required for installation of wall or floor mounted equipment as indicated,

ac or dc power supply for switchgear control and operation.

All devices included in distribution boards including breakers, KWHr meter, relays, contactors, timer switches, controls, etc...

Spare parts tools and instruments.

## 217 WIRES, CABLES, FEEDERS AND RELATED ACCESSORIES

### 1. Generally

1.01 Each kind of wire and cable is given separately (except where required to be included with other items), stating the type, size and method of installation.

1.02 Wires, cables and busbar trunking/risers are given in meters, measured the net length.

1.03 Rates for wires and cables are deemed to include the costs of:

conduits and fittings, draw wires and the like (except where conduit work is required to be measured separately),

cable sleeve where required,

cable connectors and cable joints (where permitted) including joint boxes, sealing boxes, shrouds and the like and materials and heat for making the joints,

allowance in cable length for cables entering fittings and accessories, equipment or control gear,

necessary components and accessories for fixing cables on walls, ceilings and on cable trays/ladders.

1.04 Rates for connection units are deemed to include the costs of:

Mounting fittings and accessories,

Termination to equipment/boards and busduct including all related accessories.

## 218 CONDUITS, WIREWAYS, SUPPORTING SYSTEMS AND RELATED ACCESSORIES

### 1. Generally

1.01 Each kind of conduit is given separately (except where required to be included with other items), stating the type, size and method of installation.

1.02 Each kind of trunking, cable tray, and the like is given separately (except where required to be included with other items), stating the type and dimensions.

1.03 Conduits, trunking, cable trays, and the like are given in meters.

1.04 Rates for conduits are deemed to include the costs of:

fixings including saddles or cramps,

bending, cutting, screwing and jointing, providing all conduit fittings, special boxes, adaptable boxes, floor-trap boxes, purpose made boxes, junction boxes required for drawing in cables, flameproof boxes and expansion joints etc.,

cutting and jointing conduit to fittings,

flexible conduit and extensible conduit.

1.05 Rates for cable trays and the like are deemed to include the costs of:

mounting fittings, including cutting and jointing thereto,

jointing between sections, bends, tees, etc.,

components for earth continuity,

adaptors and connections between trunking and items of equipment or control gear requiring the use of flanges and/or the forming of apertures,

junction, tap-off, and pull boxes.

pin racks for supporting cable,

supports including fixing.

## 219 EARTHING SYSTEM

### 1. Generally

1.01 Each kind of earthing system is given separately, stating the type and details, as appropriate.

1.02 Earthing system is given as an item.

1.03 Rates for measured work are deemed to include the costs of a complete system, excluding protective earthing conductors run with branch circuit wiring and protective earthing cables run with main and sub-feeders which are required to be measured separately or included with other items.

## 231 GENERAL LIGHTING INSTALLATIONS

## 232 OUTDOOR AREA AND ACCESS ROAD LIGHTING

### 1. Generally

1.01 Each kind of lighting fixture is given separately, stating the type.

1.02 Lighting fixtures are enumerated.

1.03 Rates for measured work are deemed to include the costs of:

outlets,

wires including protective earthing conductors, conduits, trunking and other raceways and fittings from outlet back to upstream outlet or to final branch circuit panelboard,

control gear, transformers and the like,

batteries and relay switches for emergency lighting,

Concrete bases where required (example: lighting poles) including related civil works and excavation for complete installation,

lamps,

fixing and supporting material.

## 241 WIRING DEVICES, DISCONNECTS AND LV DISTRIBUTION TRANSFORMERS

### 1. Generally

1.01 Each kind of wiring device including socket outlets, electrical outlets, switches, disconnecting switches and the like is given separately, stating the type and/or rating.

1.02 Wiring devices, miscellaneous equipment and the like are enumerated.

1.03 Plugs for sockets are given as an item

1.04 Rates for wiring devices, excluding disconnecting switches, are deemed to include the costs of:

outlets,

wires including protective earthing conductors, conduits, trunking and other raceways and fittings from outlet back to upstream outlet or controlled circuit (for switches etc.) or to final branch circuit panelboard,

fixing and supporting material.

1.05 Rates for disconnecting switches are deemed to include the costs of the outlets and the cost for fixing and supporting material and for terminating cables.

1.06 Rates for outdoor lighting control system are deemed to include a complete system inclusive of all wiring, panels, control equipment, accessories, supports & fixation, etc.. for a working system as per the drawings subject to Engineer's approval.

## 261 IP TELEPHONY SYSTEM

### 1. Generally

1.01 Equipment of the following types are each given separately:

Media Gateway and peripherals,

Signaling Server and peripherals,

Call Processing Unit and peripherals,

telephone sets (stating type),

spare parts, tools and instruments.

1.02 Telephone sets are enumerated.

1.03 Media gateway, signaling server, call processing unit, spare parts, tools and instruments are given as an item.

1.04 Work for Media Gateway, Signaling Server, Call Processing Unit and peripherals, telephone sets, distribution boxes is deemed to include:

configuration and setup of all servers and devices,

mounting with necessary fixing materials and supports,

cable termination with all necessary cable termination accessories and patch cords,

equipment and accessories that allow interface with the data network and other systems in the building as required.

1.05 Telephone sets are deemed to include cable cords and plugs or termination into telephone outlet complete.

1.06 Spare parts, tools and instruments are deemed to include normally supplied replaceable items including fuses, cords, connectors, bulbs and LEDs and emergency stock to keep the system operating for at least one year, and testers, test and adjusting kits.

# 265 DATA NETWORK INSTALLATION

## 1. Generally

1.01 Each component of the Data Network Installation is enumerated. The works is deemed to include the supply and installation of a generic Data Network Installation as described in the Specifications.

Spare parts, tools, instruments and outside plant fiber optic cabling are given as items.

### 1.02 Cabinets

Cabinets are each given separately and enumerated stating the type, number and dimensions.

Works is deemed to include:

Installation of cabinets for all horizontal cables in each technical room and/or closet for copper links, fiber optic links, and active equipment,

Fixation and support and labeling,

All necessary accessories and other ancillary.

### 1.03 Copper and Fiber Optic Patch Panels

Patch panels (for copper and fiber optic cables) are each given separately and enumerated, stating the type, number and size.

Works is deemed to include:

Installation of copper and fiber optic patch panels,

Termination of Cat 6 copper and fiber optic cables,

RJ45 and F.O. patch cords including connectors and necessary adapters and necessary cable tray spacers,

Fixation and support, cables bonding and labeling,

Fiber optic cables terminated between patch panels for interconnecting cabinets in a single building (where applicable),

All necessary accessories and other ancillary.

1.04 RJ45 Outlets

RJ45 outlets are each given separately and enumerated stating the type and number.

Works is deemed to include:

RJ45 faceplates and boxes at the user voice/data/video point of interconnection,

RJ45 connectors to interface faceplates and corresponding patch panels,

Cat 6 copper cables measured from the user voice/data/video point of interconnection to the copper patch panel in the corresponding telecommunications rack,

Conduits, ducts and sleeves,

Support, fixation, cable bonding and labeling,

All necessary accessories and other ancillary.

1.05 Optical Fiber Cables

Single Mode Fiber Cable is given as an item stating the type.

Works is deemed to include the costs of in addition to the outside plant fiber optic cables:

Installation of FO cabling in ducts or on cable trays for outside plant cabling,

Installation of FO splices in manholes or on walls inside the buildings,

Fixation and support and labeling of cables,

Fixation and support and labeling of splices,

All necessary accessories and other ancillary.

## 266 ACTIVE COMMUNICATION AND DATA PROCESSING EQUIPMENT

### 1. Generally

1.01 Active Communications and Data Processing Equipment is enumerated.

1.02 Spare parts, tools and instruments are given as items.

1.03 Works is deemed to include the costs of:

Detailed engineering, coordination, manufacture, supply, transportation, delivery, installation, testing, commissioning, setting to work, training and maintenance services during the 24-month Warranty Period for the data network active infrastructure as described in the Specifications including, but not limited to:

Core Data equipment,

Access Data equipment,

Associated element and/or network management and network security tools with duly dimensioned hardware.

Cables and connectors and all necessary accessories and other ancillary.

## 272 ANALOGUE ADDRESSABLE FIRE ALARM SYSTEM

### 1. Generally

1.01 Equipment of the following types is each given separately:

Main fire alarm control panel (MFAC) in the Fire Fight Station including all communication equipment with other panels in other buildings in accordance with the NFPA Fire Code Requirements,

graphic display station and event logging printer,

satellite fire alarm control panel (SFAC),

fire alarm repeater panels (FARP),

fire detection and/alarm initiating devices (stating type),

alarm and sundry devices (stating type),

control modules,

monitor modules,

fault isolators,

spares, tools and instruments.

1.02 The following equipment is enumerated:.

main fire alarm control panel (MFAC),

satellite fire alarm control panel (SFAC),

graphic display station and event logging printer,

fire alarm repeater panels (FARP),

alarm initiating devices (stating type),

electronic sounders (stating type),

strobe lights (stating type),

1.03 The following equipment is given as an item:

duct smoke detectors,

control modules,

monitor modules,

fault isolator,

spares, tools and instruments.

1.04 Rates for fire alarm cabinets are deemed to include :

wires, conduits and accessories up to fire alarm control panel

mounting with necessary fixing materials and supports,

complete power supply unit,

transmitter interfaces,

cable termination with all necessary cable termination accessories,

termination of wire ways with all necessary fittings, etc.

connection of fire fighting panels, flow switches, valves, elevators, fans to the fire alarm system,

provisional interface for future BMS system including interface elements such as software protocol, relays, transducers, etc., if any.

1.05 Rates for MFAC/SFAC graphic display units are deemed to include:

necessary equipment and accessories, including accessories that allow interface with future BMS (where provided) and other systems as necessary and as specified or shown on drawings,

termination of all network requirements.

1.06 Rates for repeater panel (FARP) are deemed to include:

mounting with necessary fixing materials and supports,

cable termination with all necessary cable termination accessories, etc.

1.07 Rates for fire detection/alarm device, end of line resistors, strobe lights electronic sounders and all other fire alarm devices and modules are deemed to include the costs of:

outlet,

wiring and conduits and related/accessories to upstream device or, to MFAC/SFAC as applicable.

1.08 Rates for spares, tools and instruments are deemed to include the costs of normally supplied replaceable items including fuses, cords, connectors, bulbs and LEDs and emergency stock to keep the system operating for at least one year, and testers, test and adjusting kits.

## 273 IP CCTV SURVEILLANCE SYSTEM

### 1. Generally

1.01 Equipment of the following types are each given separately:

CCTV Cameras (stating type)

CCTV Consoles (including monitors)

Network Video Recorders with storage,

Spare parts and loose equipment.

The works is deemed to include the supply and installation of a complete IP CCTV System as described in the Specifications.

1.02 Cameras are enumerated.

1.03 CCTV consoles, network video recorders with storage, spare parts and loose equipment are given as items.

1.04 Rates for CCTV cameras are deemed to include the costs of: CCTV cameras including housing and terminal boxes, mounting brackets and/or structures, fixing materials, painting, protection cables (power, video, data and control), wiring, conduits and related accessories, fittings, raceways/cable trays, conduits and ducts, support, fixation, cable bonding and labeling

1.05 Rates for CCTV console are deemed to include the costs of: CCTV console including viewing monitors, power supply, mounting frames/bases, covering up openings and finishing as necessary, terminal strips, cables, input/output connectors, accessories to equipment and any related peripheral components, support, fixation, cable bonding and labeling,

1.06 Work for Network Video Recorders with storage is deemed to include:

Network server, storage, rack mount, Network recording software, network and viewing software, system server, monitors, keyboard, licenses, advanced export tool for archive (for writing to CD/DVD), remote view software, cameras, etc.

Network Management System including management software, GUI, servers, workstations, network video recorders, video cards, printers, etc. in addition to the above.

All necessary accessories and other ancillary.

## 276 ACCESS CONTROL SYSTEM

### 1. Generally

1.01 Equipment of the following types is each given separately:

proximity-type card reader,

access control panel (ACP),

security & access control server,

spare parts and loose equipment,

1.02 Equipment is enumerated.

1.03 Security & access control server, spare parts and loose equipment are given as items.

1.04 Rates for proximity-type card readers are deemed to include the costs of:

cabling, conduits and related accessories for interconnection to access control panel.

1.05 Rates for access control panels are deemed to include the costs of:

mounting frames, covering-up recesses, openings and the like,

management and supervision equipment specified and recommended for operation of the system, input and output terminal racks, termination accessories and the like,

cabling, conduits and related accessories for interconnection to data network switches.

1.06 Rates for security & access control server are deemed to include the costs of:

mounting frames, covering-up recesses, openings and the like,

configuration and setup of the system network and viewing software, system server, monitors, keyboard, licenses, advanced export tool for archive (for writing to CD/DVD), remote view and control software, etc.

management and supervision equipment specified and recommended for operation of the system, input and output terminal racks, termination accessories and the like,

cabling, conduits and related accessories for interconnection to data network switches.

1.07 Rates for spare parts and loose equipment are deemed to include the costs of normally supplied replaceable items such as fuses, cords, connectors, bulbs and LEDs and any emergency stock to keep the system operating for at least one year, testers, test and adjusting kits.

## 291 BUILDER'S WORK

### 1. Generally

1.01 Builder's work in connection with electrical installations is not given separately (except where specifically required) and the costs are deemed to be included in the rates for measured work for electrical installations.

1.02 The costs for bases/foundations and supports (where not forming an integral part of the building structure) are deemed to be included in the rates for equipment.

### 2. Cable ducts and duct banks

2.01 Cable ducts and duct banks are each given separately, stating the type, number and size of ducts.

2.02 Cable ducts and duct banks are given in meters.

2.03 Rates for measured work are deemed to include the costs of:

excavation, including backfilling, disposal of surplus excavated material and earthwork support,

duct couplers, bends and other duct accessories,

duct racks/spacers.

### 3. Manholes, handholes and other underground structures

3.01 Manholes, handholes and other underground structures (where not forming an integral part of the building structure) are each given separately, stating the type and/or size.

3.02 Manholes, handholes and other underground structures are enumerated.

3.03 Rates for measured work are deemed to include the costs of:

excavation including backfilling, disposal of surplus excavated material and earthwork support,

concrete, reinforcement, formwork and waterproofing,

blockwork, brickwork and rendering,

building in ends of pipes including cutting pipes,

step irons, covers and frames.

# 4 PLUMBING

## 1. GENERAL RULES FOR PLUMBING

1.01 Pipework and accessories, underground structures, equipment and ancillaries, insulation and other plumbing work are each given separately under the following Section headings:

421 Sanitary drainage and vent system,

422 Rainwater drainage,

424 Plumbing fixtures,

431 Domestic cold water,

432 Domestic hot water,

492 Electrical work.

1.02 Rates for measured plumbing work are deemed to include the costs of:

working internally, externally and in plant rooms,

assembling and jointing together component parts of composite units and providing connecting flanges and jointing material,

providing everything necessary for jointing,

patterns, moulds, templates and the like,

making minor changes and modifications in layout required,

temporary work including removing and making good after,

disconnecting, setting aside and refixing equipment for the convenience of other trades,

cleaning and flushing piping systems,

disinfection of cold water system,

priming or painting off site and proprietary finishes or surface treatment applied as part of the production process,

painting on site including colour coding,

plates, discs, labels and charts for the identification of plant, equipment, appliances, pipes, valves and the like,

bedding and pointing components or units of equipment, ancillaries and the like,

cutting and pinning ends of supports for equipment, ancillaries and pipes,

marking the positions of and cutting or forming holes, mortices, chases and the like and making good after,

builder's work in connection with plumbing work including all work shown on the Drawings, described in the Specification or reasonably to be implied as necessary for the proper execution of the plumbing work,

preparing instruction manuals and spare parts lists and submitting required number of copies,

training Employer's personnel in the operation and maintenance of the systems including providing instructors,

temporarily operating each installation (except for testing) including attendants, insurances and providing fuel and electricity for power and lighting.

## 2. PIPEWORK

2.01 Each kind of pipe is given separately, stating the Standard to which it complies.

2.02 Each diameter of pipe is given separately. Diameters stated are nominal diameters.

2.03 Pipes are given in metres measured the length over all fittings and branches.

2.04 Rates for measured work are deemed to include the costs of:

curved pipes, flexible pipes and extensible pipes,

flow and return header pipes,

pipework required to be temporarily fixed in position, dismantled for chromium-plating or other special finishing and subsequently refixed,

purpose-made pipes and purpose-made fittings,

labours on pipes,

providing everything necessary for jointing,

joints in the running length,

joints of a special or ornamental character and extra demountable couplers in the running length,

bends, tees, crosses, joints, unions, nipples, plugs and flanges,

pipe fittings including cutting and jointing pipes to fittings,

screwed sockets, tappings, bosses and welding necks welded to pipes or flanges including perforating the pipe or flange,

special connections, special joints and isolated joints in pipes,

connections to concrete water tanks, reservoirs and chambers,

expansion loops and expansion compensators,
manual air vents,

drain valves and plugs,

drip trays and tundishis,

standard pipe supports, non-standard pipe support assemblies, spring compensated components and pipe anchors and guides,

laying and fixing in ducts, trenches and chases or embedded in in-situ concrete or screeds,

excavating trenches for buried pipes, including backfilling, disposal of surplus excavated material and earthwork support,

wrapping for underground pipes,

wrapping and waterproofing for exposed insulated pipes,

pipe sleeves and packing,

wall, floor and ceiling plates,

flashing plates, sleeves, escutcheons, flashings and seals.

## 3. ACCESSORIES FOR PIPEWORK

3.01 Floor cleanouts, floor drains, roof drains and other drains, vent cowls, back flow preventors and the like are each given separately.

3.02 Gratings and frames, where not included with the items to which they relate, are given separately.

3.03 Isolating valves, balancing valves, pressure relief valves, automatic air valves, traps and the like are each given separately.

3.04 Connections to existing services and breaking into existing pipes are each given separately.

3.05 Each type of accessory is given separately. Diameters, dimensions and details are stated in descriptions, where necessary, to identify the work.

3.06 Accessories are enumerated.

3.07 Rates for automatic air valves and the like are deemed to include the costs of associated isolating valves.

## 4. UNDERGROUND STRUCTURES

4.01 Manholes, inspection chambers, valve boxes and the like underground structures are each given separately.

4.02 Each type is given separately. Dimensions and details are stated in descriptions, where necessary, to identify the work.

4.03 Underground structures are enumerated.

4.04 Rates for measured work are deemed to include the costs of:

excavation including backfilling, disposal of surplus excavated material and earthwork support,

concrete, reinforcement, formwork and waterproofing,

blockwork, brickwork and rendering,

building in ends of pipes including cutting pipes,

channels, concrete benching and intercepting traps,

step irons, covers and frames,

valves, flowmeters and connections inside valve boxes.

## 5. EQUIPMENT AND ANCILLARIES

5.01 Each kind of equipment (including plumbing fixtures) and ancillaries is given separately, stating the size and pattern, rated duty, capacity, loading etc. as appropriate.

5.02 Each type is given separately. Diameters and dimensions are stated in descriptions, where necessary, to identify the work.

5.03 Equipment and ancillaries are enumerated.

5.04 Rates for measured work are deemed to include the costs of:

factory assembled components and controls,

loose equipment supplied by the manufacturer,

electrical connections,

valves, strainers, flexible connections, controls, instruments and fittings shown on the Drawings,

concrete bases and support pads, and other related concrete work,

plate work and supporting steelwork,

supports and fixing,

insulation and jacketing for cold and hot equipment,

anti-vibration mountings, including anti-vibration material and sound-insulating material,

loose keys, tools, spares (where specified) and the like and racks for holding tools,

cleaning off protective wrappings.

## 6. INSULATION

6.01 Each kind of insulation to pipes is given separately, stating the thickness.

6.02 Each diameter of pipe is given separately.

6.03 Insulation to pipes is given in meters.

6.04 Rates for measured work are deemed to include the costs of:

smoothing the material and working around supports,

protective covering and jacketing,

special protection or finish at openings through walls, valve chambers and the like,

insulation to flanged pipework,

working insulation around ancillaries including boxes or valves,

working non-sectional insulation over flanges and pipe fittings,

fitting sectional coverings around pipe fittings,

insulation boxes.

## 7. ELECTRICAL WORK

7.01 Electrical work in connection with plumbing is given as an item, which shall include the costs for all electrical work other than motor control centres and panels, which are each given and enumerated separately, stating the reference, name or type, as applicable.

7.02 Rates for motor control centres and panels are deemed to include the costs of, but is not necessarily limited to, wires, cables and connections between motor control centres/panels and disconnect switches or motors; disconnect switches, control wires, cable trays, conduits and the like.

7.03 Rates for measured work are deemed to include the costs of all electrical work shown on the Drawings, described in the Specification and/or reasonably required and implied as necessary for the proper execution, commissioning, operation and performance of the plumbing work.

# 5 HEATING, VENTILATING AND AIR CONDITIONING

## 1. GENERALLY

1.01 Pipework and accessories, ductwork and accessories, equipment and ancillaries, insulation and other heating, ventilating and air conditioning work are each given separately under the following Section headings:

512 Pipework,

521 Ductwork,

531 Air outlets,

548 Accessory and miscellaneous equipment,

561 Insulation,

592 Electrical work.

1.02 Rates for heating, ventilating and air conditioning work are deemed to include the costs of:

working internally, externally and in plant rooms,

assembling and jointing together component parts of composite units and providing connecting flanges and jointing material,

providing everything necessary for jointing,

patterns, moulds, templates and the like,

making minor changes and modifications in layout required,

temporary work including removing and making good after,

disconnecting, setting aside and refixing equipment for the convenience of other trades,

cleaning and flushing piping systems,

priming or painting off site and proprietary finishes or surface treatment applied as part of the production process,

painting on site including colour coding,

plates, discs, labels and charts for the identification of plant, equipment, appliances, pipes, valves and the like,

bedding and pointing components or units of equipment, ancillaries and the like,

cutting and pinning ends of supports for equipment, ancillaries and pipes,

marking the positions of and cutting or forming holes, mortices, chases and the like and making good after,

builder's work in connection with heating, ventilating and air conditioning work including all work shown on the Drawings, described in the Specification or reasonably to be implied as necessary for the proper execution of the heating, ventilating and air conditioning work,

preparing instruction manuals and spare parts lists and submitting required number of copies,

training Employer's personnel in the operation and maintenance of the systems including providing instructors,

temporarily operating each installation (except for testing) including attendants, insurances and providing fuel and electricity for power and lighting.

## 2. PIPEWORK

2.01 Each kind of pipe is given separately, stating the Standard to which it complies.

2.02 Each diameter of pipe is given separately. Diameters stated are nominal diameters.

2.03 Pipes are given in metres measured the length over all fittings and branches.

2.04 Rates for measured work are deemed to include the costs of:

curved pipes, flexible pipes and extensible pipes,

flow and return header pipes,

pipework required to be temporarily fixed in position, dismantled for chromium-plating or other special finishing and subsequently refixed,

purpose-made pipes and purpose-made fittings,

labours on pipes,

providing everything necessary for jointing,

joints in the running length,

joints of a special or ornamental character and extra demountable couplers in the running length,

flanges, unions and di-electric joints,

pipe fittings including cutting and jointing pipes to fittings,

screwed sockets, tappings, bosses and welding necks welded to pipes or flanges including perforating the pipe or flange,

special connections, special joints and isolated joints in pipes,

expansion loops,

manual air vents,

drain valves, plugs and taps,

drip trays and tundishis,

standard pipe supports, non-standard pipe support assemblies, spring compensated components and pipe anchors and guides,

laying and fixing in ducts, trenches and chases or embedded in in situ concrete or screeds,

pipe sleeves and packing,

wall, floor and ceiling plates.

## 3. ACCESSORIES FOR PIPEWORK

3.01 Flexible connections are enumerated.

3.02 Isolating valves, balancing valves, pressure relief valves, automatic air valves, strainers, traps and the like are each given separately.

3.03 Connections to existing services and breaking into existing pipes are each given separately.

3.04 Each type of accessory is given separately. Diameters, dimensions and details are stated in descriptions, where necessary, to identify the work.

3.05 Accessories are enumerated.

3.06 Rates for automatic air valves and the like are deemed to include the costs of associated isolating valves.

## 4. DUCTWORK

4.01 Each kind of ducting is given separately stating the type of material.

4.02 Each type of ducting is given separately.

4.03 Flexible ducting and extensible ducting are each given separately. Dimensions are stated in descriptions.

4.04 Ducting is given in kilogrammes, measured as the net weight of the area calculated from multiplying duct lengths (taken along the centre line over all seams, joints and fittings) by the net girth of the nominal duct dimensions. Blank ends shall be added to the area for weighting, but no deductions to the area shall be made for intersections or openings. Duct gauge shall be as per Specifications.

4.05 Flexible ducting and extensible ducting are given in metres measured the length as fully extended.

4.06 Rates for measured work are deemed to include the costs of:

for the extra weight of any and all materials required for forming seams or welds or for stiffening or jointing or for waste and losses,

stiffeners, joints and sealing,

joints in the running length,

providing materials, heat, bolts, nuts, washers and everything necessary for making joints in ducting,

curved ducting and splitter dampers,

lining ducting internally with acoustic or protective materials,

cutting and forming openings and jointing ducting to fittings,

special connections and special joints in ducting including connections between ducting of differing materials, connections between ducting and equipment, isolated joints and flexible connections between ducting and plant,

ducting turning, splitters and vanes,

nozzle outlets, test holes and covers and access doors including forming and stiffening of openings,

components for supporting ductwork including fixing,

weathering aprons, flashing plates and the like, except where required to be measured separately,

cowls and terminals.

## 5. ACCESSORIES FOR DUCTWORK

5.01 Intake louvres and the like are each given separately.

5.02 Weathering aprons, flashing plates and the like, when not included with the items to which they relate, are each given separately.

5.03 Each type of accessory is given separately. Dimensions are stated in descriptions.

5.04 Accessories are enumerated.

## 6. EQUIPMENT AND ANCILLARIES

6.01 Each kind of equipment and ancillaries is given separately, stating the size and pattern, rated duty, capacity, loading etc. as appropriate.

6.02 Each type is given separately. Diameters and dimensions are stated in descriptions, where necessary.

6.03 Equipment and ancillaries are enumerated.

6.04 Radiators are enumerated. Number of sections, number of elements and height are stated in descriptions.

6.05 Controls and instruments for each complete system are given as items.

6.06 Rates for measured work are deemed to include the costs of:

factory assembled components and controls,

loose equipment supplied by the manufacturer,

electrical connections,

refrigerant piping and accessories for air conditioning split equipment,

valves (excluding control valves), strainers, flexible couplings, fittings, accessories, other miscellaneous components and the like, as shown on the Drawings,

concrete bases and support pads, and other related concrete work,

platework and supporting steelwork,

supports and fixing,

insulation and jacketing for cold and hot equipment, including providing detachable mattresses and working insulation around special fittings and for ancillaries,

anti-vibration mountings, including anti-vibration material and sound-insulating material,

loose keys, tools, spares (where specified) and the like and racks for holding tools.

## 7. INSULATION

7.01 Each kind of insulation is given separately, stating the thickness.

7.02 Work to each diameter of pipe is given separately.

7.03 Work to each type of ducting is given separately. Dimensions of ducts are stated in descriptions of work given in metres.

7.04 Work to pipes is given in metres.

7.05 Work to ductwork is given in square metres or metres.

7.06 Rates for measured work are deemed to include the costs of:

smoothing the material and working around supports,

protective covering and jacketing,

special protection or finish at openings through walls, valve chambers and the like,

insulation to flanged pipework,

working pipe insulation around ancillaries including boxes or valves,

working non-sectional pipe insulation over flanges and fittings,

fitting sectional pipe coverings around fittings,

insulation boxes on pipe insulation.

working duct insulation around fittings,

working duct insulation around special fittings and for ancillaries.

## 8. ELECTRICAL WORK

8.01 Electrical work in connection with heating, ventilating and air conditioning is given as an item, which shall include the costs for all electrical work other than motor control centres and panels, which are each given and enumerated separately, stating the reference, name or type, as applicable.

8.02 Rates for motor control centres and panels are deemed to include the costs of, but is not necessarily limited to, wires, cables and connections between motor control centres/panels and disconnect switches or motors; disconnect switches, control wires, cable trays, conduits and the like.

8.03 Rates for measured work are deemed to include the costs of all electrical work shown on the Drawings, described in the Specification and/or reasonably required and implied as necessary for the proper execution, commissioning, operation and performance of the heating, ventilating and air conditioning work.

# 60 EARTHWORK AND PAVEMENT

## 600 SITE CLEARING

### 3.3 Removal or Realignment of Existing Utilities

1.01 Removal or realignment of utilities is given as provisional sum.

1.02 Rates for measured work are deemed to include the costs of:

excavating for, removing, realigning or salvaging existing utilities, where indicated on the drawings, as directed by the Engineer.

### 3.4 Clearing and Grubbing

1.01 Clearing and grubbing the site generally is given as an item.

1.02 Rates for measured work are deemed to include the costs of:

removing site features (including fences, gates, walls, roads, paved areas and the like; but excluding demolition of structures included in Division B hereof), including breaking out foundations,

when shown on the drawings or directed by the Engineer, removing and disposing of pavement layers including asphalt and granular layer to the surface of the subgrade; curbs, tiles and clearing all existing concrete foundations and stumps under all structures,

removing carefully trees and tree stumps, storing and /or relocating as specified or instructed by the Engineer.

filling depressions caused by clearing and grubbing operations with compacted fill materials,

removing wholly or in part & disposing of all obstructions, buildings, fences, gates, walls, abandoned pipelines and others, as indicated on drawings or as directed by Engineer,

protecting site features, utilities, structures, trees and site vegetation which are to remain**.**

removing trees and tree stumps, including grubbing up roots,

clearing site vegetation (including hedges, bushes, scrub and undergrowth), including grubbing up roots,

protecting site features, trees and site vegetation which are to remain,

removing general debris and rubbish,

filling depressions caused by clearing and grubbing operations with compacted fill materials,

disposal of materials,

temporarily diverting ditches, field drains and other waterways including reinstating on completion or cleaning and filling.

601 EARTH MOVING

3.5 Excavation for Structures

1.01 Excavation includes:

Foundations (including isolated ground beams).

1.02 Excavation is given in cubic metres. The quantities given are the bulk before excavating.

1.03 Rates for measured work are deemed to include the costs of:

any method of excavating and working,

excavating in any material whatsoever encountered including rock,

variations to bulk,

commencing excavating at any level, and excavating to any depth,

any width of trench and any number of pits,

curved excavation,

excavating below ground water level (irrespective of any difference between the post-contract and pre-contract level),

excavating next to existing services and around existing services crossing excavations including temporary support, temporarily re-routing, sealing and removing services as required,

breaking out existing materials and hard pavings including concrete, reinforced concrete, brickwork, blockwork, stonework, drains, and coated macadam or asphalt and the like,

extra excavation for working space and to accommodate earthwork support including additional disposal, backfilling, work below ground water level, breaking out and excavation support and protection,

excavation support and protection (including interlocking steel piling) including support below ground water level, to unstable ground, next to roadways, next to existing buildings and support left in,

disposal of ground water and surface water,

disposal of excavated material, on site or off site, including spreading and levelling or depositing in spoil heaps, providing tip and paying fees and multiple handling,

backfilling to excavations with material arising from excavations or borrow soil material including depositing and compacting in layers and multiple handling,

surface treatments including compacting surface of ground and bottoms of excavations, levelling and grading to falls, trimming sloping surfaces and trimming vertical surfaces to sides of cuttings (including trimming in rock) and applying herbicides, pesticides, and anti termite treatment.

## 3.6 Excavation for Walks & Pavements

1.01 Unclassified excavation is given in cubic meters; measured as equal to the volumes computed from the cross sections shown on the drawings and the original ground elevation taken jointly by the Engineer and the Contractor before cleaning and grubbing operations.

1.02 Rates for measured work are deemed to include the costs of:

all excavated materials of whatever type,

any method of excavating and working,

variations to bulk,

disposal away and either wasted, stockpiled on deposit on or in vicinity of embankments areas,

excavation for benching slopes,

ditch excavation and excavation of unstable material,

backfilling of overbreakage, the trimming and grading of cut slopes, ditches and other below subgrade surfaces, drainage of excavation areas, obliteration of disused roadways and other ancillary excavation works.

3.9 Subgrade Inspection & Construction

1.01 Subgrade preparation in cut is given in sq.m of subgrade layer measured as equal to the areas computed from the drawings.

1.02 Rates for measured work are deemed to include the cost of:

all excavation below top of subgrade,

scarifying and removing undesirable matter,

addition of suitable material and compaction of the existing subgrade platform to the finished subgrade levels.

1.03 Subgrade preparation in fill shall not be measured for direct payment but shall be considered as subsidiary works, the costs of which shall be included in the contract prices for pay items.

3.14 Soil Fill

1.01 Borrow soil is given in cubic meter measured as equal to the voids filled after compaction.

1.02 Rates for measured work are deemed to include the costs of:

furnishing selected material according to specifications,

the excavation and the transportation of the material from approved borrow areas to site,

the backfilling and the compaction as required,

determining the optimum amount of water to be used with fill material to obtain maximum dry density, for every borrow pit and for every type of filling material,

the required tests for approval of the borrow areas and the periodic test for the verification that no change has occurred since the original approval, preparing surfaces to receive filling or backfilling layers and compacting as specified,

submitting representative samples for approval as per specification,

carrying out field density test as specified and at the rates specified,
proper formation of embankments, trimming of slopes, preparation and completion of the roadway subgrade and shoulders,

embankment for benching,

filling of any thickness,

multiple handling,

variations to bulk,

filling below ground water level,

removing from site unsuitable and surplus filling materials.

2.01 Each kind of filling material is given separately.

2.02 Filling includes:

to make up levels,

engineered fill under slab on grade

engineered fill under foundations

2.03 Filling is given in cubic metres measured as equal to the void filled after compaction.

2.04 Rates for measured work are deemed to include the costs of:

preparing surfaces to receive filling,

using material arising from excavations including selecting and treating or using borrow soil material,

filling of any thickness,

multiple handling,

variations to bulk,

filling below ground water level,

filling and compacting in layers including levelling and grading to falls and slopes, and loss of material into ground during filling and compaction,

trimming sloping and vertical sides of filling,

excavating benchings in sloping ground to receive filling and in sides of sloping filling, including disposal,

blinding surfaces of filling with sand, gravel, ash or other fine material,

providing protective filling and removing on completion,

disposal of surplus and waste.

3.16 Compaction of Satisfactory Soil

1.01 Rates for measured work are deemed to include the costs of:

laying and compaction of fill from suitable excavated material,

preparing surfaces to receive filling or backfilling layers and compacting as specified,

submitting representative samples for approval as per specification,

carrying out field density test as specified and at the rates specified,
proper formation of embankments, trimming of slopes, preparation and completion of the roadway subgrade and shoulders,

embankment for benching,

filling of any thickness,

multiple handling,

variations to bulk,

filling below ground water level,

removing from site unsuitable and surplus filling materials.

## 602 AGGREGATE SUB-BASE COURSE

1.01 Aggregate sub-base courses are given in cu.m, measured as equal to the volumes computed from the cross section shown on the drawings.

Rates for measured work are deemed to include the cost of:

provision of aggregate from approved sources,

screening, crushing if specified, and mixing with water,

laying, spreading & raking to correct levels, falls and cambers,

rolling and compacting,

testing of materials as specified.

| | PAY ITEM | UNIT OF MEASUREMENT |
|---|---|---|
| (1) | Aggregate Sub-base Course<br>Provision, installation and compaction of Aggregate Sub-base Course (CBR ≥ 30%). | Cubic meter ($m^3$) |

## 603 AGGREGATE BASE COURSE

1.01 Aggregate base courses are given in cu.m, measured as equal to the volumes computed from the cross section shown on the drawings.

Rates for measured work are deemed to include the cost of:

provision of aggregate from approved sources,

screening, crushing if specified, and mixing with water,

laying, spreading & raking to correct levels, falls and cambers,

rolling and compacting,

testing of materials as specified.

| PAY ITEM | UNIT OF MEASUREMENT |
|---|---|
| (1) Aggregate Base Course<br>Provision, installation and compaction of Aggregate Sub-base Course (CBR ≥ 80%). | Cubic meter ($m^3$) |

## 605 ASPHALT PAVING

2.2 Each kind of material is given separately.

1.01 Bituminous Prime Coat is given in square meter ($m^2$) measured as equal to the areas primed at the appropriate rate specified by the Engineer.
Rates for measured work are deemed to include the cost of:

surface preparation,

protective measures to avoid staining or damage to appurtenances,

blotting of prime coats when required,

cleaning stains and repairing damage caused by equipment, etc..

1.02 Bituminous tack coat is given in square meter ($m^2$) measured as equal to the areas sealed at the appropriate rate specified by the Engineer.

Rates for measured work are deemed to include the cost of:

surface preparation,

protective measures to avoid staining or damage to appurtenances,

cleaning stains and repairing damage caused by equipment, etc…

1.03 Each kind of bituminous course is given separately

Bituminous course is given in cubic meters ($m^3$) measured as equal to the areas and thickness as shown on the drawings.

Rates for measured work are deemed to include the costs of mix furnished, spread, compacted, completed and accepted.

| | PAY ITEM | UNIT OF MEASUREMENT |
|---|---|---|
| (1) | Bituminous Wearing Course<br>Provision, installation and compaction of Bituminous Wearing Course, complete in all respect as per Specifications, Method of Measurement and the Drawings. | Cubic meter ($m^3$) |

| | | |
|---|---|---|
| (2) | Bituminous Base Course<br>Provision, installation and compaction of Bituminous Base Course, complete in all respect as per Specifications, Method of Measurement and the Drawings. | Cubic meter ($m^3$) |
| (3) | Bituminous Prime Coat | Square meter ($m^2$) |
| (4) | Bituminous Tack Coat | Square meter ($m^2$) |

## 608 CONCRETE PAVING

(1) In-situ Plain Portland Cement Concrete Pavement is given in square meter ($m^2$) of the indicated layer thickness, stating its flexural strength and the type of cement. Measurement shall be based on the drawings and on the field measurements of area and thickness.

(2) In-situ Reinforced Portland Cement Concrete Pavement is given in square meter ($m^2$), stating its flexural strength and the type of cement. Measurement shall be based on the drawings and on the field measurements of area and thickness.

(3) Concrete pavement works are deemed to include:

- Designing mixes
- Any method of pouring, placing, compacting and curing
- Pouring on or against earth or unblinded hardcore
- Any thickness, cross-sectional area or number of members
- Horizontal, sloping, vertical and curved work
- Placing or finishing to falls and cross falls
- Formwork of any type, shape and size including fixing and removing
- Shaping of reinforcement steel of any diameter and length with all necessary hooks, tying wire, spacers, chairs and the like including cutting, bending lopping and fixing in position
- Basic finish as struck from formwork (including coffered or troughed formwork) and tamped worked finish
- Surface texture (brush or broom finish) as specified
- Extra width of concrete or formwork to edges of blinding beds
- Reinforcement content of any percentage of the volume of concrete
- All labours on concrete including working around pipes or cables, cutting channels, chases, mortises, pockets and holes and including subsequent grouting or filling and making good
- All types of expansion, contraction and construction joints to spacing, dimensions and details shown on the pavement drawings, including:
    - Formwork to formed joints
    - Horizontal, sloping, vertical and curved work
    - Treatment of reinforcement crossing the joint (if any)
    - Treatment of concrete joint faces
    - Any width or depth of joint
    - Crack inducing grooves (saw cuts) in induced contraction joints
    - Preparation of surfaces, cleaners, primers, backing strips and bond breakers
    - Dowel bars (smooth or deformed) of the diameters, spacing and lengths shown on drawings
    - De-bonding compound and dowel caps
    - Joint filler board used in the appropriate types of joints as shown on pavement drawings

| PAY ITEM | UNIT OF MEASUREMENT |
|---|---|
| (1) 530mm Portland Cement Concrete Pavement (Plain) Type 1A, Flexural Strength 4.6 MPa, inclusive of dowels, deformed bars, joint sealant, filler and groove<br>Complete in all respect as per Specifications, Method of Measurement and the Drawings. | Cubic meter ($m^3$) |
| (2) 530mm Portland Cement Concrete Pavement (Reinforced) Type 1B, Flexural Strength 4.6 MPa, inclusive of dowels, deformed bars, joint sealant, filler and groove<br>Complete in all respect as per Specifications, Method of Measurement and the Drawings. | Cubic meter ($m^3$) |
| (3) Polyethylene Sheet<br>Provision and installation of Polyethylene Sheets, complete in all respect as per Specifications, Method of Measurement, Drawings and the Drawings. | Square meter ($m^2$) |

| PAY ITEM | UNIT OF MEASUREMENT |
|---|---|
| **Sleeper Slab Joint at Concrete and Flexible Pavement Interface**<br><br>A 3.0m transition sleeper slab is to be constructed at the interface between concrete and flexible pavement as shown on Pavement Drawing no.PL 241087-TD-INF-G-303. This includes a 530mm deep sleeper slab joint including concrete, formwork, reinforcement, dowelling expansion joint, saw cutting, asphalt bituminous course layers, polyethylene sheeting, joint sealant and Geogrid Installation in asphalt layers interface between End of Transition Slab and Asphalt Layer. | Linear Meter |

## 610 PAVEMENT DEMOLITION

- Demolition/Removal of existing pavement layers shall be measured in m2 as shown in BOQ. This shall include material removed, transported, and disposed-off site in designated and approved areas by the Engineer and Employer. The limit of pavement area to be demolished shall be as shown on pavement demolition layout plan.

- The potential re-use of any excavated materials from the existing unbound aggregate base/subbase layers shall be coordinated and approved by the Engineer and shall be subject to QA/QC testing in order to verify quality and properties compliance with project specifications requirements prior to any re-use.

- Any necessary saw cutting to ensure proper preservation of the remaining adjacent pavement shall be deemed to be included in the pay for this work.

| PAY ITEM | UNIT OF MEASUREMENT |
|---|---|
| (1) Pavement Demolition/Removal of Existing Road Pavement | Square meter (m2) |

## 612 GEOTECHNICAL INVESTIGATIONS

**Method of Measurement**

1. Verification Boreholes the location of the Warehouse specified to be performed before execution of foundations, are enumerated.

2. Rates for “Verification Boreholes” are deemed to include the costs of:
   - mobilizing and erecting drilling rig and equipment on drill hole locations, dismantling and moving from location to location, and demobilizing upon completion,
   - drilling vertical or inclined holes in any material,
   - providing temporary support for sides of drill holes,
   - drilling through any material, including rock and artificial obstructions, ensuring minimum penetration in rock as per specifications and drawings,
   - providing temporary casing,
   - sampling, testing of soil, rock and water samples,
   - preparation and submission of test records,
   - backfilling drill holes with approved materials upon completion of the work, and restoring ground surface to approved formation, and reinstatement,
   - providing drilling records and reports,
   - providing soil report,
   - all health and safety measures per Specifications and local Authorities requirements,
   - obtaining all NOC's and any approval or permits from authorities required for the execution of the works
   - all ancillary works and/or subsidiary works necessary for the safe and proper execution of the works.

**Basis of Payment**

1 The quantities of completed and accepted work measured as provided for above will be paid for at the relevant unit rates for ‘Verification Boreholes below foundations of electrical substations, sewage and irrigation pump stations’ in the Bill of Quantities, which rates shall be full compensation for equipment, tools, labor, materials, transporting and dumping, and for materials, transportation, hauling, labor, equipment, tools, supplies, pre-testing and post-testing, and other items necessary for the proper completion of the work.

# *GENERAL REQUIREMENTS*

| Item | Description | Qty | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 01 - GENERAL REQUIREMENTS | | | | |
| | CONDITIONS OF CONTRACT | | | | |
| | The Contractor is required to insert and price those Items arising out of the Conditions of Contract and General Requirements (Section 1.31 to 1.36), which the Contractor considers to have a monetary value and the Contractor wishes to price. Example of such Items are given below. This list may be extended as required. | | | | |
| | Conditions of Contract | | | | |
| A | Performance Security | | Item | | |
| B | Insurances as per provision of the Conditions of Contract | | Item | | |
| C | Mobilization and Demobilization of Contractor's facilities, Contractor's temporary facilities including establishment, and removal from Site | | Item | | |
| D | Maintenance of Contractor's facilities and Contractor's temporary facilities | | Item | | |

| Item | Description | Qty | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| A | Mobilization and Demobilization of Engineer's and Employer's offices, provision, erection, with all requried furniture and equipment and provision of services and supplies for the Engineer's/Employer staff/Supervision Team offices covering all requirement set in Section 1:36 | | Item | | |
| B | Maintenance of Engineer's and Employer's offices, including cleaning, security, with all requried furniture and equipment and provision of services and supplies for the Engineer's/Employer staff/Supervision Team offices covering all requirement set in Section 1:36 | | Item | | |

| Item | Description | Qty | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | UTILITY SERVICES SUBCRIPTIONS<br><br>The Contractor shall coordinate with the relevant service providers for utility connections, and shall pay all subscription fees as detailed below: | | | | |
| A | Subscription after project handing over to all service connections as required under the Contract Documents for all service utilities | | Item | | |
| B | Provision of all warranties and guarantees in accordance with the Contract, including manufacturer warranties and Defects Liability obligations, together with preparation and submission of complete Operation and Maintenance (O&M) Manuals, and provision of training to the Employer's personnel for operation and maintenance of the Works, all in accordance with the Contract requirements | | Item | | |
| C | Provision of complete As-Built records and drawings for all disciplines, including incorporation of all site changes, and final approved drawings, in both hard and soft copy formats, in accordance with the Contract requirement | | Item | | |
| D | Safety and Environmental requirements in accordance with Contract Documents | | Item | | |
| E | Photographic records | | Item | | |

| Item | Description | Qty | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | The Contractor shall describe and price below anything he considers essential for the completion of the Works as described in the Conditions of Contract and the Specification and as shown on the Drawings which are not covered by other items in the Bills of Quantities and which the Contractor considers to have a monetary value and the Contractor wishes to price.<br><br>Anything not so separately described and priced shall be deemed to be covered in the rates entered against the other items in the Bills of Quantities | | | | |
| | (i) | | Item | | |
| | (ii) | | Item | | |
| | (iii) | | Item | | |
| | (iv) | | Item | | |

GENERAL REQUIREMENTS
To General Summary US$

# *DEMOLITION AND RELOCATION*

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | DEMOLITION AND RELOCATION | | | | |
| | RELCOATION WORKS | | | | |
| 01 010 | Relocation of Existing Diesel Tank | | LS | | |
| 01 020 | Relocation of Existing Hangar (17x14) | | LS | | |
| 01 030 | Relocation of Existing Hangar (13x12) | | LS | | |
| 01 060 | Relocation of the weighbridge including and not limited to all existing cables/connections (internal & external) connected to the existing control room of the weigh bridge as deemed necessary and as per site conditions | | LS | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | DEMOLITION WORKS | | | | |
| 02 010 | 11 Units of concrete block with metal roof to be demolished. ( Total area = 1825.74 M2.) | | LS | | |
| 02 020 | 4 Units of concrete block with concrete roof to be demolished. ( Total area = 117.00 M2.) | | LS | | |
| 02 030 | 2 Units of workshop concrete block with metal roof to be demolished. ( Total length of wall = 106.00 m.& Hight =3.00m.) | | LS | | |
| 02 040 | Existing fence concrete block to be demolished. ( Length = 92.00m. & Hight = 2.50m.) | | LS | | |
| 02 050 | Existing fence Stone to be demolished. ( Length= 32.00m. & Hight =1.50m.) | | LS | | |
| | DEMOLITION AND RELOCATION To General Summary | | | US$ | |

# *FIRE STATION*

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E - CONCRETE WORK | | | | |
| | | E12 - CONCRETING | | | | |
| 02 | | In situ concrete class C; sulphate-resisting Portland cement; plain/ Blinding | | | | |
| 02 | 011 | foundations | 30 | m3 | | |
| 02 | 051 | Slab on grade | 27 | m3 | | |
| 03 | | In situ concrete class A;reinforced-Moderatly Sulfate Resisting Portland Cement | | | | |
| 03 | 021 | Foundations | 170 | m3 | | |
| 03 | 051 | 150 mm Slab on grade | 250 | m2 | | |
| 03 | 052 | 200 mm Slab on grade | 290 | m2 | | |
| 03 | 071 | Slabs | 70 | m3 | | |
| 03 | 091 | Attached drop beams (drop part below slab only) | 20 | m3 | | |
| 03 | 131 | Isolated columns | 12 | m3 | | |
| 03 | 151 | Upstands | 10 | m3 | | |
| | | E21 - REINFORCEMENT FOR IN SITU CONCRETE | | | | |
| 04 | | Bar reinforcement | | | | |
| 04 | 201 | High yield steel | 43 | T | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E71 - DAMP-PROOF MEMBRANES AND COATINGS | | | | |
| 06 | | Self-adhesive polyethylene sheet (including proper protection system as shown on drawings) to | | | | |
| 06 | 101 | Foundations and peripheral upstands | 460 | m2 | | |
| 10 | | Bituminous coating to | | | | |
| 10 | 101 | All reinforced concrete surfaces in contact with soil and not waterproofed | 385 | m2 | | |
| | | E - CONCRETE WORK<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | F - STRUCTURAL FRAMING | | | | |
| | F11 - STRUCTURAL STEEL WORK | | | | |
| 02 | Structural framing | | | | |
| 02 001 | Mild steel as per structural drawings, specifications and MOM. | 13 | T | | |
| | F - STRUCTURAL FRAMING<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | G - MASONRY | | | | |
| | G11 - BRICK AND BLOCK MASONRY | | | | |
| 01 | Concrete hollow blocks; ordinary Portland cement; including mortar for bedding and jointing; to | | | | |
| 01 101 | Walls; 100 thick | 186 | m2 | | |
| 01 301 | Walls; 200 thick | 290 | m2 | | |
| | G - MASONRY To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | H - WALL AND ROOF CLADDING AND COVERING | | | | |
| | H31 - PROFILED SHEET CLADDING AND COVERING | | | | |
| 01 | Steel corrugated cladding sheets; exposed metal roof panels; zinc coated galvanized steel, factory finishes; including flashings, trims, accessories and fixings; complete; as specified and shown on Drawings | | | | |
| 01 020 | Canopy; top, soffits and edges | 604 | m2 | | |
| | H - WALL AND ROOF CLADDING AND COVERING To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | J - THERMAL AND MOISTURE PROTECTION | | | | |
| | J12 - ELASTOMERIC MEMBRANE ROOFING | | | | |
| 01 | Single layer elastomeric sheet (EPDM); vulcanized ethylene propylene diene monomer sheet membrane roofing, 1.52 mm thick, fully bonded application, resistant to ozone, U.V. rediation and ageing; as specified; to | | | | |
| 01 010 | Roofs | 231 | m2 | | |
| 01 020 | Upstands | 40 | m2 | | |
| 02 | Elastomeric coating; U.V. protection to bitumen membrane; to | | | | |
| 02 010 | Upstands | 13 | m2 | | |
| 03 | Filter membrane; vapour permeable geotextile, non-woven thermally bonded continuous polypropylene filaments; to | | | | |
| 03 010 | Roofs | 231 | m2 | | |
| 04 | Protective covering ballast; crushed gravel; to | | | | |
| 04 010 | Roofs 50 thick | 231 | m2 | | |
| 06 | Accessories aluminium alloy | | | | |
| 06 010 | Pressure plate; 40 x 3 thick; including backing cord and sealant; complete; as specified and as Drg. GEN-A-500; detail 2 | 89 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 07 | Accessories; galvanized steel | | | | |
| 07 010 | Rainwater spouts; 75 diameter; 370 long; including stainless steel saddle band; as Drg. GEN-A-500; detail 7 | 2 | Nr | | |
| | J14 - LIQUID APPLIED WATERPROOFING COATINGS | | | | |
| 08 | Cold fluid-applied waterproofing; single component modified polyurethane, seamless, joint-free, water and weathertight elastomeric membrane; to | | | | |
| 08 010 | Floors and upstands in wet areas | 23 | m2 | | |
| | J21 - THERMAL INSULATION | | | | |
| 09 | Roof; insulation; extruded polystyrene board; loose laid; to | | | | |
| 09 010 | Roofs; 50 thick | 231 | m2 | | |
| | J - THERMAL AND MOISTURE PROTECTION To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | K - DRY LININGS, FLOORING AND PARTITIONS | | | | |
| | K31 - PLASTERBOARD LININGS, PARTITIONS AND CEILINGS | | | | |
| 01 | Gypsum board suspended ceiling, comprising gypsum board finished to receive paint, including upstands, suspension system, acoustical sealant, fittings and fixings; complete as specified and as shown on Drawings; to | | | | |
| 01 015 | Ceilings; horizontal; moisture | 23 | m2 | | |
| | K - DRY LININGS, FLOORING AND PARTITIONS To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | M - METALWORK AND WOODWORK | | | | |
| | M21 - WINDOWS AND SCREENS | | | | |
| 01 | Windows and screens; aluminium alloy; powder coating finish; including subframe, sunshade louvers, fixings, bedding, pointing, glazing gaskets and beads, ironmongery (excluding glass measured in Section R GLAZING); complete; as specified and Drg.GEN-A-602 | | | | |
| 01 060 | Type 80 ; overall size 1200 x 1500 high | 13 | Nr | | |
| | M22 - DOORS AND HATCHES | | | | |
| 02 | Steel flush doors; 43 mm thick; leaf construction type 2a; fire rated; constructed from steel section frame; with thermal insulation material, galvanized steel sheet both skins, factory primed for painting; including frame, ironmongery, fittings and fixings; complete; as specified and as Drgs. GEN-A-601 and A-602 | | | | |
| 02 030 | Leaf size S4; 1000 x 2200 high | 1 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 03 | Semi-solid core flush wood doors; 43 thick, leaf construction type 1; comprising preservative treated softwood framing and noggings faced both sides with 6 mm plywood glued and pressed to framing and lipped on all edges with hardwood finished to receive paint; including frame, ironmongery, fittings and fixings; complete; as specified and as Drgs. GEN-A-601 and A-602 | | | | |
| 03 040 | Leaf size W4; 1200 x 2200 high | 2 | Nr | | |
| 03 050 | Leaf size W5; 1100 x 2200 high | 2 | Nr | | |
| 03 070 | Leaf size W7; 900 x 2200 high | 7 | Nr | | |
| 03 080 | Leaf size W8; 800 x 2200 high | 2 | Nr | | |
| 03 100 | Leaf size W10; 600 x 1850 high | 4 | Nr | | |
| | M31 - STAIRS, BALUSTRADES AND SUNDRY ITEMS | | | | |
| 04 | Access ladders; mild steel galvanized; compising flat strings and bar rungs; including brackets, anchor bolts, fittings and fixings; complete; as Drg. GEN-A-500 | | | | |
| 04 015 | 450 wide x 3950 rise; with extended rail; detail 6 | 2 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 05 | Balustrades and handrails; galvanized steel, finish to receive paint; comprising 50 diameter top rail and posts, 50 diameter lower rails; including cover steel, anchored to concrete; fittings and fixings; complete; as specified and as Drg. GEN-A-501A; detail 3 | | | | |
| 05 005 | 1000 high; raking | 3 | m | | |
| 05 010 | 1000 high; horizontal | 2 | m | | |
| | M - METALWORK AND WOODWORK<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | P - SURFACE FINISHES | | | | |
| | P11 - PLASTER AND DECORATIVE RENDER COATINGS | | | | |
| 01 | Cement - sand plaster; plain finish; to | | | | |
| 01 010 | Walls; 15 thick | 640 | m2 | | |
| 01 020 | Walls; 20 thick | 917 | m2 | | |
| 01 110 | Ceilings; 15 thick | 86 | m2 | | |
| 01 120 | Ceilings; 20 thick | 4 | m2 | | |
| 03 | Cement-sand plaster finished to receive rigid tiles; to | | | | |
| 03 010 | Walls; 15 thick | 103 | m2 | | |
| | P12 - SCREEDS AND TOPPINGS | | | | |
| 04 | Cement-sand screeds; laid to fall and cross fall, finished; to receive flexible finish; to | | | | |
| 04 110 | Roofs; 30 minimum thick | 231 | m2 | | |
| 04 510 | Triangular fillet; 50 x 50 | 89 | m | | |
| 05 | Cement - sand screed toppings; trowelled finish; to receive flexible finish; to | | | | |
| 05 010 | Floors; 100 thick | 86 | m2 | | |
| 05 011 | Skirtings; 100 high; coved | 84 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 06 | Epoxy surface hardener and dustproofer to sand cement screed trowelled finish; to | | | | |
| 06 410 | Floors | 71 | m2 | | |
| 07 | Polyurethane coating; two component, to trowelled concrete surfaces; to | | | | |
| 07 005 | Floors | 206 | m2 | | |
| 07 010 | Ramp | 60 | m2 | | |
| 07 020 | Landing; treads and riser | 10 | m2 | | |
| | P21 - RIGID FLOOR AND WALL TILING AND SLABS | | | | |
| 09 | Marble slabs and fittings; best quality; polished finish; including cement-sand screed; complete; as specified and shown on Drawings | | | | |
| 09 210 | Saddle; type I; 30 thick | 6 | m | | |
| 09 220 | Saddle; type II; 30 thick overall | 2 | m | | |
| 10 215 | Ceramic tiles and fittings; vitrified unglazed; including cement-sand screed; to | | | | |
| 10 310 | Floors; 300 x 300 x 9 thick; anti-slip | 23 | m2 | | |
| 10 311 | Floors; 600 x 600 x 9 thick; heavy duty | 101 | m2 | | |
| 10 320 | Skirtings; 100 high | 98 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 11 | Glazed ceramic tiles and fittings; vitrified satin glazed with cushion edges and spaces lugs; to | | | | |
| 11 005 | Walls; 300 x 300 x 6 thick | 103 | m2 | | |
| | P - SURFACE FINISHES<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | R - GLASSWORK | | | | |
| | R11 - GENERAL GLAZING | | | | |
| 01 | Insulated double glazing units; complete; as specified; to | | | | |
| 01 005 | Glazing to metal | 24 | m2 | | |
| | R - GLASSWORK To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | V - PAINTING AND DECORATING | | | | |
| | V11 - PAINTING AND CLEAR FINISHING | | | | |
| 01 | Interior flat latex-based paint; emulsion paint, based on PVA or PVA acrylic copolymers, water resistant suitable for repeated wahsing and scrubbing, to concrete, masonry, render and plaster | | | | |
| 01 005 | General surfaces; internal | 570 | m2 | | |
| 05 | External acrylic emulsion paint, resin based, water-resistant suitable for repeated washing and scrubbing; to concrete, masonry, render and plaster | | | | |
| 05 010 | General surfaces; external | 921 | m2 | | |
| 07 | Oil paint; to primed metal | | | | |
| 07 015 | General surfaces | 42 | m2 | | |
| 10 | Oil paint; to primed wood | | | | |
| 10 020 | General surfaces | 68 | m2 | | |
| 12 | Epoxy paint; to primed metal | | | | |
| 12 025 | Surfaces of balustrades and the like; plain open type | 8 | m2 | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 14 | Oil paint; to concrete, masonry, render, plaster and gypsum board | | | | |
| 14 010 | General surfaces | 261 | m2 | | |
| 14 020 | General surfaces; fine texture | 23 | m2 | | |
| | V - PAINTING AND DECORATING To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | X - FITTINGS, SPECIALTIES AND EQUIPMENT | | | | |
| | X10 - FITTINGS | | | | |
| 01 | Lockers; pressed steel; backed enamel finished; including continuous base, card holder, ironmongery, dust cap; fittings and fixings; as Drg. GEN-A-500; detail 16 | | | | |
| 01 005 | Double tier; 300 x 400 x 2500 high | 8 | Nr | | |
| 05 | Kitchen counter; comprising granite counter top 20 thick, with back splash and side spalshes, blockboard construction, faced on all exposed surfaces with decorative laminated plastics sheet carcass doors, drawers, shelves, and plinths; including ironmongery, fittings and fixings; complete; as specified and as Drg. GEN-A506A; detail 7 | | | | |
| 05 025 | Overall size 2850 x 600 x 980 high | 1 | Nr | | |
| 05 030 | Overall size 3500 x 600 x 980 high | 1 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 10 | Wall mounted upper cabinet units, timber framing and blockboard construction, plastic laminated facing, with doors, adjustable shelves; including filler piece, gypsum furring, paint, ironmongery, fittings and fixigns; complete; as specified and as Drg. GEN-A-506A; detail 7 | | | | |
| 10 025 | Overall size 2850 x 350 x 700 high | 1 | Nr | | |
| 10 030 | Overall size 3500 x 350 x 700 high | 1 | Nr | | |
| | X80 - TOILET AND BATH ACCESSORIES | | | | |
| 10 | Miscellaneous fixtures and fittings; complete; as specified and shown on Drawings | | | | |
| 10 005 | Toilet paper holder | 2 | Nr | | |
| 10 010 | Paper towel dispenser | 2 | Nr | | |
| 10 015 | Soap dispenser | 2 | Nr | | |
| 10 020 | Waste receptacle | 2 | Nr | | |
| 10 025 | Coat hanger | 2 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 12 | Shower curtain rails; aluminium tube 20 diameter; including aluminium flanges, fittings and fixings; complete; as specified and as Drg. GEN-A-501A; detail 6 | | | | |
| 12 010 | 20 diameter x 850 long | 2 | Nr | | |
| 15 | Mirror glass; 6 mm thick; polished plate glass, surface mounted type, with stainless steel clips; including hardboard filler; fittings and fixings; complete; as specified and shown on Drawings | | | | |
| 15 005 | Mirror size; 600 x 900 high | 2 | Nr | | |
| | X - FITTINGS, SPECIALTIES AND EQUIPMENT To Summary | | | US$ | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 2 - ELECTRICAL WORK | | | | |
| | | 214 - STATIC UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEM | | | | |
| 01 | | UPS system complete, including built-in batteries, charger, inverter transfer switch and manual by-pass switch | | | | |
| 01 | 001 | UPS-FFS; 1 kVA / 0.8 kW; with 1 phase, 220 V, 50 Hz input and 1 phase, 220 V, 50 Hz output | 1 | Nr | | |
| | | 216 - DISTRIBUTION, SUBDISTRIBUTION AND FINAL BRANCH CIRCUIT PANELBOARDS | | | | |
| 01 | | Final branch circuit panelboards | | | | |
| 01 | 001 | LP-FFS | 1 | Nr | | |
| 01 | 002 | EPU-FFS | 1 | Nr | | |
| | | 218 - CONDUITS, WIREWAYS, SUPPORTING SYSTEMS AND RELATED ACCESSORIES | | | | |
| 01 | | Cable trays; galvanized steel (mm) | | | | |
| 01 | 001 | 150 mm | 30 | m | | |
| 02 | | Cable trays with elevated cover; galvanized steel (mm) | | | | |
| 02 | 001 | 150 mm | 40 | m | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 219 - EARTHING SYSTEM | | | | |
| 03 | | Type TN-S complete | | | | |
| 03 | 001 | Final branch circuit panelboards, lighting installations and wiring accessories | | Item | | |
| 03 | 002 | Mechanical equipment | | Item | | |
| 03 | 003 | Low Current equipment | | Item | | |
| | | 231 - GENERAL LIGHTING INSTALLATIONS | | | | |
| 04 | | LED Lighting fixtures | | | | |
| 04 | 001 | Type B1 | 6 | Nr | | |
| 04 | 002 | Type B1a | 4 | Nr | | |
| 04 | 003 | Type B2 | 13 | Nr | | |
| 04 | 004 | Type B2a | 2 | Nr | | |
| 04 | 005 | Type C2 | 7 | Nr | | |
| 04 | 006 | Type C2a | 2 | Nr | | |
| 04 | 007 | Type E1 | 3 | Nr | | |
| 04 | 008 | Type E2 | 4 | Nr | | |
| 04 | 009 | Type F4 | 7 | Nr | | |
| 04 | 010 | Type F4a | 7 | Nr | | |
| 04 | 011 | Type CC1 | 15 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 04 | 012 | Type CC1a | 5 | Nr | | |
| 04 | 013 | Type N4 | 5 | Nr | | |
| | | 241 - WIRING DEVICES, DISCONNECTS AND LV DISTRIBUTION TRANSFORMERS | | | | |
| 05 | | Switches | | | | |
| 05 | 001 | General lighting switch (S1); one way | 5 | Nr | | |
| 05 | 002 | General lighting switch (S1); two way | 10 | Nr | | |
| 05 | 003 | General lighting switch (S1); three way | 1 | Nr | | |
| 05 | 004 | General lighting switch (S2); one way (weatherproof) | 2 | Nr | | |
| 05 | 005 | General lighting switch (S2); two way (weatherproof) | 2 | Nr | | |
| 05 | 006 | Ultrasonic Sensor | 1 | Nr | | |
| 05 | | Socket outlets | | | | |
| 05 | 001 | Type RO1; simplex | 21 | Nr | | |
| 05 | 002 | Type RO1; duplex | 4 | Nr | | |
| 05 | 003 | Type RO2; simplex (waetherproof) | 3 | Nr | | |
| 05 | 004 | Type RO4; duplex - UPS | 3 | Nr | | |
| 05 | 005 | Type R45 | 2 | Nr | | |
| 05 | | Plugs | | | | |
| 05 | 001 | Plugs | | Item | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 05 | | Switch disconnectors (disconnecting switches) | | | | |
| 05 | 001 | 20 amp; 4P | 1 | Nr | | |
| 05 | 002 | 20 amp; 2P; weatherproof; Pedestal mounted | 8 | Nr | | |
| 05 | | Electric outlets | | | | |
| 05 | 001 | Electric Outlet, 2x20 A | 3 | Nr | | |
| 05 | 002 | Water Heater outlet with 2P switch, 2x20A, weatherproof | 1 | Nr | | |
| | | 261 - TELEPHONY SYSTEM | | | | |
| 06 | | Telephone extension sets | | | | |
| 06 | 001 | Standard desk-type | 3 | Nr | | |
| 06 | 002 | Wall-type | 2 | Nr | | |
| | | 265 - DATA NETWORK INSTALLATION | | | | |
| 06 | | Data network installation equipment | | | | |
| 06 | 001 | 21U telecommunications equipment rack - wall-mounted | 1 | Nr | | |
| 06 | 002 | 12-port fiber optic patch panel - rack mounted | 1 | Nr | | |
| 06 | 003 | 48-port CAT-6 copper patch panel - rack mounted | 1 | Nr | | |
| 06 | 004 | CAT-6 RJ-45 data outlet, wall-mounted | 8 | Nr | | |
| 07 | | Spare parts, tools and instruments | | | | |
| 07 | 001 | Set of spare parts | | Item | | |
| 07 | 002 | Set of tools and instruments | | Item | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 266- ACTIVE COMMUNICATION AND DATA PROCESSING EQUIPMENT | | | | |
| 08 | | Active data communication equipment | | | | |
| 08 | 001 | Layer-2 Access Switch | 1 | Nr | | |
| 09 | | Spare parts, tools and instruments | | | | |
| 09 | 001 | Set of spare parts | | Item | | |
| 09 | 002 | Set of tools and instruments | | Item | | |
| | | 272 - ANALOGUE ADDRESSABLE FIRE ALARM SYSTEM | | | | |
| 10 | | Fire alarm cabinets and repeater panels | | | | |
| 10 | 001 | Master Fire Alarm Control Panel (MFAC) | 1 | Nr | | |
| 10 | 002 | Workstation with a Graphical User Interface (GUI) | 1 | Nr | | |
| 10 | 003 | Event logging printer | 1 | Nr | | |
| 11 | | Alarm initiating devices | | | | |
| 11 | 001 | Manual fire alarm pull station | 3 | Nr | | |
| 11 | 002 | Optical smoke detector - ceiling mounted | 12 | Nr | | |
| 11 | 003 | Fixed temperature heat detector - ceiling mounted | 1 | Nr | | |
| 12 | | Alarm notification devices | | | | |
| 12 | 001 | Addressable strobe light; Type S1 - ceiling mounted | 7 | Nr | | |
| 12 | 002 | Addressable electronic sounder - wall mounted | 2 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 12 | 003 | Addressable electronic sounder with built-in strobe - wall mounted | 2 | Nr | | |
| 13 | | Accessories | | | | |
| 13 | 001 | Control Modules | | Item | | |
| 13 | 002 | Monitor modules | | Item | | |
| 13 | 003 | Fault isolators | | Item | | |
| 14 | | Spare parts, tools and instruments | | | | |
| 14 | 001 | Set of spare parts | | Item | | |
| 14 | 002 | Set of tools and instruments | | Item | | |
| | | 291 - BUILDER'S WORK | | | | |
| 15 | 001 | Builders work for sleeves and the like | | Item | | |

2 - ELECTRICAL WORK
To Summary US$

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 4 - PLUMBING | | | | |
| | 421 - SANITARY DRAINAGE AND VENT SYSTEM | | | | |
| 1 | PVC pipes to BS 4514 (above ground) | | | | |
| 01 010 | 40 dn | 16 | m | | |
| 01 020 | 50 dn | 12 | m | | |
| 01 030 | 65 dn | 2 | m | | |
| 2 | PVC pipes to BS 4660 (below ground) | | | | |
| 02 010 | 40 dn | 4 | m | | |
| 02 020 | 50 dn | 4 | m | | |
| 02 030 | 82 dn | 3 | m | | |
| 02 040 | 110 dn | 14 | m | | |
| | Components and Accessories | | | | |
| 03 | Floor drains | | | | |
| 03 010 | Type FD-1; 82 dn | 5 | Nr | | |
| 03 | Floor cleanouts | | | | |
| 03 020 | Type FCO-1; 110 dn | 2 | Nr | | |
| 03 | Cowls | | | | |
| 03 030 | Type RVC-1; 50 dn | 1 | Nr | | |
| 03 040 | Type RVC-1; 65 dn | 1 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 423 - SANITARY AND RAINWATER DRAINAGE - OUTSIDE BUILDINGS | | | | |
| 04 | Inspection chamber | | | | |
| 04 010 | Type IC-01 | 1 | Nr | | |
| | 424 - PLUMBING FIXTURES | | | | |
| 05 | Lavatories | | | | |
| 05 010 | Type LAV-1 | 2 | Nr | | |
| 06 | Water closets | | | | |
| 06 010 | Type EWC-1 | 2 | Nr | | |
| 07 | BPH | | | | |
| 07 010 | Type BPH-1 | 2 | Nr | | |
| 08 | Sinks | | | | |
| 08 010 | Kitchen sink; type KS-1 | 1 | Nr | | |
| 09 | Showers | | | | |
| 09 010 | Type SH-1 | 2 | Nr | | |
| | 431 - DOMESTIC COLD WATER | | | | |
| | Ppr pressure pipes to BS EN 1452 | | | | |
| 10 010 | 20 dn | 20 | m | | |
| 10 020 | 25 dn | 20 | m | | |
| 10 030 | 32 dn | 14 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 12 | Ball valves PN 10 | | | | |
| 12 010 | 25 dn | 2 | Nr | | |
| 13 | Automatic air valves | | | | |
| 13 010 | 20 dn | 1 | Nr | | |
| 14 | Sundries | | | | |
| 14 010 | Valve box | 1 | Nr | | |
| | 432 - DOMESTIC HOT WATER | | | | |
| 15 | Ppr pipes to BS EN 10255 | | | | |
| 15 010 | 20 dn | 12 | m | | |
| 15 020 | 25 dn | 16 | m | | |
| 16 | Ball valves PN 10 | | | | |
| 16 010 | 25 dn | 2 | Nr | | |
| 17 | Insulation; 25 thick; including | | | | |
| 17 010 | 20 dn | 12 | m | | |
| 17 020 | 25 dn | 16 | m | | |
| 18 | Electric water heaters (US Spec.) | | | | |
| 18 010 | Type EWH-1 | 1 | Nr | | |
| | 451 - FIRE FIGHTING SYSTEMS | | | | |
| 19 | Black seamless steel pipes to DIN 2440 | | | | |
| 19 010 | 32 dn | 16 | m | | |
| 19 020 | 40 dn | 3 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 20 | Hose reel cabinets | | | | |
| 20 010 | Type FHR-1 | 2 | Nr | | |
| 21 | Fire Extinguisher | | | | |
| 21 010 | Type FE-1 | 2 | Nr | | |
| | 492 - ELECTRICAL WORK | | | | |
| 22 | Other electrical work | | | | |
| 22 010 | All other electrical work in connection with Plumbing | 1 | Item | | |
| | 4 - PLUMBING<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 5 - HEATING, VENTILATING AND AIR CONDITIONING | | | | |
| | 512 - PIPEWORK | | | | |
| 01 | Condensate Piping and Accessories | | | | |
| 01 010 | 20 dn | 19 | m | | |
| | 521 - DUCTWORK | | | | |
| 02 | Galvanized steel ductwork | | | | |
| 01 010 | Low pressure | 60 | Kg | | |
| 03 | Volume dampers | | | | |
| 03 010 | Type VD | 1 | Item | | |
| 04 | Fire dampers | | | | |
| 04 010 | Type FD | 1 | Item | | |
| | 531 - AIR OUTLETS | | | | |
| 05 | Return air and exhaust registers | | | | |
| 05 010 | 150 x 150 | 2 | Nr | | |
| 05 020 | 250x150 | 1 | Nr | | |
| 06 | Outside air louvres | | | | |
| 06 010 | 300 x 200 | 1 | Nr | | |
| | 543 - AIR HANDLING EQUIPMENT | | | | |
| 07 | Inline centrifugal fans | | | | |
| 07 010 | Type EF-1 | 1 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 08 | Split air conditioning units; Indoor Unit | | | | |
| 08 010 | Type AC-1 | 8 | Nr | | |
| 09 | Split air conditioning units; Outdoor | | | | |
| 09 010 | Type CU-1 | 8 | Nr | | |
| | 592 - ELECTRICAL WORK | | | | |
| 10 | Other electrical work | | | | |
| 10 001 | All other electrical work in connection with HVAC | 1 | Item | | |
| | 5 - HEATING, VENTILATING AND AIR CONDITIONING<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 60 - EARTHWORK AND PAVEMENT | | | | |
| | SECTION 600 SITE CLEARING | | | | |
| 01 | Clearing and Grubbing | | | | |
| 01 010 | Clearing the site generally | 1 | Item | | |
| | SECTION 601 EARTH MOVING | | | | |
| 02 | Soil Fill | | | | |
| 02 010 | To make up levels | 115 | m3 | | |
| 02 011 | Engineered fill under slab on grade | 155 | m3 | | |
| 02 012 | Engineered fill under foundations | 1360 | m3 | | |
| | 60 - EARTHWORK AND PAVEMENT<br>To Summary | | | US$ | |

SUMMARY

| | | Amount US$ |
|---|---|---|
| E | CONCRETE WORK | |
| F | STRUCTURAL FRAMING | |
| G | MASONRY | |
| H | WALL AND ROOF CLADDING AND COVERING | |
| J | THERMAL AND MOISTURE PROTECTION | |
| K | DRY LININGS, FLOORING AND PARTITIONS | |
| M | METALWORK AND WOODWORK | |
| P | SURFACE FINISHES | |
| R | GLASSWORK | |
| V | PAINTING AND DECORATING | |
| X | FITTINGS, SPECIALTIES AND EQUIPMENT | |
| 2 | ELECTRICAL WORK | |
| 4 | PLUMBING | |
| 5 | HEATING, VENTILATING AND AIR CONDITIONING | |
| 60 | EARTHWORK AND PAVEMENT | |

TOTAL FIRE STATION
To General Summary US$

# *WATER RESERVOIR AND PUMP STATION*

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E - CONCRETE WORK | | | | |
| | | E12 - CONCRETING | | | | |
| 02 | | In situ concrete class C; sulphate-resisting Portland cement; plain/ Blinding | | | | |
| 02 | 011 | Foundations | 43 | m3 | | |
| 02 | 061 | Channels, pits and the like | 6 | m3 | | |
| 03 | | In situ concrete class A;reinforced-Moderatly Sulfate Resisting Portland Cement | | | | |
| 03 | 021 | Foundations | 335 | m3 | | |
| 03 | 031 | Machine bases | 3 | m3 | | |
| 03 | 061 | Channels, pits and the like | 33 | m3 | | |
| 03 | 071 | Slabs | 158 | m3 | | |
| 03 | 091 | Attached drop beams (drop part below slab only) | 6 | m3 | | |
| 03 | 111 | Walls | 230 | m3 | | |
| 03 | 131 | Isolated columns | 22 | m3 | | |
| 03 | 151 | Upstands | 23 | m3 | | |
| | | E21 - REINFORCEMENT FOR IN SITU CONCRETE | | | | |
| 04 | | Bar reinforcement | | | | |
| 04 | 201 | High yield steel | 130 | T | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E71 - DAMP-PROOF MEMBRANES AND COATINGS | | | | |
| 05 | | Self-adhesive polyethylene sheet (including proper protection system as shown on drawings) to | | | | |
| 05 | 101 | Foundations and peripheral upstands | 765 | m2 | | |
| 06 | | Chemical waterproof coating to | | | | |
| 06 | 101 | Internal surfaces of water tank | 1500 | m2 | | |
| | | E - CONCRETE WORK<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | G - MASONRY | | | | |
| | G11 - BRICK AND BLOCK MASONRY | | | | |
| 01 | Concrete hollow blocks; ordinary Portland cement; including mortar for bedding and jointing; to | | | | |
| 01 301 | Walls; 200 thick | 166 | m2 | | |
| | G - MASONRY To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | J - THERMAL AND MOISTURE PROTECTION | | | | |
| | J12 - ELASTOMERIC MEMBRANE ROOFING | | | | |
| 01 | Single layer elastomeric sheet (EPDM); vulcanized ethylene propylene diene monomer sheet membrane roofing, 1.52 mm thick, fully bonded application, resistant to ozone, U.V. rediation and ageing; as specified; to | | | | |
| 01 010 | Roofs | 119 | m2 | | |
| 01 020 | Upstands | 20 | m2 | | |
| 02 | Elastomeric coating; U.V. protection to bitumen membrane; to | | | | |
| 02 010 | Upstands | 7 | m2 | | |
| 03 | Filter membrane; vapour permeable geotextile, non-woven thermally bonded continuous polypropylene filaments; to | | | | |
| 03 010 | Roofs | 119 | m2 | | |
| 04 | Protective covering ballast; crushed gravel; to | | | | |
| 04 010 | Roofs 50 thick | 119 | m2 | | |
| 06 | Accessories aluminium alloy | | | | |
| 06 010 | Pressure plate; 40 x 3 thick; including backing cord and sealant; complete; as specified and as Drg. GEN-A-500; detail 2 | 44 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 07 | Accessories; galvanized steel | | | | |
| 07 010 | Rainwater spouts; 75 diameter; 370 long; including stainless steel saddle band; as Drg. GEN-A-500; detail 7 | 5 | Nr | | |
| | J21 - THERMAL INSULATION | | | | |
| 08 | Roof; insulation; extruded polystyrene board; loose laid; to | | | | |
| 08 010 | Roofs; 50 thick | 119 | m2 | | |
| | J - THERMAL AND MOISTURE PROTECTION To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | M - METALWORK AND WOODWORK | | | | |
| | M31 - STAIRS, BALUSTRADES AND SUNDRY ITEMS | | | | |
| 01 | Access ladders; mild steel galvanized; comprising flat strings and bar rungs; including brackets, anchor bolts, fittings and fixings; complete; as Drg. GEN-A-500 | | | | |
| 01 005 | 400 wide x 1800 rise; detail 13 | 3 | Nr | | |
| 05 | Access ladders; galvanized mild steel, comprising steel channel side rails, serrated treads, safety cage; including brackets, expansion bolts, paint, fittings and fittings; complete; as specified and as Drg. GEN-A-500; detail 5 | | | | |
| 05 020 | 450 wide x 5700 rise | 2 | Nr | | |
| 08 | Balustrades and handrails; galvanized steel, finish to receive paint; comprising 50 diameter top rail and posts, 50 diameter lower rails; including cover steel, anchored to concrete; fittings and fixings; complete; as specified and as Drg. GEN-A-501A; detail 3 | | | | |
| 08 005 | 1000 high; raking | 3 | m | | |
| 08 010 | 1000 high; horizontal | 3 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 10 | Stair nosing; angle protection; galvanized steel continuous angle set in concrete; including all fixings and fittings; complete; as shown on Drawings | | | | |
| 10 005 | Size 60 x 60 x 6 thick | 9 | m | | |
| t | Trench cover; ductile iron grating; comprising solid rectangular bearing bars; including cast iron angle frame, set in concrete, fixings and fittings; as Drg. GNE-A-500; detail 9 | | | | |
| 25 005 | 600 wide | 11 | m | | |
| 30 | Sump pit covers; comprising steel angle frame, 8 thick checkered plate skin, steel angle frame set in concrete; including pull handles, polyurethane paint, fittings and fixings; complete; as specified and as Drg. GEN-A-501; detail 3 | | | | |
| 30 005 | Covers; size 1000 x 1000 | 1 | Nr | | |
| 31 | Access hatches; comprising 2 thick galvanized pressed steel skin cover, steel angle frame set in concrete; including ironmongery, stay chain, padlock, neoprene gaskets, timber nailer, epoxy paint, fittings and fixings; complete; as specified and as Drg. GEN-A-500; detail 18 | | | | |
| 31 010 | Size 800 x 800 | 7 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 70 | Fixed aluminium louvers doors and windows powder coating finish; comprising blades, frame; including ironmongery, fittings and fixings; complete; as specified and as Drg. GEN-A-602 | | | | |
| 70 015 | Type 74; size 1150 x 2400 high | 2 | Nr | | |
| 70 020 | Type 75; size 1700 x 2400 high | 1 | Nr | | |
| 70 025 | Type 76; size 1100 x 2000 high | 2 | Nr | | |
| 70 030 | Type 77; size 650 x 650 high | 2 | Nr | | |
| | M - METALWORK AND WOODWORK<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | P - SURFACE FINISHES | | | | |
| | P11 - PLASTER AND DECORATIVE RENDER COATINGS | | | | |
| 01 | Cement - sand plaster; plain finish; to | | | | |
| 01 010 | Walls; 15 thick | 333 | m2 | | |
| 01 020 | Walls; 20 thick | 187 | m2 | | |
| 01 110 | Ceilings; 15 thick | 139 | m2 | | |
| | P12 - SCREEDS AND TOPPINGS | | | | |
| 04 | Cement-sand screeds; laid to fall and cross fall, finished; to receive flexible finish; to | | | | |
| 04 110 | Roofs; 30 minimum thick | 535 | m2 | | |
| 04 510 | Triangular fillet; 50 x 50 | 44 | m | | |
| 08 | Cement - sand screed toppings; trowelled finish; to receive flexible finish; to | | | | |
| 08 010 | Floors; 100 thick | 91 | m2 | | |
| 08 015 | Landings, treads and risers | 7 | m2 | | |
| 08 020 | Skirtings; 100 high; coved | 65 | m | | |
| 08 030 | Skirtings; 100 high; above nosing | 3 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 56 | Epoxy surface hardener and dustproofer to sand cement screed trowelled finish; to | | | | |
| 56 410 | Floors | 108 | m2 | | |
| 56 610 | Landings, treads amd risers | 7 | m2 | | |
| 56 760 | Channels, pits and the like | 18 | m2 | | |
| 60 | Polyurethane coating; two component, to trowelled concrete surfaces; to | | | | |
| 60 015 | Roof | 471 | m2 | | |

P - SURFACE FINISHES
To Summary US$

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | V - PAINTING AND DECORATING | | | | |
| | V11 - PAINTING AND CLEAR FINISHING | | | | |
| 01 | Interior flat latex-based paint; emulsion paint, based on PVA or PVA acrylic copolymers, water resistant suitable for repeated wahsing and scrubbing, to concrete, masonry, render and plaster | | | | |
| 01 005 | General surfaces; internal | 139 | m2 | | |
| 05 | External acrylic emulsion paint, resin based, water-resistant suitable for repeated washing and scrubbing; to concrete, masonry, render and plaster | | | | |
| 05 010 | General surfaces; external | 187 | m2 | | |
| 10 | Epoxy paint; to primed metal | | | | |
| 10 025 | Surfaces of balustrades and the like; plain open type | 10 | m2 | | |
| 12 | Oil paint; to concrete, masonry, render, plaster and gypsum board | | | | |
| 12 030 | General surfaces | 333 | m2 | | |
| 14 | Polyurethane paint; to concrete, masonry, render and plaster; to | | | | |
| 14 010 | General surfaces | 431 | m2 | | |
| | V - PAINTING AND DECORATING<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | X - FITTINGS, SPECIALTIES AND EQUIPMENT | | | | |
| | X45 - GRP FABRICATIONS | | | | |
| 01 | GRP access ladder; fiberglass-composite ladder; made of pultured tubing, comprising flat strings and bar rungs coated with abrasive materials for slip resistance; including softwood stiffener, stainless steel expansion bolts, fittings and fixings; complete; as Drg. GEN-A-500; detail 10 | | | | |
| 01 005 | 450 wide x 4800 rise | 2 | Nr | | |
| 01 010 | 450 wide x 6500 rise | 2 | Nr | | |
| | X - FITTINGS, SPECIALTIES AND EQUIPMENT<br>To Summary | | US$ | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 2 - ELECTRICAL WORK | | | | |
| | | 214 - STATIC UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEM | | | | |
| 01 | | UPS system complete, including built-in batteries, charger, inverter transfer switch and manual by-pass switch | | | | |
| 01 | 001 | UPS-RPS; 1 kVA / 0.8 kW; with 1 phase, 230 V, 50 Hz input and 1 phase, 230 V, 50 Hz output | 1 | Nr | | |
| | | 216 - DISTRIBUTION, SUBDISTRIBUTION AND FINAL BRANCH CIRCUIT PANELBOARDS | | | | |
| 01 | | Final branch circuit panelboards | | | | |
| 01 | 001 | LP-RPS | 1 | Nr | | |
| 01 | 002 | EPU-RPS | 1 | Nr | | |
| | | MOTOR-CONTROL CENTERS | | | | |
| | | Supply, install and place at location; including all necessary accessories, fittings and fixings; complete; as specified and shown on Drawings | | | | |
| 02 | | Motor Control Center | | | | |
| 02 | 001 | MCP-RPS | 1 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 217 - WIRES, CABLES, FEEDERS AND RELATED ACCESSORIES | | | | |
| 03 | | Single core, copper conductor, PVC insulated; unarmoured cables (earthing cables); 0.45/0.75 kV | | | | |
| 03 | 001 | 4 mm² | 156 | m | | |
| 03 | 002 | 6 mm² | 52 | m | | |
| 03 | 003 | 16 mm² | 12 | m | | |
| 04 | | Multi-core, copper conductor, PVC insulated, PVC sheathed feeder cables; unarmoured; 0.6/1 kV | | | | |
| 04 | 001 | 3 x 4 mm² | 60 | m | | |
| 04 | 002 | 4 x 4 mm² | 96 | m | | |
| 04 | 003 | 4 x 6 mm² | 52 | m | | |
| 05 | | Multi-core, copper conductor, XLPE insulated, PVC sheathed feeder cables; unarmoured; 0.6/1 kV | | | | |
| 05 | 001 | 4 x 35 mm² | 12 | m | | |
| | | 218 - CONDUITS, WIREWAYS, SUPPORTING SYSTEMS AND RELATED ACCESSORIES | | | | |
| 06 | | Cable trays; galvanized steel (mm) | | | | |
| 06 | 001 | 150 mm | 40 | m | | |
| 06 | 002 | 300 mm | 10 | m | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 07 | | Cable trays with elevated cover; galvanized steel (mm) | | | | |
| 07 | 001 | 150 mm | 10 | m | | |
| | | 219 - EARTHING SYSTEM | | | | |
| 08 | | Type TN-S complete | | | | |
| 08 | 001 | Final branch circuit panelboards, lighting installations and wiring accessories | | Item | | |
| 08 | 002 | Mechanical equipment | | Item | | |
| 08 | 003 | Low Current equipment | | Item | | |
| | | 231 - GENERAL LIGHTING INSTALLATIONS | | | | |
| 09 | | LED Lighting fixtures | | | | |
| 09 | 001 | Type B1 | 3 | Nr | | |
| 09 | 002 | Type B1a | 2 | Nr | | |
| 09 | 003 | Type B2 | 8 | Nr | | |
| 09 | 004 | Type B2a | 2 | Nr | | |
| 09 | 005 | Type E2 | 3 | Nr | | |
| | | 241 - WIRING DEVICES, DISCONNECTS AND LV DISTRIBUTION TRANSFORMERS | | | | |
| 10 | | Switches | | | | |
| 10 | 001 | General lighting switch (S1); one way | 2 | Nr | | |
| 10 | 002 | General lighting switch (S2); one way (weatherproof) | 1 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 11 | | Socket outlets | | | | |
| 11 | 001 | Type RO1; simplex | 1 | Nr | | |
| 11 | 002 | Type RO1; duplex | 1 | Nr | | |
| 11 | 003 | Type RO2; simplex (weatherproof) | 4 | Nr | | |
| 11 | 004 | Type RO4; duplex - UPS | 1 | Nr | | |
| 11 | 005 | Type R45 | 1 | Nr | | |
| 12 | | Plugs | | | | |
| 12 | 001 | Plugs | 1 | Item | | |
| 13 | | Switch disconnectors (disconnecting switches) | | | | |
| 13 | 001 | 20 amp; 4P | 1 | Nr | | |
| 13 | 002 | 20 amp; 3P; weatherproof | 2 | Nr | | |
| 13 | 003 | 20 amp; 4P; weatherproof | 3 | Nr | | |
| 13 | 004 | 32 amp; 4P; weatherproof | 3 | Nr | | |
| 13 | 005 | 20 amp; 4P; weatherproof, pedestal mounted | 3 | Nr | | |
| 13 | 006 | 63 amp; 4P; weatherproof, pedestal mounted | 1 | Nr | | |
| 14 | | Electric outlets | | | | |
| 14 | 001 | Electric Outlet, 2x20 A, weatherproof | 1 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 261 - TELEPHONY SYSTEM | | | | |
| 15 | | Telephone extension sets | | | | |
| 15 | 001 | Standard desk-type | 1 | Nr | | |
| 15 | 002 | Wall-type | 1 | Nr | | |
| | | 265 - DATA NETWORK INSTALLATION | | | | |
| 16 | | Data network installation equipment | | | | |
| 16 | 001 | 21U telecommunications equipment rack - wall-mounted | 1 | Nr | | |
| 16 | 002 | 12-port fiber optic patch panel - rack mounted | 1 | Nr | | |
| 16 | 003 | 48-port CAT-6 copper patch panel - rack mounted | 1 | Nr | | |
| 16 | 004 | CAT-6 RJ-45 data outlet, wall-mounted | 4 | Nr | | |
| 17 | | Spare parts, tools and instruments | | | | |
| 17 | 001 | Set of spare parts | 1 | Item | | |
| 17 | 002 | Set of tools and instruments | 1 | Item | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 266- ACTIVE COMMUNICATION AND DATA PROCESSING EQUIPMENT | | | | |
| 18 | | Active data communication equipment | | | | |
| 18 | 001 | Layer-2 Access Switch | 1 | Nr | | |
| 19 | | Spare parts, tools and instruments | | | | |
| 19 | 001 | Set of spare parts | 1 | Item | | |
| 19 | 002 | Set of tools and instruments | 1 | Item | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 272 - ANALOGUE ADDRESSABLE FIRE ALARM SYSTEM | | | | |
| 20 | | Alarm initiating devices | | | | |
| 20 | 001 | Manual fire alarm pull station | 1 | Nr | | |
| 20 | 002 | Optical smoke detector - ceiling mounted | 2 | Nr | | |
| 20 | 003 | Fixed temperature heat detector - ceiling mounted | 3 | Nr | | |
| 21 | | Alarm notification devices | | | | |
| 21 | 001 | Addressable strobe light; Type S1 - ceiling mounted | 2 | Nr | | |
| 22 | | Accessories | | | | |
| 22 | 001 | Control Modules | 1 | Item | | |
| 22 | 002 | Monitor modules | 1 | Item | | |
| 22 | 003 | Fault isolators | 1 | Item | | |
| 23 | | Spare parts, tools and instruments | | | | |
| 23 | 001 | Set of spare parts | 1 | Item | | |
| 23 | 002 | Set of tools and instruments | 1 | Item | | |
| | | 291 - BUILDER'S WORK | | | | |
| 24 | 001 | Builders work for sleeves and the like | 1 | Item | | |
| | | 2 - ELECTRICAL WORK<br>To Summary | | | US$ | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 4 - PLUMBING | | | | |
| | | 412 - PIPES AND FITTINGS | | | | |
| 01 | | Ductile iron pipes | | | | |
| 01 | 100 | 100 dn | 25 | m | | |
| 01 | 150 | 150 dn | 15 | m | | |
| 02 | | uPVC pipes | | | | |
| 02 | 110 | 82 dn | 5 | m | | |
| 03 | | Flexuble coupling | | | | |
| 03 | 010 | 40 dn | 3 | Nr | | |
| 03 | 020 | 50 dn | 3 | Nr | | |
| 04 | | Dismantling coupling | | | | |
| 04 | 010 | 100 dn | 6 | Nr | | |
| | | 414 - PUMPS | | | | |
| 05 | | Closed expansion tanks | | | | |
| 05 | 010 | FDPS-PT-1 | 1 | Nr | | |
| 06 | | Horizontal end-suction pumps | | | | |
| 06 | 010 | FDPS-P-4-1 to 3 | 3 | Nr | | |
| 07 | | Submersible sump pumps | | | | |
| 07 | 010 | FDPS-SP-1 & 2 | 2 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 413 -COMPONENTS AND ACCESSORIES | | | | |
| 08 | | Instruments | | | | |
| 08 | 010 | Pressure gauges | 7 | Nr | | |
| 09 | | Stainers | | | | |
| 09 | 010 | 100 dn | 3 | Nr | | |
| 10 | | Silent Check valves | | | | |
| 10 | 080 | 80 dn | 3 | Nr | | |
| 12 | | Butterfly valves | | | | |
| 12 | 080 | 80 dn | 3 | Nr | | |
| 12 | 100 | 100 dn | 5 | Nr | | |
| 12 | 150 | 150 dn | 2 | Nr | | |
| 13 | | Flow meter | | | | |
| 13 | 010 | 100 dn | 1 | Nr | | |
| | | 451 - FIRE FIGHTING SYSTEMS | | | | |
| 14 | | Black seamless steel pipes | | | | |
| 14 | 010 | 25 dn | 50 | m | | |
| 14 | 011 | 32 dn | 5 | m | | |
| 14 | 012 | 40 dn | 5 | m | | |
| 14 | 013 | 50 dn | 5 | m | | |
| 14 | 014 | 65 dn | 10 | m | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 14 | 015 | 80 dn | 10 | m | | |
| 14 | 016 | 150 dn | 40 | m | | |
| 14 | 017 | 200 dn | 16 | m | | |
| 15 | | Main fire pumps | | | | |
| 15 | 010 | Horizontal split case, FDPS-P-2 | 1 | Nr | | |
| 16 | | Jockey pumps | | | | |
| 16 | 010 | Vertical multistage, FDPS-P-2 | 1 | Nr | | |
| 17 | | Emergency fire pumps | | | | |
| 17 | 010 | Horizontal split case, FDPS-P-1 | 1 | Nr | | |
| 18 | | Gate valves | | | | |
| 18 | 040 | 40 dn | 2 | Nr | | |
| 18 | 150 | 150 dn | 6 | Nr | | |
| 18 | 200 | 200 dn | 4 | Nr | | |
| 19 | | Alarm check valves | | | | |
| 19 | 150 | 150 dn | 1 | Nr | | |
| 20 | | Check valves | | | | |
| 20 | 080 | 40 dn | 1 | Nr | | |
| 20 | 150 | 150 dn | 2 | Nr | | |
| 21 | | Pressure reducing valves | | | | |
| 21 | 140 | 80 dn | 1 | Nr | | |
| 21 | 150 | 150 dn | 1 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 22 | | Flow meter | | | | |
| 22 | 010 | 150 dn | 2 | Nr | | |
| 23 | | Automatic sprinklers | | | | |
| 23 | 020 | Type SP-2 | 21 | Nr | | |
| 24 | | Portable fire extinguishers | | | | |
| 24 | 010 | Type FE-1 | 3 | Nr | | |
| 24 | 020 | Type FE-2 | 3 | Nr | | |
| | | 467 -WORKSHOP EQUIPMENT | | | | |
| 25 | | Top running overhead cranes | | | | |
| 25 | 010 | FDPS-OC-1, 3 tons capacity | 1 | Nr | | |

4 - PLUMBING
To Summary US$

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 5 - HEATING, VENTILATING AND AIR CONDITIONING | | | | |
| | 543 - AIR HANDLING EQUIPMENT | | | | |
| 02 | Inline centrifugal fans | | | | |
| 02 010 | FDPS-EF-1 & 2, capacity 4.5 Kg | 2 | Nr | | |
| | 548 ACCESSORY AND MISCELLANEOUS EQUIPMENT | | | | |
| 03 | Room air conditioners | | | | |
| 03 010 | FDPS-SRAC-1 & 2 | 2 | Nr | | |
| | 5 - HEATING, VENTILATING AND AIR CONDITIONING To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 60 - EARTHWORK AND PAVEMENT | | | | |
| | SECTION 600 SITE CLEARING | | | | |
| 01 | Clearing and Grubbing | | | | |
| 01 010 | Clearing and grubbing the site generally | 1 | Item | | |
| | SECTION 601 EARTH MOVING | | | | |
| 02 | Excavation for Structures | | | | |
| 02 010 | Foundations | 680 | m3 | | |
| 03 | Soil Fill | | | | |
| 03 010 | Engineered fill under foundations | 1850 | m3 | | |
| | 60 - EARTHWORK AND PAVEMENT To Summary | | | US$ | |

SUMMARY

| | | Amount US$ |
|---|---|---|
| E | CONCRETE WORK | |
| G | MASONRY | |
| J | THERMAL AND MOISTURE PROTECTION | |
| M | METALWORK AND WOODWORK | |
| P | SURFACE FINISHES | |
| V | PAINTING AND DECORATING | |
| X | FITTINGS, SPECIALTIES AND EQUIPMENT | |
| 2 | ELECTRICAL WORK | |
| 4 | PLUMBING | |
| 5 | HEATING, VENTILATING AND AIR CONDITIONING | |
| 60 | EARTHWORK AND PAVEMENT | |

TOTAL WATER RESERVOIR AND PUMP STATION
To General Summary US$

# *SEWAGE PUMP STATION*

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E - CONCRETE WORK | | | | |
| | | E12 - CONCRETING | | | | |
| 02 | | In situ concrete class C; sulphate-resisting Portland cement; plain/ Blinding | | | | |
| 02 | 011 | Foundations | 1 | m3 | | |
| 03 | | In situ concrete class A;reinforced-Moderatly Sulfate Resisting Portland Cement | | | | |
| 03 | 021 | Foundations | 6 | m3 | | |
| 03 | 071 | Slabs | 5 | m3 | | |
| 03 | 091 | Attached drop beams (drop part below slab only) | 1 | m3 | | |
| 03 | 111 | Walls | 16 | m3 | | |
| 03 | 131 | Columns | 2 | m3 | | |
| 03 | 151 | Upstands | 1 | m3 | | |
| | | E21 - REINFORCEMENT FOR IN SITU CONCRETE | | | | |
| 04 | | Bar reinforcement | | | | |
| 04 | 201 | High yield steel | 3.5 | T | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E71 - DAMP-PROOF MEMBRANES AND COATINGS | | | | |
| 05 | | Self-adhesive polyethylene sheet (including proper protection system as shown on drawings) to | | | | |
| 05 | 101 | Foundations and peripheral upstands | 90 | m2 | | |
| | | E - CONCRETE WORK To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | G - MASONRY | | | | |
| | G11 - BRICK AND BLOCK MASONRY | | | | |
| 01 | Concrete hollow blocks; ordinary Portland cement; including mortar for bedding and jointing; to | | | | |
| 01 301 | Walls; 200 thick | 35 | m2 | | |
| | G - MASONRY To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | J - THERMAL AND MOISTURE PROTECTION | | | | |
| | J12 - ELASTOMERIC MEMBRANE ROOFING | | | | |
| 01 | Single layer elastomeric sheet (EPDM); vulcanized ethylene propylene diene monomer sheet membrane roofing, 1.52 mm thick, fully bonded application, resistant to ozone, U.V. rediation and ageing; as specified; to | | | | |
| 01 010 | Roofs | 12 | m2 | | |
| 01 020 | Upstands | 7 | m2 | | |
| 02 | Elastomeric coating; U.V. protection to bitumen membrane; to | | | | |
| 02 010 | Upstands | 2 | m2 | | |
| 03 | Filter membrane; vapour permeable geotextile, non-woven thermally bonded continuous polypropylene filaments; to | | | | |
| 03 010 | Roofs | 12 | m2 | | |
| 04 | Protective covering ballast; crushed gravel; to | | | | |
| 04 010 | Roofs 50 thick | 12 | m2 | | |
| 06 | Accessories aluminium alloy | | | | |
| 06 010 | Pressure plate; 40 x 3 thick; including backing cord and sealant; complete; as specified and as Drg. GEN-A-500; detail 2 | 15 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 07 | Accessories; galvanized steel | | | | |
| 07 010 | Rainwater spouts; 75 diameter; 370 long; including stainless steel saddle band; as Drg. GEN-A-500; detail 7 | 1 | Nr | | |
| | J21 - THERMAL INSULATION | | | | |
| 08 | Roof; insulation; extruded polystyrene board; loose laid; to | | | | |
| 08 010 | Roofs; 50 thick | 12 | m2 | | |
| | J - THERMAL AND MOISTURE PROTECTION To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | M - METALWORK AND WOODWORK | | | | |
| | M22 - DOORS AND HATCHES | | | | |
| 02 | Steel louvered doors; 43 mm thick; galvanized; zinc coated and factory primed for painting; including frame, ironmongery, fittings and fixings; complete; as specified and shown on Drawings | | | | |
| 02 010 | Size 2100 x 2200 high; double leaf; sand trap | 1 | Nr | | |
| | M31 - STAIRS, BALUSTRADES AND SUNDRY ITEMS | | | | |
| 01 | Access ladders; mild steel galvanized; compising flat strings and bar rungs; including brackets, anchor bolts, fittings and fixings; complete; as Drg. GEN-A-500 | | | | |
| 01 005 | 450 wide x 3775 rise; detail 6 | 1 | Nr | | |
| 02 | Sump pit covers; comprising steel angle frame, 8 thick checkered plate skin, steel angle frame set in concrete; including pull handles, polyurethane paint, fittings and fixings; complete; as specified and as Drg. GEN-A-501 | | | | |
| 02 005 | Covers; size 528 x 528 | 2 | Nr | | |
| 02 010 | Covers; size 686 x 686 | 2 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 03 | Fixed aluminium louvers powder coating finish sand trap; comprising baldes, frame; including fittings and fixings; complete; as specified and shown on Drawings | | | | |
| 03 015 | Size 300 x 300 high | 1 | Nr | | |
| | M - METALWORK AND WOODWORK To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | P - SURFACE FINISHES | | | | |
| | P11 - PLASTER AND DECORATIVE RENDER COATINGS | | | | |
| 01 | Cement - sand plaster; plain finish; to | | | | |
| 01 010 | Walls; 15 thick | 37 | m2 | | |
| 01 020 | Walls; 20 thick | 61 | m2 | | |
| 01 110 | Ceilings; 15 thick | 11 | m2 | | |
| | P12 - SCREEDS AND TOPPINGS | | | | |
| 04 | Cement-sand screeds; laid to fall and cross fall, finished; to receive flexible finish; to | | | | |
| 04 110 | Roofs; 30 minimum thick | 12 | m2 | | |
| 04 140 | Floors; 30 minimum thick | 4 | m2 | | |
| 04 510 | Triangular fillet; 50 x 50 | 15 | m | | |
| 08 | Cement - sand screed toppings; trowelled finish; to receive flexible finish; to | | | | |
| 08 010 | Floors; 50 thick | 11 | m2 | | |
| 08 020 | Skirtings; 100 high; coved | 14 | m | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| 09 | Epoxy surface hardener and dustproofer to sand cement screed trowelled finish; to | | | | |
| 09 010 | Floors | 17 | m2 | | |
| | P - SURFACE FINISHES | | | | |
| | To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | V - PAINTING AND DECORATING | | | | |
| | V11 - PAINTING AND CLEAR FINISHING | | | | |
| 01 | Interior flat latex-based paint; emulsion paint, based on PVA or PVA acrylic copolymers, water resistant suitable for repeated wahsing and scrubbing, to concrete, masonry, render and plaster | | | | |
| 01 005 | General surfaces; internal | 11 | m2 | | |
| 02 | External acrylic emulsion paint, resin based, water-resistant suitable for repeated washing and scrubbing; to concrete, masonry, render and plaster | | | | |
| 02 010 | General surfaces; external | 61 | m2 | | |
| 03 | Oil paint; to concrete, masonry, render, plaster and gypsum board | | | | |
| 03 030 | General surfaces | 36 | m2 | | |
| 04 | Oil paint; to primed metal | | | | |
| 04 010 | General surfaces | 14 | m2 | | |
| | V - PAINTING AND DECORATING<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | X - FITTINGS, SPECIALTIES AND EQUIPMENT | | | | |
| | X45 - GRP FABRICATIONS | | | | |
| 01 | GRP access ladder; fiberglass-composite ladder; made of pultured tubing, comprising flat strings and bar rungs coated with abrasive materials for slip resistance; including softwood stiffener, stainless steel expansion bolts, fittings and fixings; complete; as Drg. GEN-A-501; detail 8 | | | | |
| 01 005 | 450 wide x 4980 rise; with safety cage | 1 | Nr | | |
| | X - FITTINGS, SPECIALTIES AND EQUIPMENT To Summary | | | US$ | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 2 - ELECTRICAL WORK | | | | |
| | | 216 - DISTRIBUTION, SUBDISTRIBUTION AND FINAL BRANCH CIRCUIT PANELBOARDS | | | | |
| 01 | | Final branch circuit panelboards | | | | |
| 01 | 001 | LP-LS | 2 | Nr | | |
| | | 219 - EARTHING SYSTEM | | | | |
| 01 | | Type TN-S complete | | | | |
| 01 | 001 | Fnal branch circuit panelboards, lighting installations and wiring accessories | 1 | Item | | |
| 01 | 002 | Mechanical equipment | 1 | Item | | |
| | | 231 - GENERAL LIGHTING INSTALLATIONS | | | | |
| 01 | | LED Lighting fixtures | | | | |
| 01 | 001 | Type B2 | 2 | Nr | | |
| 01 | 002 | Type OO3 | 1 | Nr | | |
| | | 241 - WIRING DEVICES, DISCONNECTS AND LV DISTRIBUTION TRANSFORMERS | | | | |
| 01 | | Switches | | | | |
| 01 | 001 | General lighting switch (S2); one way | 2 | Nr | | |
| 02 | | Socket outlets | | | | |
| 02 | 001 | Type RO2; simplex | 2 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 03 | | Plugs | | | | |
| 03 | 001 | Plugs | 1 | Item | | |
| 04 | | Switch disconnectors (disconnecting switches) | | | | |
| 04 | 001 | 20 amp; 2P; weatherproof, pedestal mounted and with combination starter | 2 | Nr | | |
| | | 272 - ANALOGUE ADDRESSABLE FIRE ALARM SYSTEM | | | | |
| 05 | | Fire alarm cabinets and repeater panels | | | | |
| 05 | 001 | Slave Fire Alarm Control Panel (SFAC) | 1 | Nr | | |
| 06 | | Alarm initiating devices | | | | |
| 06 | 001 | Manual fire alarm pull station | 1 | Nr | | |
| 06 | 002 | Optical smoke detector - ceiling mounted | 1 | Nr | | |
| 07 | | Alarm notification devices | | | | |
| 07 | 001 | Addressable electronic sounder with built-in strobe - wall mounted | 4 | Nr | | |
| 08 | | Accessories | | | | |
| 08 | 001 | Control Modules | 1 | Item | | |
| 08 | 002 | Monitor modules | 1 | Item | | |
| 08 | 003 | Fault isolators | 1 | Item | | |
| 09 | | Spare parts, tools and instruments | | | | |
| 09 | 001 | Set of spare parts | 1 | Item | | |
| 09 | 002 | Set of tools and instruments | 1 | Item | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 291 - BUILDER'S WORK | | | | |
| 10 | 001 | Builders work for sleeves and the like | 1 | Item | | |
| | | 2 - ELECTRICAL WORK | | | | |
| | | To Summary | | | US$ | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 4 - PLUMBING | | | | |
| | | 412 - PIPES AND FITTINGS | | | | |
| 01 | | Ductile iron pipes | | | | |
| 01 | 100 | 100 dn | 12 | m | | |
| 01 | | PVC pipes | | | | |
| 01 | 150 | 150 dn | 12 | m | | |
| 01 | 200 | 200 dn | 6 | m | | |
| 02 | | Dismantling couplings | | | | |
| 02 | 100 | 100 dn | 2 | Nr | | |
| | | 413 -COMPONENTS AND ACCESSORIES | | | | |
| 03 | | Silent check valves | | | | |
| 03 | 100 | 100 dn | 2 | Nr | | |
| | | 414 - PUMPS | | | | |
| 04 | | Submersible sewage pumps | | | | |
| 04 | 010 | SP-LS-1 & 2 | 2 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 451 - FIRE FIGHTING SYSTEMS | | | | |
| 05 | | Portable fire extinguishers | | | | |
| 05 | 010 | Type FE-1 | 1 | Nr | | |
| 05 | 020 | Type FE-2 | 1 | Nr | | |
| | | 4 - PLUMBING<br>To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 5 - HEATING, VENTILATING AND AIR CONDITIONING | | | | |
| | 548 ACCESSORY AND MISCELLANEOUS EQUIPMENT | | | | |
| 01 | Odor control units | | | | |
| 01 010 | OCU-LS-1 | 1 | Item | | |
| | 5 - HEATING, VENTILATING AND AIR CONDITIONING To Summary | | | US$ | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | 60 - EARTHWORK AND PAVEMENT | | | | |
| | SECTION 600 SITE CLEARING | | | | |
| 01 | Clearing and Grubbing | | | | |
| 01 010 | Clearing and grubbing the site generally | 1 | Item | | |
| | SECTION 601 EARTH MOVING | | | | |
| 02 | Excavation for Structures | | | | |
| 02 010 | Foundations | 420 | m3 | | |
| 03 | Soil Fill | | | | |
| 03 010 | Engineered fill under foundations | 340 | m3 | | |
| | 60 - EARTHWORK AND PAVEMENT To Summary | | | US$ | |

SUMMARY

| | | Amount US$ |
|---|---|---|
| E | CONCRETE WORK | |
| G | MASONRY | |
| J | THERMAL AND MOISTURE PROTECTION | |
| M | METALWORK AND WOODWORK | |
| P | SURFACE FINISHES | |
| V | PAINTING AND DECORATING | |
| X | FITTINGS, SPECIALTIES AND EQUIPMENT | |
| 2 | ELECTRICAL WORK | |
| 4 | PLUMBING | |
| 5 | HEATING, VENTILATING AND AIR CONDITIONING | |
| 60 | EARTHWORK AND PAVEMENT | |

TOTAL SEWAGE PUMP STATION
To General Summary US$

# *INFRASTRUCTURE WORKS*

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E - CONCRETE WORK | | | | |
| | | E12 - CONCRETING | | | | |
| 02 | | In situ concrete class C; sulphate-resisting Portland cement; plain/ Blinding | | | | |
| 02 | 011 | Foundations | 170 | m3 | | |
| 03 | | In situ concrete class A;reinforced-Moderatly Sulfate Resisting Portland Cement | | | | |
| 03 | 021 | Foundations | 585 | m3 | | |
| 03 | 131 | Columns | 2 | m3 | | |
| 03 | 111 | Walls | 670 | m3 | | |
| | | E21 - REINFORCEMENT FOR IN SITU CONCRETE | | | | |
| 04 | | Bar reinforcement | | | | |
| 04 | 201 | High yield steel | 85 | T | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | E71 - DAMP-PROOF MEMBRANES AND COATINGS | | | | |
| 05 | | Self-adhesive polyethylene sheet (including proper protection system as shown on drawings) to | | | | |
| 05 | 101 | Foundations and peripheral walls | 5800 | m2 | | |
| | | E - CONCRETE WORK<br>To Summary | | | US$ | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | Y - EXTERNAL WORKS | | | | |
| | | Y22 - KERBS, EDGINGS AND CHANNELS | | | | |
| 02 | | Precast concrete | | | | |
| 02 | 010 | Upstand Kerb | 1920 | m | | |
| 02 | 011 | Heel Kerb | 1430 | m | | |
| | | Y23 - BLOCK AND SLAB PAVINGS | | | | |
| | | SIDEWALK | | | | |
| 02 | 010 | 200 x 100 x 60mm long, interlocking concrete blocks, grey color | 3600 | m2 | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | Y41 - CHAIN LINK FENCING AND ASSOCIATED GATES | | | | |
| | | Wire mesh chain link fence; comprising galvanized steel tubular posts, top rail, mesh wire, PVC coated, barbwire; including gates, stretcher bar, tension wire, accessories and fixings; complete; as specified and as shown on Drawings | | | | |
| 03 | 010 | Fence; 3750 high | 1120 | m | | |
| 03 | 011 | Extra over for sliding gate; overall size 8600 x 4000 high | 2 | Nr | | |
| 03 | 012 | Extra over for pedestrian hinged single leaf gate; overall size 1000 x 2600 high | 1 | Nr | | |
| | | Y - EXTERNAL WORKS<br>To Summary | | | US$ | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | Z - WATER SUPPLY, IRRIGATION, DRAINAGE AND SEWERAGE | | | | |
| | | Z11 - PIPES, FITTINGS AND ACCESSORIES | | | | |
| 02 | | WATER SUPPLY | | | | |
| 02 | 100 | Ductile Iron pipe Class K9 | | | | |
| 02 | 111 | 100 | 770 | m | | |
| 02 | 113 | 200 | 2250 | m | | |
| 02 | 190 | Water Supply Service Connection for Buildings - complete as specified and shown on Drawings; Polyethylene pipe Class 6kg/cm2 | | | | |
| 02 | 191 | 25 dn | 3 | Nr | | |
| 02 | 200 | Water Supply Service connection for provisionel buildings- complete as specified and shown on Drawings; Polyethylene pipe Class 6kg/cm2 | | | | |
| 02 | 201 | 50 dn | 4 | Nr | | |
| 04 | | FIRE FIGHTING | | | | |
| 04 | 100 | Ductile Iron pipe Class K9 | | | | |
| 01 | 101 | 150 | 2290 | m | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 05 | | SEWERAGE | | | | |
| 05 | 100 | UPVC pipe Class 6kg/cm2 | | | | |
| 05 | 101 | 200 dn | 1110 | m | | |
| 05 | 120 | Sewage Service Connections; UPVC pipe Class 6kg/cm2; including connection to existing network or as directed | | | | |
| 05 | 121 | 150 dn | 50 | m | | |
| 06 | | STORM | | | | |
| 06 | 100 | uPVC pipe Class 6 kg/cm2- complete as specified. | | | | |
| 06 | 102 | 300 dn | 240 | m | | |
| 06 | 103 | 400 dn | 120 | m | | |
| 06 | 104 | 500 dn | 400 | m | | |
| 06 | 110 | GRP pipe minimum Stiffness 5000 N/m2- complete as specified | | | | |
| 06 | 111 | 600 dn | 245 | m | | |
| 06 | 112 | 700 dn | 190 | m | | |
| 06 | 115 | 800 dn | 70 | m | | |
| 06 | 117 | 1000 dn | 50 | m | | |
| 06 | 118 | 1200 dn | 280 | m | | |
| 06 | 119 | 1300 dn | 110 | m | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 06 | 120 | 1500 dn | 140 | m | | |
| 06 | 121 | 1600 dn | 260 | m | | |
| 06 | 122 | 1700 dn | 240 | m | | |
| 06 | 123 | 2000 dn | 400 | m | | |
| | | Concrete Pipe at the Outfall- complete as specified and shown on drawings | | | | |
| 06 | 125 | 2000 dn | 10 | m | | |
| 06 | 130 | Gully Connections; uPVC pipe Class 6 kg/cm2; including connection to existing network or as directed | | | | |
| 06 | 131 | 200 dn | 800 | m | | |
| | | Z13 - VALVES, IRRIGATION EQUIPMENT AND ACCESSORIES | | | | |
| 07 | | WATER SUPPLY | | | | |
| 07 | 100 | Gate valves with chambers - complete as specified and shown on Drawings | | | | |
| 07 | 103 | 100 | 2 | Nr | | |
| 07 | 106 | 200 | 2 | Nr | | |
| 07 | 200 | Air valve and chamber - complete as specified and shown on Drawings | | | | |
| 07 | 201 | 65 mm | 4 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 08 | 200 | Washout and chamber - complete as specified and shown on Drawings | | | | |
| 08 | 201 | 100 | 1 | Nr | | |
| 08 | 205 | 200 | 2 | Nr | | |
| 08 | 210 | Water meter and chamber- complete as specified and shown on drawings | | | | |
| 08 | 211 | 200 | 1 | Nr | | |
| | | Connection to existing public water supply network | 1 | Nr | | |
| 09 | | FIRE FIGHTING | | | | |
| 09 | 100 | Gate valves with chambers- complete as specified and shown on Drawings | | | | |
| 09 | 105 | 150 | 6 | Nr | | |
| 09 | 110 | Air valve and chamber - complete as specified and shown on Drawings | | | | |
| 09 | 111 | 65 mm | 3 | Nr | | |
| 09 | 200 | Washout and chamber - complete as specified and shown on Drawings | | | | |
| 09 | 201 | 150 | 1 | Nr | | |
| 09 | 210 | Fire Hydrants | | | | |
| 09 | 211 | 150 | 18 | Nr | | |
| 09 | 310 | Replace above ground Fire Hydrants by underground Fire Hydrants | 10 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | Z25 - MANHOLES, GULLIES, INLETS, CHAMBERS | | | | |
| 10 | | SEWERAGE | | | | |
| 10 | 100 | Manholes - complete as specified and shown on Drawings | | | | |
| 10 | 120 | 1.2 m (chamber ring diameter) | | | | |
| 10 | 121 | Not exceeding 4.7 m deep (Type A) | 20 | Nr | | |
| 10 | 130 | Extra over manholes for drops - complete as specified and shown on Drawings | | | | |
| 10 | 131 | Drop depth not exceeding 1.5 m | 1 | Nr | | |
| 10 | 150 | Service Connections | | | | |
| 10 | 151 | Inspection chambers complete (including provisional to warehouses) | 6 | Nr | | |
| 11 | | STORM | | | | |
| 11 | 100 | Manholes - complete as specified and shown on Drawings | | | | |
| 11 | 120 | 1.2 m (chamber ring diameter) | | | | |
| 11 | 121 | Not exceeding 4.0 m deep (Type A) | 23 | Nr | | |
| 11 | 150 | 1.5 m (chamber ring diameter) | | | | |
| 11 | 151 | Not exceeding 4.0 m deep (Type A) | 5 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 11 | 170 | 2.0 m (chamber ring diameter) | | | | |
| 11 | 171 | Not exceeding 4.0 m deep (Type A) | 7 | Nr | | |
| 11 | 180 | 2.5 m (chamber ring diameter) | | | | |
| 11 | 181 | Not exceeding 4.3 m deep (Type A) | 7 | Nr | | |
| 11 | 250 | Gullies | | | | |
| 11 | 251 | Reinforced concrete road gully complete as per Drawings | 132 | Nr | | |
| 11 | 251 | Reinforced concrete rectangular channel complete as per Drawings | 580 | m | | |
| 11 | 253 | Connection to existing public sewage network | 1 | Nr | | |

Z - WATER SUPPLY, IRRIGATION, DRAINAGE AND SEWERAGE

To Summary US$

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 2 - ELECTRICAL WORK | | | | |
| | | 217 - WIRES, CABLES, FEEDERS AND RELATED ACCESSORIES | | | | |
| 01 | | Multi-core, copper conductor, XLPE insulated, PVC sheathed feeder cables; unarmoured; 12/20 kV | | | | |
| 01 | 001 | 3 x 120 mm² | 400 | m | | |
| 02 | | Single core, copper conductor, PVC insulated, (Earthing Cable); unarmoured; 0.45/0.75 kV | | | | |
| 02 | 001 | 10 mm² | 470 | m | | |
| 02 | 002 | 16 mm² | 1939 | m | | |
| 02 | 003 | 50 mm² | 150 | m | | |
| 02 | 004 | 150 mm² | 240 | m | | |
| 03 | | Multi-core, copper conductor, PVC insulated, PVC sheathed feeder cables; unarmoured; 0.6/1 kV | | | | |
| 03 | 001 | 4 x 10 mm² | 470 | m | | |
| 04 | | Multi-core, copper conductor, XLPE insulated, PVC sheathed feeder cables; unarmoured; 0.6/1 kV | | | | |
| 04 | 001 | 4 x 16 mm² | 400 | m | | |
| 04 | 002 | 4 x 25 mm² | 555 | m | | |
| 04 | 003 | 4 x 35 mm² | 1070 | m | | |
| 04 | 004 | 4 x 95 mm² | 150 | m | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 04 | 005 | 4 x 150 mm² | 360 | m | | |
| | | 219 - EARTHING SYSTEM | | | | |
| 05 | | Type TN-S complete, for outdoor lighting | | | | |
| 05 | 001 | Earth Pit | 2 | Nr | | |
| | | 232 - OUTDOOR AREA AND ACCESS ROAD LIGHTING | | | | |
| 06 | | Lighting columns including luminaires and accessories | | | | |
| 06 | 001 | 30 m high mast lighting column with 495 W LED floodlight (Type FF3), twelve floodlights,Type U3 | 4 | Nr | | |
| | | 241 - WIRING DEVICES, DISCONNECTS AND LV DISTRIBUTION TRANSFORMERS | | | | |
| 07 | | Lighting control for site lighting | | | | |
| 07 | 001 | Control system for high mast light control as per drawings (including panels and cables/wires, and requested accessories) | | Item | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 08 | | Miscellaneous Works | | | | |
| 08 | 001 | Protection Bollards for existing highmasts with 12 bollards for each highmast | | Item | | |
| | | 265 - DATA NETWORK INSTALLATIONS | | | | |
| 09 | | Optical Fiber cable | | | | |
| 09 | 001 | Single-mode fiber optic cables; including installation, splices, labeling and all needed accessories. | | Item | | |
| | | 291 - BUILDER'S WORK | | | | |
| 10 | | Underground cable duct assemblies; | | | | |
| 10 | 001 | Type 2ø, 100mm in concrete encasement | 180 | m | | |
| 10 | 002 | Type 6ø, 100mm in concrete encasement | 18 | m | | |
| 10 | 002 | LV Ducts between Substation SS6 and New Warehoueses as per contractor's design and as shown on drawings | | Item | | |
| 10 | 003 | Type 4ø, 150mm in concrete encasement | 150 | m | | |
| 10 | 004 | Type 4ø, 100mm for telecommunications in concrete encasement | 1340 | m | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 11 | | Cable Manholes | | | | |
| 11 | 001 | Type A | 3 | Nr | | |
| 11 | 001 | Type B | 5 | Nr | | |
| 11 | 002 | Type C | 3 | Nr | | |
| 11 | 003 | Manholes for LV Ducts between Substation SS6 and Warehouese as per contractor's design and as shown on drawings | | Item | | |
| 11 | 004 | Manholes and handholes neck to be adjusted to follow the grading level | | Item | | |
| 12 | | Cable handholes | | | | |
| 12 | 001 | Type HH3 | 10 | Nr | | |
| 12 | 002 | Type HH3 | 5 | Nr | | |
| 13 | | Demolition works | | | | |
| 13 | 001 | Demolition of existing Duck banks and Manholes as shown on drawings | | Item | | |
| | | 2 - ELECTRICAL WORK<br>To Summary | | | US$ | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | 60 - EARTHWORK AND PAVEMENT | | | | |
| | | SECTION 600 SITE CLEARING | | | | |
| 01 | | Clearing and Grubbing | | | | |
| 01 | 001 | Clearing and grubbing the site generally | 1 | Item | | |
| | | 601 EARTH MOVING | | | | |
| 02 | | Excavation for Structures | | | | |
| 02 | 001 | Foundations | 170 | m3 | | |
| 03 | | Excavation for Walks and Pavements | | | | |
| 03 | 001 | Unclassified Excavation | 105000 | m3 | | |
| 04 | | Subgrade Inspection and Construction | | | | |
| 04 | 001 | Subgrade Preparation in Cut | 105100 | m2 | | |
| 05 | | Soil Fill | | | | |
| 05 | 001 | Engineered fill under foundations | 76 | m3 | | |
| 06 | | Compaction of Satisfactory Soil | | | | |
| 06 | 001 | construction of fill from suitable excavated material | 12000 | m3 | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 07 | | 602 - AGGREGATE SUB-BASE COURSE | | | | |
| 07 | 001 | Aggregate Sub-base Course | 4230 | m3 | | |
| 08 | | 603 - AGGREGATE BASE COURSE | | | | |
| 08 | 001 | Aggregate base Course | 20010 | m3 | | |
| 09 | | 605 - ASPHALT PAVING | | | | |
| 09 | 001 | Bituminous Prime Coat | 28200 | m2 | | |
| 09 | 002 | Bituminous Tack Coat | 56400 | m2 | | |
| 09 | 003 | Bituminous Surface Course | 1692 | m3 | | |
| 09 | 004 | Bituminous Base Course | 4512 | m3 | | |
| 10 | | 605 - ASPHALT PAVEMENT DEMOLITION | | | | |
| 10 | 001 | Pavement Demolition/Removal of Existing Road Pavement as per Specifications, Method fo Measurment and Drawings. | 14000 | m2 | | |
| 10 | 002 | Trenching of existing road for utility disposition followed by temporary reinstatement. | 5000 | m2 | | |
| 11 | | 607 - UNIT PAVERS | | | | |
| 11 | 001 | Polyethylene sheet | 77000 | m2 | | |
| 11 | 002 | 530mm Portland Cement Concrete Pavement (Plain) Type 1A, Flexural Strength 4.6 Mpa, inclusive of dowels, deformed bars, joint sealant, filler and groove. Complete in all respect as per Specifications, Method of Measurment and Drawings. | 40545 | m3 | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 11 | 003 | 530mm Portland Cement Concrete Pavement (Reinforced) Type 1B, Flexural Strength 4.6 Mpa, inclusive of dowels, deformed bars, joint sealant, filler and groove. Complete in all respect as per Specifications, Method of Measurment and Drawings. | 212 | m3 | | |
| 11 | 004 | Sleeper Slab Joint at Concrete and Flexible Pavement Interface A 3.0m transition sleeper slab is to be constructed at the interface between concrete and flexible pavement as shown on Pavement Drawing no.PL 241087-TD-INF-G-303. | 1669 | m | | |
| 13 | | 612 GEOTECHNICAL INVESTIGATIONS | | | | |
| 13 | 001 | Verification Boreholes at the location of the Warehouse: Rotary drilled boreholes, 15m deep, to be performed before execution of foundations of structures, all inclusive of mobilization/demobilization, NOC's, setting out, boring through any material, sampling, performing SPT and coring in rock at the intervals specified, laboratory testing, filling of the borehole, verification of the bearing capacity and foundation design, preparation and submission of geotechnical interpretative reports, all in compliance with the requirements of the project specifications. | 5 | Nr | | |

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| 13 | 002 | Test pits not exceeding 3 m deep, to be excavated before commencing with the pavement works, all inclusive of mobilization/demobilization, NOC's, setting out, laboratory testing, backfilling of the test pit, verification of the pavement design, preparation and submission of geotechnical interpretative reports, all in compliance with the requirements of the project specifications. | 2 | Nr | | |

| Item | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|
| | FENCE AND GATE | | | | |
| | 60 - EARTHWORK AND PAVEMENT | | | | |
| | SECTION 600 SITE CLEARING | | | | |
| 01 | Clearing and Grubbing | | | | |
| 01 010 | Clearing the site generally | 1 | Item | | |
| | SECTION 601 EARTH MOVING | | | | |
| 02 | Excavation for Structure | | | | |
| 02 010 | Foundations | 2600 | m3 | | |
| 03 | Soil Fill | | | | |
| 03 010 | To make up levels | 1150 | m3 | | |
| | 60 - EARTHWORK AND PAVEMENT<br>To Summary | | | US$ | |

SUMMARY

| | | Amount US$ |
|---|---|---|
| E | CONCRETE WORK | |
| Y | EXTERNAL WORKS | |
| Z | WATER SUPPLY, DRAINAGE AND SEWERAGE | |
| 2 | ELECTRICAL WORK | |
| 60 | EARTHWORK AND PAVEMENT | |
| TOTAL INFRASTRUCTURE WORKS | | |
| To General Summary | US$ | |

# *PROVISIONAL SUM*

| Item | | Description | Quantity | Unit | Rate | Amount US$ |
|---|---|---|---|---|---|---|
| | | PROVISIONAL SUM | | | | |
| 01 | 010 | Allow for a contingency amount to be used by the Employer, and for any additional activities as instructed by the Engineer | | PS | 2,000,000.00 | 2,000,000.00 |
| | | PROVISIONAL SUM<br>To General Summary | | | | US$ 2,000,000.00 |

# *GENERAL SUMMARY*

SUMMARY

| | Amount US$ |
|---|---|
| GENERAL REQUIREMENTS | |
| DEMOLITION AND RELOCATION | |
| FIRE STATION | |
| WATER RESERVOIR AND PUMP STATION | |
| SEWAGE PUMP STATION | |
| INFRASTRUCTURE WORKS | |
| PROVISIONAL SUM | 2,000,000.00 |
| TOTAL BEFORE VAT | |
| VAT (%) | |
| TOTAL | US$ |