

PROJECT: Schools for Knowledge Economy Project (SKEP)

Method of Measurements

Vol.3 of 4 - Method of Measurements



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1. Civil and Architectural Works

1.1. General

1.1.1. Introduction

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

The Bills of Quantities are to be read and construed in association and conjunction with the Drawings, Specification and this Method of Measurement.

Information that is given on the Drawings and/or in the Specification may be identified by cross-references included in the descriptions of work in the Bill of Quantities.

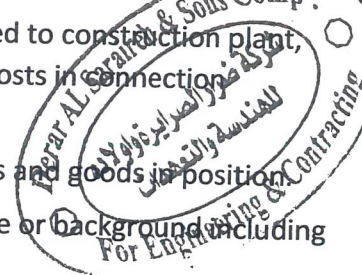
1.1.2. Quantities

- 2.01 Work is measured net as fixed in position except where otherwise stated in a measurement rule applicable to the work.
- 2.02 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).
- 2.03 Quantities measured in tons 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.
- 2.04 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 that are at the boundaries of measured areas are always deducted irrespective of size.

1.1.3. 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 and height. Where ambiguity could arise, the dimensions are identified.
- 3.03 Reference "General Technical Specifications for Buildings, the First Volume of Civil Works and Architectural issued by the Ministry of Public Works and Housing, Edition 2, 1996", applies only to Technical Specifications and not to MOM as the MOM for this contract adopted as per Volume III.
- 3.04 Unless otherwise specifically stated in the Bill of Quantities or herein, the following are deemed to be included with all work:
 - Labour and all costs in connection therewith.
 - Materials, products, goods and all costs in connection therewith



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- 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, provision of the following are deemed to be included with all 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, the engineer.
- Temporary telephones for the use of the contractor and the engineer, and the cost of calls.
- Temporary roads, hard standing, 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 of water retaining structures for leakage including providing water.
- Design, co-ordination, installation and as-built record and shop drawings and the like.
- Preparation and submittal of reports, records, certificates, notices, designs, details, calculations and other information and data required by the specification.
- Compliance with all other requirements, provisions and obligations contained in the general requirements, specifications and conditions of contract, maintaining, adapting, clearing away and making good are deemed to be included with the items for temporary works

1.1.4. Units of Measurement and Abbreviations

All units of measurement shall be based on the Metric System of weights and measurements except where other units are specifically mentioned for standard products.

The following symbols and abbreviations are used in this Method of Measurement and in the Bill of Quantities.

- JD Jordan Dinar
- M Linear meter
- m Linear meter
- M.R Linear meter
- m² Square meter
- MS Square meter
- m³ Cubic meter
- cm Centimeter
- mm Millimeter
- no Number
- No Number
- LS Lump Sum
- Kg Kilogram



- % Percentage
- dn Nominal diameter
- Qty Quantity
- Dwg Drawing
- MOM Method of Measurement
- PC Prime Cost
- PS Provisional Sum
- T Ton
- Specs Specifications



1.1.5. Definitions

- 5.01 Where items in the Bills of Quantities contain the phrase "as specified" the Contractor shall refer to the Specifications, the Conditions of Contract, the Drawings and other Contract Documents for the full description. The Contractor shall include in his rates for complying with this clause whether the phrase "as specified" appears in the text or not. The Bills of Quantities are to be read and construed in association and conjunction with the Drawings, Specification and this Method of Measurement. Information that is given on the Drawings and/or in the Specification may be identified by cross-references included in the descriptions of work in the Bill of Quantities.
- 5.02 The term "Site" means the whole site area as defined on the Drawings.
- 5.03 The terms "including", "is included", "include for" and similar words and phrases are used to indicate that the items in question are not measurable as separate items, are not specifically mentioned in descriptions but the costs of which are included in the measured items.
- 5.04 The word "Ditto" means the repetition of all or part of the preceding items as applicable to complete the sense of the item.
- 5.05 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.
- 5.06 The words "Deliver" or "Store" means materials to be delivered to the store(s) against the receipt to be issued by the Employer.
- 5.07 "Complete": Means as indicated on the Drawings, required by the Specifications, required by manufacturer's written instructions, and indicated in the Method of Measurement.
- 5.08 "Optional Item(s)" means an item (if any) which is specified in the Contract as an Optional Item, for the execution of any part of the Works, in which the Employer has

the full right to omit this item(s) without being subjected to any financial, legal or contractual claims.

5.09 The description contained in the Schedule of Rates and Bills of Quantities are not comprehensive and are for convenience only and the Contractor is to note that all relevant requirements of the Specifications, Drawings, General Conditions and other Contract Documents are to be taken into account in the measured items.

1.1.6. Mock Ups

Mock ups and/or Field samples are not measured as separate items under respective trade or element in which they occur and deemed to be included with respective price.

1.1.7. Protection

The Contractor shall allow in his rates for protecting the work of all trades including the work of his sub-contractors against damage by whatever method is deemed necessary during execution of the works until handing over to the Employer. Any work damaged before the Works are handed over, is to be replaced or made good at the Contractor's expense and to the entire satisfaction of the Engineer.

1.1.8. Delivery and Storage

8.01 The Contractor shall allow in his rates for all materials to be supplied as an "Extra Stock" or "Spares" or all materials coming out of demolition operations and to be "Stored", for delivering such materials and storing in store(s) against the receipt to be issued by the Employer.

8.02 The rates shall include for all multiple handling and transportation.



1.2. Division 2 -Site Work General

1.2.1. Minor Demolition and Remodeling

1. Rates for demolition shall include for all works incidental and associated with the demolition works, removal of spoils and salvaged material from site and leaving work site clean, level and tidy.
2. Additions and alternation works are measured net. Rates shall include for all protection to existing adjoining works, finishes, screening repair areas and for all works needed to hand over the adjoining works and surfaces in their original conditions to the satisfaction of the Engineer.
3. Including relocating, installing and connecting any impeded pipes, cables and connections raised during the demolition works.
4. All dismantled (salvaged) items must be delivered to the client.
5. If the owner wishes to take any of the materials/items from the existing site before demolishing, Tenderer shall hand over the selected material/item to the owner at the site location.
6. Basketball hoop poles removal, maintenance and fixing to new site is enumerated. Rate deemed to include:
 - a. Removing the basketball hoop poles with care.
 - b. Do necessary maintenance to basketball hoop poles, welding, fabrication, and painting.
 - c. Fixing the basketball hoop poles to site indicated on the drawings, including excavation, concrete base, steel bars, fixing bolts and any accessories needed to complete the work.

1.2.2. Earthwork

A. Excavation

1. Excavation generally is measured in cubic meters. Excavation for foundations, tie beams and the like are measured separately. Excavation is measured from the existing average over site ground level or from excavated formation level as applicable or natural ground level.
2. All excavations are measured the net dimensions required for the work as shown on the Drawings and the Contractor must make whatever allowance he considers necessary in his rates for working space, for increase of bulk in the excavated materials, for earthwork support and also for the additional width of concrete and earth filling occasioned thereby. He must also make allowance for all increase in bulk in items of filling, removal, etc.
3. The rates for excavation shall include for:



- a. Excavating in any type of ground whatsoever (including any value of bearing capacity given by tender documents or investigated by testing agency later) including rock and ground below normal ground water level and the use of any necessary plant.
- b. Breaking out existing foundations and all other obstructions met with, during the progress of the Works.
- c. Keeping the excavations free from sludge, loose and foreign matter, and of required for leveling, grading and ramming.
- d. Unless measured separately, the returning, filling of previously excavated areas and consolidation of selected excavated material as required including all necessary spoil heaps and double handling.
- e. Loading and carting away of surplus (suitable and unsuitable) excavated material as per the requirements of the Specifications.
- f. Spreading, leveling and consolidating selected excavated materials to make up levels under floors including all spoil heaps and double handling.

B. Imported Filling and Backfilling

1. Each kind of filling material is given separately.
2. Filling is given in cubic meters measured as equal to the void filled after compaction.

C. Rate of Filling shall include for:

- a. Watering and compacting in layers as specified.
- b. Additional material necessary to make up levels.
- c. Multiple handling as necessary.
- d. Temporary retaining boards.
- e. Hand-picking where required.



1.2.3. Aggregate Base Course / Single Size Aggregates

A. Measurement:

1. Crushed Aggregate Base Course shall be measured by square meters stating the thickness, or cubic meters of aggregate materials furnished, compacted crushed and screened.
2. Single size aggregates shall be measured by cubic meters.
3. Fine sand shall be measured by square meters stating the thickness.

B. Rate deemed to include:

1. Provision of aggregate from approved sources

2. Mixing Aggregate with water.
3. Laying, spreading and raking to correct levels, falls and cambers
4. Placed, spread, compacted and finished for base course.
5. Testing of materials as specified.

1.2.4. Parking Marking

A. Measurement

1. Pavement Markings are measured in linear meter.
2. Work should be conducted according to drawings and specifications.

B. Rate deemed to include:

- Setting out.
- Extra work involved in patterned work and work in multi-colors.
- Work of any width, height and girth.
- Special and non-standard work.
- Finishing exposed edges.
- Cleaning, sealing, grinding and polishing including working overhead and working over and around obstruction.
- Temporary support.
- Shop drawings, samples and results.
- Protection.

1.2.5. Stone Curbs

A. Measurements

Precast Stone Curbs are measured nett length in place in linear meter mentioning set straight or occurred on plan.

B. Rate deemed to include:

- Fairface concrete
- All short lengths.
- Cutting, waste materials.
- Cement mortar bed, joint fillers and sealants.
- Rate shall also include for concrete bed, haunching, excavation , painting and back filling where required.
- All formwork and its accessories for all concrete types.
- All steel works needed according to drawings and specifications.



1.2.6. Unit Pavers

A. Measurements

- Paving tiles are measured nett area in place in square meters.
- Cast in place concrete pavers are measured nett area in place in square meters.
- Interlocking concrete tiles is measured net area in place in square meters.
- Limestone treads, treads and risers, coping and the like are measured in linear meter.

B. Rate deemed to include:

- Laying paving tiles to falls and cross falls.
- Any type of setting beds.
- Forming joints between tiles.
- Grouting.
- Expansion tile strip.
- Cement mortar and fill.
- Complete the works, including control joints, separation joints, formwork and all as specified.

1.2.7. Fences and Gates

A. Measurement

1. Hinged/sliding gates are enumerated stating the elevation dimensions.

B. Rate deemed to include:

1. Fabrication, all ends, welding, priming, painting, etc...
2. Hardware and accessories needed.
3. Assembling, bases, fitting and jointing component parts, bolts, nuts, holes, caps, brackets, anchors, pockets,
4. Grouting floor cover flanges, ground rail and wheels, cylindrical locks.

1.2.8. Parking Bumpers

A. Measurement

1. Precast Concrete Parking Bumpers are enumerated.

B. Rate deemed to include:

1. Anchorage bolts, painting.
2. Steel reinforcement.
3. Fixation and all accessories needed.



4. And all as indicated and specified.

1.2.9. Metal Bollards

A. Measurements

1. Metal Bollards are enumerated stating overall size and types.

B. Rate deemed to include:

- Excavations.
- All concrete works, foundation for fixing bollards.
- All metal fabrication required, welding, etc...
- Joints, Fillers, Grout, Gravel.
- Fixing, bolts.
- Finishes, painting.
- Placing in position and all as per drawings and specification.

1.2.10. Planting Soil

A. Measurement

1. Planting soil is measured in square meters stating the thickness or in cubic meters.

B. Rate deemed to include:

- Locating, Procuring.
- Stockpiling on site.
- Mixing of planting soil.
- Laying.
- All as specified and indicated.



1.3. Division 3 – Concrete

1.3.1. Concrete Reinforcement

A. Measurement

1. Bar reinforcement is given in Tons.

B. Rate deemed to include:

1. Cutting to length, bending, cranking, lapping, forming hooks, wire brushing to remove scale and rust and securely fixing in position with tying wires, spacers, chairs and positioning blocks irrespective of whether the bars are in bases, columns, beams, slabs, walls or staircases, etc.
2. Preparing bar bending schedules
3. Erection and dismantling of access scaffolding as necessary.
4. Fixing bars in any position and in any number.
5. Fixing bars horizontally, vertically, sloping and curved.
6. Weight of surface treatment and rolling margins.
7. Testing and quality control procedure.



1.3.2. Cast In Place Concrete

A. Generally

1. Concrete work is generally measured in **cubic meters** to the nett volumes, all in accordance with the details and dimensions shown on the Drawings.
2. No deduction is measured for the volume of any conduit, reinforcement or structural steel embedded in concrete. Voids entirely within an area of concrete less than 0.5 m² are not deducted.
3. Columns and walls are measured in **cubic meters**, and measured between top of raft slab level to soffit of the beam, except shaft wall. Shaft wall measured in full height throughout from top of the slab level. Beams are only measured separately for drop part only if there is a separate pay item.
4. Water stops placed horizontally and vertically are measured separately in **linear meters**.
5. Work is deemed to include:
 - a. All types of formwork, cutting or forming all grooves, chases, recesses, notches, holes, mortises, pockets, stop ends, construction joints, working around pipes, ducts and obstructions, casting in fixing blocks, hangers all projections, keys and the like.
6. Rates for topping concrete shall include for power float surface finish.

B. Formwork

1. No separate item is included in the Bills of Quantities for formwork, and the contractor is to make due allowance for this item in his rates for concrete.
2. Allowances for formwork shall include for all cutting and waste, timber, rails, fabricating, hoisting, fixing and supporting in position with all necessary struts, braces, battens, supports and distance pieces, for bolting and wedging, for all splayed edges, for all rebated edges, holes, grooves and notching and for easing, striking and removal on completion. It shall also include for coating faces of formwork in contact with concrete with a coat of mould oil or other suitable material to prevent adhesion and for all necessary formwork at expansion, construction, control and isolation joints and all straight, raking and circular cutting and waste are included with unit price.
3. Making fairface (smooth) finish of concrete walls, columns, slabs..etc and wherever required and stairs is measured separately as "extra over" in square meters for the required surface. Rate shall include making chamfered edges.
4. The Contractor shall allow for fixing formwork to all heights above finished floor level.

C. Concrete Test Cube/Miscellaneous Items

1. Rates for concrete shall include for providing and testing concrete cube as described to the satisfaction of the Engineer.
2. All miscellaneous items like, scaffolding at any heights, cutting and patching, anchors, curing compound, admixtures, coordinating with services, etc. are included with unit price.

1.3.3. Concrete Topping

A. Measurement

1. Each kind of screed toppings is given separately stating the surface finish.
2. Thickness stated for screed toppings shall be according to the manufacturer's recommendations or as required by the Engineer.
3. Work to screed toppings 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.

B. Rate deemed to include:

1. All works including preparing the surface.
2. All necessary formwork.
3. Trowelling smooth finish as appropriate.
4. Steel mesh on roof



5. Cleaning, application as per manufacturer's recommendation and the like.
6. Work laid in bays where required and as indicated on drawings.
7. Keying mixes, bonding agents, adhesives, hardeners and other fixing materials.

1.3.4. Lightweight Concrete

A. Measurement

1. Foam/lightweight concrete is measured in cubic meters.

B. Rate deemed to include:

1. Providing fillets at all turnings, around pipes, sleeves, ducts, etc.
2. Laying in bays, if necessary, including temporary formwork and dividing strips.
3. Cement screed topping 2 cm thick to receive water proofing membrane.

1.3.5. Cyclopean Concrete

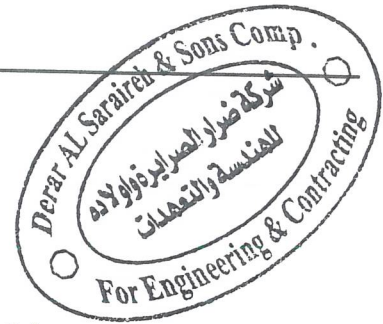
A. Measurement

1. Cyclopean concrete is measured in cubic meters.

B. Rate deemed to include:

1. All necessary formwork, formwork accessories, etc.
2. Large crushed stones max size of two-third the thickness mixed with concrete.
3. Keying mixes, bonding agents and other fixing materials.





1.4. Division 4 – Masonry

1.4.1. Concrete Blockwork

A. Measurement

1. Blockwork Cellular/ Hollow/Solid/ Lightweight (thermal)/Bearing or Unbearing/ is measured according to wall thickness, the net area in place in square meters. No deductions to be made for pipe work, cables, conduits, cable trays or ductwork passing through walls. The space occupied by concrete lintels, sills and the like is not to be deducted.
2. Cavity blockwork is measured only from one side to the net area in place given in square meters.
3. Ribbed blocks are enumerated as furnished.

B. Rate deemed to include:

1. Supply all necessary materials, manufacture, sampling and testing, haulage, hoisting, scaffolding, testing, curing and erection of blockwork to the dimensions shown on Drawings and as specified.
2. All rough and fair cutting and waste, cutting and pinning to soffits, inter-sections and ends, bonding with wall ties to reinforced concrete members, forming openings, chases, mortices, leaving temporary openings in walls for structural members and making good.
3. Raking out joints as the work proceeds to- form a key for rendering or pointing as required.
4. Forming grooves for flashings, etc. and leaving weep holes.
5. Admixtures with cement and sand mortar, upon the approval of the Engineer.
6. Forming cavities including wall ties as specified and all extra materials and labour for closing cavities at sills, jambs, etc.
7. Concrete lintels, concrete sills and the like, and grout filling
8. Reinforced concrete bond beams and stiffener columns in walls as detailed in structural drawings , specifications and codes.
9. Providing solid blocks at jambs and sills to doors and windows in lieu of hollow block.
10. Providing solid block instead of hollow blocks at junction between ceiling soffits and walls and for all opening jambs and sills.
11. Providing solid block instead of hollow in the first course of all walls.
12. Fire proofing material and insulation around pipes, ducts, cables, etc., passing through walls, slabs and ceilings.

13. Providing all necessary galvanized mild steel lathing at joints of blockwork and junction between concrete and blockwork
14. Providing all necessary damp proof course.
15. Joint sealant at connections with ceiling, as specified

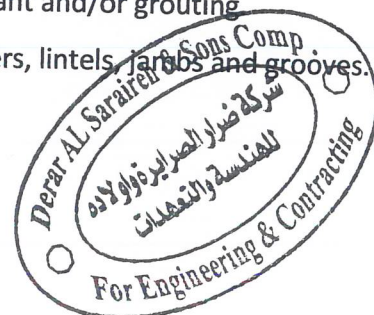
1.4.2. Natural Stone Works

A. Measurement: Stone/marble/Granite

1. Cladding or build is given in square meters, on the exposed face. No deduction is made for voids not exceeding 0.10m².
2. Marble/Granite for floors is given in square meters.
3. For stairs tread and riser is measured in linear meters in one single measurement.
4. Copping and window sill are measured in square meters, on the exposed face. No deduction is made for voids not exceeding 0.10m².
5. Cornices, band courses, moldings, and the like features are measured in linear meters.
6. Stone/marble/Granite Skirting is measured in linear meters.

B. Rate deemed to include:

- a. Work at any height above floor level.
- b. All required surface finish to all exposed surfaces.
- c. Sand / aggregate beds, at any thickness.
- d. All type of formwork needed, cement concrete backing at any thickness.
- e. Cement sand mortar bed and backing with thicknesses in accordance with drawings.
- f. Galvanized steel ties, plugs and clips.
- g. Steel angle supports, expansion bolts, stock and the like.
- h. Pre-welded mild steel wire mesh.
- i. All other needed fixing materials and accessories.
- j. Layout and treatment of joints including sealant and/or grouting
- k. All special pieces as (but not limited to) corners, lintels, jambs and grooves.
- l. Cleaning and Protection.



1.4.3. Wash Basin Counters

A. Measurement

1. Marble/Granite washbasin counter is given in linear meters measured along the center.

B. Rate deemed to include:

- a. Work at any height above floor level.
- b. Fabrication, and all required surface finish to all exposed surfaces as per drawings.
- c. Granite or marble all surfaces.
- d. Galvanized steel frame, angles supports and expansion bolts.
- e. All other needed fixing materials and accessories
- f. Joint sealant, stock, Cleaning and Protection.



1.5. Division 5 – Metals

1.5.1. Metal Fabrication

1.5.1.1. *Ladders*

A. Measurement

1. Each kind of work is given separately.
2. Ladders and the like shall be enumerated stating dimensions or in linear meters.

B. Rate deemed to include:

1. Ladders and the like shall include side channels,
2. Fabrication, Rungs, brackets, frames and chequered plate.
3. Priming, painting.
4. Assembling, fitting and jointing component parts, bolts, nuts, holes, welding, fixing, etc...

1.5.1.2. *Window Screens*

A. Measurement

1. Metal Window screens are measured by square meter.

B. Rate deemed to include:

1. Fabrication, assembling, welding, grinding, priming, painting, any type of finishing required, etc...
2. Fixing using bolts, anchors and the like.

1.5.1.3. *Handrails and Railing*

A. Measurement

1. Each kind of work is given separately, stating the kind of material and finish as delivered.
2. Each type of balustrades and the like is given separately.
3. Each height of balustrades and the like is given separately.
4. Balustrades and the like are given in linear meters.

B. Rate deemed to include:

1. Cover moulds, trims, and the like, where supplied with the unit.
2. Fabrication, Welding and assembling.
3. Flanges, bolts, screws, nuts, washers, plates and the like.
4. Clips, pipe supports and the like.
5. Priming and Painting.



1.5.2. Division 6 - Wood and Plastic

1.5.3. Custom Cabinets / Tables

A. Measurement

1. Kitchen cabinet units shall be measured in **linear meter** of the face of cabinet, or **enumerated** stating overall dimensions.
2. Laboratory furniture is **enumerated** for each component as indicated in bills of quantities and drawings.
3. Laboratory Tables are **enumerated** for each component as indicated in bills of quantities and drawings.
4. Class Room Cabinets are **enumerated** for each component as indicated in bills of quantities and drawings.

B. Rate deemed to include:

1. Assembling, fitting and jointing together all component parts,
2. All assigned types of wood, veneers and laminates,
3. All metal tube sections, angels, beech wood tops and the like.
4. All welding, fabrication, fixation needed.
5. All hardware, accessories, ironmongery, worktops.
6. All type of topping.
7. Shelving, drawer units, wood treatment, priming, painting.
8. Wood structure backing, skirting where indicated, block and plaster works where indicated,
9. Fixation to floors and/or walls as detailed and required.
10. Priming and painting finishes of any type, color and the like.
11. Connection to all services.
12. All fixed furniture shall be marked with a stick Marked with the USAID Identity.

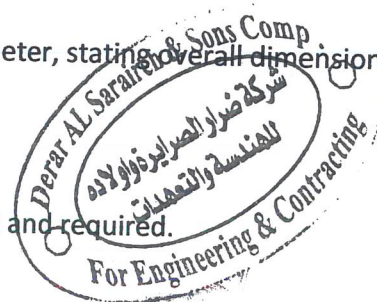
1.5.4. Wood Veneer

A. Measurement

1. Wooden skirting shall be measured in linear meter, stating overall dimensions.

B. Rate deemed to include:

1. Fabrication, assembling.
2. Fixation, Adhesive materials and all as detailed and required.
3. Painting as indicated and specified.



1.5.5. Division 7 - Thermal and Moisture Protection

1.5.5.1. Sheet Waterproofing

Water Proofing Membrane:

A. Measurements

1. Each type of waterproofing sheets is given separately.
2. Waterproofing membrane have been measured net in square meter as laid, openings less than 0.5 m² in area has not been deducted.

B. Rate deemed to include:

1. Supplying all necessary materials, plant, equipment and tools, storage, sampling and testing, haulage, hoisting and execution of all waterproofing, insulation and other works as specified.
2. Preparation of surfaces to be covered, bitumen primer.
3. Cutting as necessary and fitting around pipes and obstructions.
4. Overlaps, forming collars and watertight joints around roof outlets, pipes and ducts passing through roof slab.
5. Preparation and submission of detailed shop drawings and samples to the Engineer for his approval.
6. Skirting and mastic sealant, including dressing over angle fillets, bending, Galvanized steel flashing, tucking-in edges and for all laps, ends, angles and intersections, etc and for additional layer of membrane where needed.
7. Use rounded gravel (wadi gravel) for roof on top of waterproof sheets (size 20mm – 40mm) as per drawings.

1.5.5.2. Fluid-Applied Waterproofing

Cold-applied Bituminous Coating:

A. Measurement

1. Bituminous coatings to be measured the net area in place in square meters

B. Rate deemed to include:

1. Preparation of surfaces.
2. Applying two perpendicular coats as specified.
3. Protection.



1.5.5.3. Building Insulation

Extruded Polystyrene:

A. Measurement

1. Extruded polystyrene boards measured to the nett area in place in square meters.
2. No deduction is made for voids not exceeding 0.50 m².

B. Rate deemed to include:

1. Surface cleaning, preparations and all needed accessories as specified.
2. Fixing, taping and fittings and all needed accessories.

1.5.6. Joint Filler

A. Measurements

1. Joint filler/Impregnated fiber board are given in Linear meters measured overall the width or depth of joints.

B. Rate deemed to include:

1. Curved, horizontal, sloping and vertical work,
2. Formwork,
3. All necessary accessories and fixing works,
4. Any width or depth of joint.

1.5.7. Vapor Retarders (Polyethylene Sheets)

A. Measurement

1. Polyethylene sheets are measured to the nett area in place in square meters.

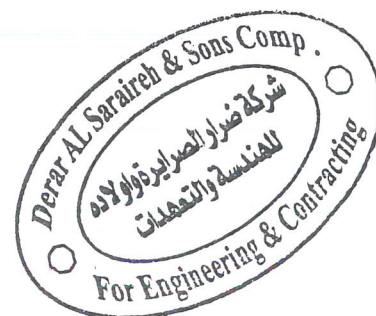
B. Rate deemed to include:

1. Preparation of surfaces to be covered.
2. Cutting as necessary and fitting around pipes and obstructions.
3. Overlaps, Taping, forming collars and watertight joints around roof outlets, pipes and ducts passing through roof slab.
4. Fixing and all needed accessories as specified.

1.5.8. Joint Sealers

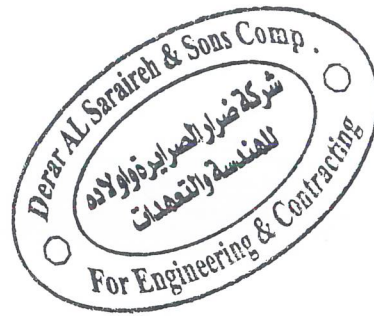
A. Measurement

1. Joint sealant is given in linear meters as furnished.



B. Rate deemed to include:

1. Joint cleaning and preparation for work.
2. Monolithic seals closed backing cord, water barriers, and all other associated works as specified.



1.6. Division 8 - Doors and Windows

General - Notes:

1.6.1. Steel Doors and Frames

A. Measurement

1. Hollow metal doors/ Steel doors/fire rated doors are enumerated stating overall dimensions.

B. Rate deemed to include:

1. All labour to edges, forming openings, hanging and fixings.
2. Frames, wall anchors, expansion bolts, lugs, dowels, grouting frames, sub-frames, blocking pieces required for fixing hardware and all weather- stripping as specified.
3. Hardware, frames, and accessories needed.
4. Rates for all doors shall include for glazing in all types where indicated.
5. Rates for all doors shall include for steel louvers (grills) where indicated.
6. Priming and painting.
7. Fire rated accessories for fire rated doors.
8. Steel coiling doors including frames, steel track system, brackets, closures, bracing, smoke seals, abrasion resistance strips, endlocks, box roller, shaft, axis, padlock, hardware, rubber strips.

1.6.2. Aluminum Doors

A. Measurement

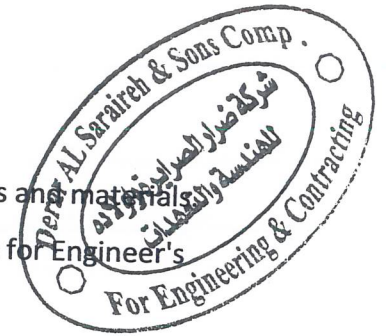
1. Single, double glazed Aluminum doors and the like have been enumerated stating the dimensions.

B. Rate deemed to include:

1. Assembling, cutting and waste and grinding, drilling, counter sinking, bolting and riveting.
2. Shop coating with primer, haulage, protection and storage.
3. Hardware and accessories.
4. Aluminum sub-frames if and where required, hoisting and fixing in position, caulking with mastic, grouting mortices with cement and sand grout.
5. Inspection of aluminum work at workshop by the Engineer if necessary.
6. Ironmongery as required including matching, fixing screws, etc. and shall include for fixing.



7. Approved design and quality weather and drought seals.
8. Fly screens.
9. Aluminum or steel angles, profiles and frames.
10. All necessary fixings, fittings, accessories and related works and materials.
11. Preparation and submission of shop drawings and samples for Engineer's approval.



1.6.3. Wood Doors

A. Measurement

1. Doors are enumerated stating overall dimensions.

B. Rate deemed to include:

1. Hardware, accessories, fire rating where indicated/required as shown on drawings.
2. Hanging and fixing.
3. Stainless steel Kick Plate, any type of frame.
4. Steel/wood frames and subframe.
5. Doors shall include for Glazing in all types and beads.
6. Fire rating accessories where needed.
7. Preparing & painting in all types or polishing/varnishing as indicated.
8. Steel/wooden louvers where indicated.

1.6.4. Aluminum Windows

A. Measurement

1. Single, double glazed Aluminum windows and the like have been enumerated stating the dimensions.

B. Rate deemed to include:

1. Assembling, cutting and waste and grinding, drilling, counter sinking, bolting and riveting.
2. Shop coating with primer, haulage, protection and storage.
3. Hardware and accessories.
4. Aluminum sub-frames if and where required, hoisting and fixing in position, caulking with mastic, grouting mortices with cement and sand grout.
5. Inspection of aluminum work at workshop by the Engineer if necessary.

6. Ironmongery as required including matching, fixing screws, etc. and shall include for fixing.
7. Approved design and quality weather and drought seals.
8. Fly screens.
9. Aluminum or steel angles, profiles and frames.
10. All necessary fixings, fittings, accessories and related works and materials.
11. Preparation and submission of shop drawings and samples for Engineer's approval.

1.6.5. Door Hardware

A. Hardware is included with door's/Window's pricing.

B. Rate deemed to include:

1. Finish hardware shall include for cutting all holes, channels, pockets and neatly fitting strictly in accordance with the manufacturer's instruction and deemed included for fire rating hardware where required.
2. Fixing, removing, re-fixing after painting, covering, protecting, clearing, testing, oiling, easing, and leaving in perfect operating conditions.
3. Supplying all keys including master keying system and handover to Employer in clearly labeled and as specified.

1.6.6. Access Doors and Panels

A. Measurement

1. Access Doors and panels are enumerated stating overall dimensions.

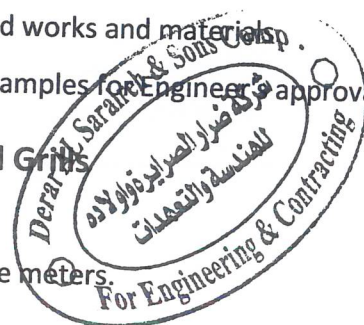
B. Rate deemed to include:

1. Hardware, ironmongery, accessories, fire rating where indicated/required as shown on drawings.
2. Hanging and fixing.
3. Any type of frame, subframe.
4. Painting, priming and protection.
5. All necessary fixings, fittings, accessories and related works and materials.
6. Preparation and submission of shop drawings and samples for Engineer approval.

1.6.7. Coiling Doors (Roller Shutter Doors) and Grills

A. Measurement

1. Coiling Doors and grills are measured in square meters.



B. Rate deemed to include:

1. Hardware, ironmongery, accessories, fire rating where indicated/required as shown on drawings.
2. Hanging and fixing.
3. Any type of frame, subframe.
4. Painting, priming and protection.
5. All necessary fixings, fittings, accessories and related works and materials.
6. Preparation and submission of shop drawings and samples for Engineer's approval.



1.7. Division 9 - Finishes

1.7.1. Portland Cement Plaster

A Measurement

1. Plaster work is measured in square meters to the net area to be covered.
2. All openings and other unfinished areas over 0.5 m² have been deducted.

B. Rate deemed to include:

1. Preparation of surfaces, plastering at any height or shape, plastering accessories like, but not limited to, corner beads, chasing and stop beads, corner reinforced central joints, control joints, metal lath, Expanded Metal Rib Lath, Angle Bead, C-section Aluminum and the like.
2. Curing and protection of plaster.
3. For external plaster work shall include making grooves where needed as indicated in the drawings.
4. Waterproof admixture is included for water tanks and external plastering.

1.7.2. Tiles

1.7.2.1. Ceramic, Porcelain, Terazzo and Other Tiles – General

A. Measurement

1. Each kind of tiling is given separately.
2. Patterned work and work in multi-colors and any shape.
3. Work to each of the following is given separately:-
 - Floors.
 - Walls.
 - Treads and Riser.
 - Sills, Thresholds.
 - Skirting.
 - Borders.
 - Edges
4. Thickness, dimensions, types and details are stated in descriptions where necessary to identify the work.
5. Thickness stated for tiles is the thickness exclusive of keys, grooves and the like.
6. Work to floors/walls is measured in square meters measured on the exposed face. No deduction is made for voids not exceeding 0.50m².



7. Work to sills and thresholds are measured in square meters measured on the exposed face.
8. Works to treads and risers are measured in linear meters on the exposed nosing of the tread slab and covers the slabs of both treads and risers.
9. Work to skirting, borders, and the like is measured in linear meters.
10. Work for parapet coping is measured in square meters measured on the exposed face

B. Rate deemed to include:

1. Work at any height above floor level.
2. Setting out.
3. Extra work involved in patterned work and work in multi-colors.
4. Work of any width, height and girth.
5. Special and non-standard tiles and slabs.
6. Slabs and tiling lay to falls and cross falls.
7. Finishing and polishing exposed edges.
8. Sand leveling bed.
9. Adhesive and fixing materials and/or devices.
10. Plastering behind any type of walls tiles and screed under any type of flooring tiles.
11. Bedding and fixing including bedding mortars,
12. All cutting including circular cutting, internal and external angles, intersections, joints, division strips and anti slip nosing.
13. Jointing, grouting, cleaning, sealing, grinding and polishing
14. Working overhead and working over and around obstruction.
15. Temporary support
16. Supports for roof paving.
17. Shop drawings, samples and results.
18. Protection.

1.7.3. Acoustic Ceilings –General

A. Measurement

1. Each kind of assemblies is given separately.
2. Work which includes moisture resistant treatment and the like are each so described.



3. Work to each of the Ceilings types are given separately.
4. Thickness of ceiling types is stated in descriptions.
5. Gypsum board, acoustic and mineral fiber false ceilings is measured in square meters measured on the horizontal exposed face and over obstructions, vertical surface applied to changes of levels or bulkheads are included, no deduction is made for voids not exceeding 0.50m². No allowance in the measurement is made for lapped joints, shadow line, recesses or additional layers of gypsum board.

B. Rate deemed to include:

- Suspension system and framed members including method of fixings head and sole plates, protection edge profiles, studs, stiffening sections, furring and channels, fixings for heavy fittings and other fixing materials.
- Support work and accessories for fittings including bridging, jointing including fair joints, jointing battens, fillets, beads and the like, joint and reinforcing tape.
- Acoustic blankets, sealants, fire rated sealants.
- Two coats plastering under acoustical plaster
- Painting, including fire rated paint.
- Shadow gaps, shadowlines.
- Finishing including plaster for dabs, filling and finishing.
- Work at any height above floor level.
- Work of any width, height, girth or shape.
- Working overhead.
- Working over around obstructions, integral services, into recesses and the like, including additional materials.
- Angels, junctions, abutments and ends of lining of partitions.
- Access panels and holes for pipes services and the like.

1.7.4. Carpeting - General

1. Each kind of carpet is given separately.
2. Carpet is measured in square meters.
3. Resilient flooring is measured by square meter.
4. Rate deemed to include:
 - Carpet tiles, roll carpets, cut pile carpets.
 - All necessary fixing materials, adhesive.
 - Underlay needed for respective carpet type.



- Accessories finishes and all as shown on drawings and specifications.
- Fire rated treatment.
- Furnished catalogs and complete installation instructions.
- All as indicated and specified.

1.7.5. Painting

A. Measurement

1. Each kind of paint is given separately.
2. Painting works have been measured net in square meter.
3. Work to narrow widths generally is measured together in the main quantities.
4. No deduction if voids not exceeding 0.5 m2.

B. Rate deemed to include:

1. All associated works and other requirements necessary for the proper execution and completion of the measured items, including but not limited to:
 - a. All preparatory work in rubbing down, both initially and between coats including full coverage of putty.
 - b. All surfaces treatments required prior to painting or coating, priming, undercoats and the like.
 - c. Masking and protecting adjacent surfaces.
 - d. Cutting-in and otherwise working to adjacent surfaces or materials.
 - e. All specified coats and working in multi colors.
 - f. Supplying all necessary materials, machines, tools, brushes, etc. scaffolding, ladders, storage and protection, additives, mixing, hoisting, sampling and testing, and all other incidental requirements for the proper execution of paint work as specified.
 - g. Cleaning loose render and repairing all cracks and holes with patching render properly keyed to existing and sand-papering smooth.
 - h. Neutralizing alkaline surfaces of rendered or exposed concrete areas by brushing on, an acid solution and two percent zinc chloride or approved equal and removing all loose particles after drying as directed by the Engineer.
 - i. Narrow widths and in short lengths to apertures, jambs, sills, reveals, soffits of lintels, sides and top faces of curbs, panels and strips, etc. All such areas to be included within their respective main items, unless otherwise stated.
 - k. Making good all paint work to the satisfaction of the Engineer.
 - k. Protection of works.



1.8. Division 10 –Specialties

1.8.1. Louvers

A. Measurement

1. Steel and/or aluminum louver is measured in square meter stating overall dimension.

B. Rate deemed to include:

1. All labour to edges, forming openings, hanging and fixings.
2. Fabrication, frames, wall anchors, expansion bolts, lugs, dowels, grouting frames, sub-frames, blocking pieces required for fixing hardware and all weather-stripping as specified.
3. Hardware, frames, and accessories needed.
4. Priming and painting.

1.8.2. Protective Covers

A. Measurement

1. Each kind of Shading is enumerated stating its dimensions.

B. Rate deemed to include:

1. Shop drawing, all fabrication and installation in position of a complete system including all fabrication of structural works.
2. Excavation, reinforced concrete work, reinforcement bars if needed.
3. Accessories, connections, welding, steel cables, bolts and the like.
4. Priming, painting, any type of finishing.
5. Fabric covering and all works required to complete the works.

1.8.3. Signage – General

A. Measurement

1. Each kind of signage/Plaque is given separately.
2. Signage/Plaque is enumerated stating its dimensions.

B. Rate deemed to include:

- Any type of backgrounds.
- Shop drawings.
- Selection samples and verification samples.
- Manufacturer's installation instruction.
- Signage report as per specifications.



- Complete with all concealed mounting devices, adhesive, chain, bolts, etc...
- Accessories finishes and all as show on drawings and specifications.
- All type of fixing, mounting, required as specified and indicated.
- Any color, any finishing type.
- Protection and cleaning.



1.9. Division 11 – Equipments

1.9.1. Playground Equipments

A Measurement

1. Playground Equipment shall be measured as Lump Sum, including:

- Basketball hoop pole
- Football goal equipment
- Volleyball post

B. Rate deemed to include:

- Shop drawings.
- Excavation and reinforced concrete footings.
- Installing, fixing, erecting, and mounting, as per Manufacturer's installation instruction.
- Welding, fabrication, fixing.
- Wooden backboards, fiber, nylon net, steel tube poles.
- Any concrete mix, concrete work, form work needed for fixing the equipment.
- Sand beds as per drawings and approved by the Engineer.
- Bolts, concealed fixing, painting.
- All accessories and all as indicated and specified.
- Any type of Painting.
- Protection and cleaning.

1.9.2. Laboratory Furniture

A. Measurement

1. Each kind of Laboratory Furniture is given separately and is enumerated.

B. Rate deemed to include:

- Shop drawings.
- Any type of counter top, worktop, steel frames. All frames and its connections are coated with epoxy resin based powder coating with excellent resistance to chemicals.
- Installing, fixing, erecting, and mounting, as per Manufacturer's installation instruction.
- Bolts, concealed fixing, hardware, fittings needed, painting.
- All accessories and all as indicated and specified.
- Protection and cleaning.





1.10. Division 15- Mechanical Works

1.10.1. Preambles

The Bills of Quantities shall be read in conjunction with the Instructions to Bidders, General and Special Conditions of Contract, Technical Specifications, Appendices and Drawings. The documents are to be taken as - explanatory and inter-related to one another.

It is the responsibility of the Contractor to check the locations and quantities of the materials and equipment to be executed in accordance with the contract drawings and specifications.

Any discrepancy between the Drawings and Specifications and Bill of Quantities shall be brought to the notice of The Engineer in writing for his decision as to which is the correct interpretation before the work is commenced. Dimensions and sizes shown on Drawings shall generally take preference over those stated in the Specifications.

The unit rate of the materials and equipment shall be based on the Specification, all components as required for proper operation of the systems and as mentioned under each item concerned in the Specifications, Technical Data and notes on the Schedules of Equipment, Contract Drawings, and all other Contract Documents.

The Unit rate and the rates inserted in the Bills of Quantities respectively shall be comprehensive and shall include for complying in all respects with the requirements of the Technical Specifications, drawings and all other related Contract Documents. This shall cover all the obligations under the contract and all matters deemed necessary for the proper construction, completion of and remedy of defects in the works.

Specification section number mentioned in the BOQ related only to the main section, but for all required works and cost included, the Contractor must refer to all items mentioned in the specifications and drawings.

In the Bills of Quantities, a unit price or rate shall be inserted against its respective item with quantities only. The value of any item left UN priced shall be deemed to be covered by other rates and prices entered in the Bills of Quantities.

All measurements and evaluation of the executed works called for in the Contract shall be based on the unit price stated in the Bills of Quantities and made according to the specifications. Any work done by the Contractor, but not called for in the Contract or not requested in writing by the Engineer, shall not be included in the measurement and evaluation.

In addition to the above-mentioned requirements, the Unit Rate shall include the following which shall also be complementary to the items mentioned in the B.O.Q.-

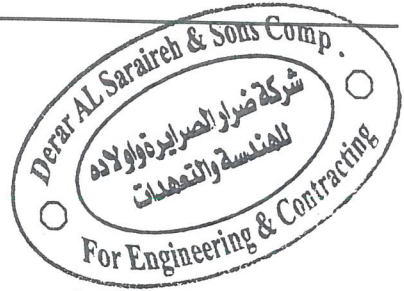
1. Supply of materials and equipment.
2. Off loading and handling from trucks on site to place of installation.
3. Installation of materials and equipment.

4. All civil work required and connected with the mechanical installations, such as: equipment concrete bases with vibration pads and supports, cutting through walls and slabs for passage of pipes and conduits and ducts, pipe sleeves, chasings in concrete and block walls, and slabs, re-patching, fixings of pipe and duct hangers and supports to structure, wooden frames for air outlets and louvers and wall mounted fans, excavation and backfilling for pipes, riggings, hoisting, water proofing, cleaning, protections and painting.
5. All testing, balancing, adjusting, commissioning and handing over to the Employer complete operational systems and equipment, including material necessary for testing (e.g. Fuel water ... etc).
6. Allowance for cleaning and for proper protection of all equipment, plants, electrical installations and structures during installation.
7. Flushing, cleaning with chemicals and chemical water treatment for the closed system for the HVAC piping network.
8. Disinfections, flushing and water treatment.
9. All labor, materials, tools, scaffolding instruments, electric power supply, fuel and water required for installation, testing, balancing, adjusting, disinfections, flushing, operation and commissioning.
10. Thermal insulation for all equipment, valves trimming and accessories.
11. System identifications, tags, labels, nameplates and charts.
12. Shop-drawings and as-built drawings.
13. Spare parts and consumables for ideal running of all services and equipment for a period of two years after the date of substantial completion of works.
14. Spare parts for equipment as mentioned in the specifications under clause of 'Extra Materials'.
15. Spare parts and tools information for five years. Quantities not including the two years mentioned in item 13 above.
16. Operation and maintenance manuals.
17. Training of Owner's personnel on the operation and maintenance of all mechanical systems.
18. Samples and mockups as required by the Engineer, including field test of materials.
19. Onsite inspection and testing of all materials and workmanship.
20. Maintenance of all items supplied by contractor as per Contract Conditions.
21. Calculating of pump head and fan total static pressure according to approved shop drawings. The figures indicated on design drawings are indicative and should be confirmed by exact calculations. No extra over allowance shall be paid for higher

pump head or fan static pressure if it was found necessary to meet system requirements.

22. Obtaining the approval of the local authorities for the shop drawings and equipment submittals for the mechanical systems.





1.11. Method of Measurement

1.11.1. Pipe Work (Generally For All Kinds of Pipes)

Each kind of pipe is given separately, stating the size.

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

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

The unit rate is deemed to include:

- Converter in pipes and extensible pipes.
- Flow and return header pipes.
- Pipe work required to be temporarily fixed in position, dismantled for special finishing and subsequently refixed.
- Purpose-made pipes and purpose-made fittings.
- Labor on pipes.
- Providing everything necessary for jointing.
- Joints in the running length.
- Joint of a special of ornamental character and extra demountable couplers in the running length.
- Flanges, unions and di-electric unions.
- Pipe fittings including cutting and jointing pipes to fittings.
- Screwed sockets, tapings, bosses and welding necks welded to pipes and flanges including drilling the pipe flange.
- Special connections, special joints and isolated joints in pipes.
- Expansion loops, expansion compensators, elbow with guides and anchors substantiated by thermal expansion calculations by the supplier all these calculations shall be submitted for the approval of the Engineer according to the contractor shop drawings.
- Expansion compensators, with guides and anchors at every expansion joint of the building structure.
- Plugs, taps and end caps.
- Test plugs (points).
- Painting with anti-corrosion coats for piping and supports.
- Final painting of uninsulated pipes and all supports with approved oil paint of suitable color.
- Drip trays and tundishes.

- Standard pipe supports, non-standard pipe support assemblies spring compensated components.
- Laying and fixing in ducts, trenches, tunnels and chases or embedded in concrete and screeds.
- All pipes fittings, and joints such as elbows, bends, tees, reducers, unions, flanges anchoring, sleeves, plates puddle flanges, dirt pockets, sockets and all jointing materials, hangers, supports, rollers and all necessary connections
- Wall, floor and ceiling plates.
- All automatic air vents with isolating valves drain cocks at bottom of risers and main pipes.
- All pipe insulations, cladding and protections.
- All pipes acoustic insulation including claddings trays
- All pressure gages, temperature gages and thermometers, balancing and measuring taps, test point as shown on drawings or as called for in specifications and as deemed necessary for systems testing, balancing and commissioning.
- All shock absorbers and joints.
- All Fire retardant and protection sealants for all pipes crossing fire rated elements.
- All adapters and dielectric unions for connecting dissimilar materials
- Excavation and back filling, chasing in walls, making holes, and making good, pipe coating, as required per specifications and drawings.
- Existing pipes done by first fix contractor inspection flushing testing.
- All hummer arresters.

Pipe work shall be measured in Linear meter (m).

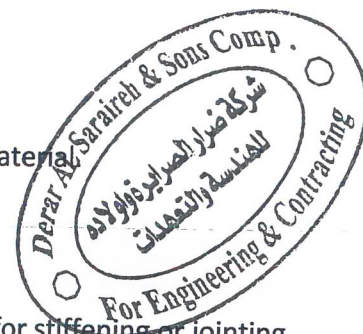
1.11.2. Ductwork (Generally)

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

Each type of ducting given separately.

The unit rate is deemed to include:

- Weight of any materials required for seams or welds for stiffening or jointing.
- Stiffeners, joints and sealing.
- Joints in the running length and transverse joints.
- Providing materials, bolts, nuts, washers and everything necessary for making joints in ducting.
- 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 splitter dampers and turning vanes.
- Volume controls dampers as shown on drawings and where necessary for proper balancing of the system.
- Back draft dampers or shutter.
- Flexible connectors at the building expansion joints.
- Nozzle outlets, test holes with covers, access doors and panels including forming and stiffening of openings.
- Components for supporting and suspension of ductwork including fixing.
- Weather aprons, flashing plates and the like, except where required to be measured separately.
- Cowls and terminals.
- Galvanized metal mesh for the bell mouth termination of return or exhaust ducts.
- Duct test by light
- Cleaning from inside and outside.
- Fire retardant sealants for all ductwork passing through fire rated structures.
- All access doors and panels.
- All fire dampers, smoke dampers, Motorized fire dampers, motorized smoke dampers and all fire and smoke dampers, including Access door
- All Wall sleeve and flanges.
- All measuring tap holes and caps.
- Metal mesh and insect screens for all belmouths fresh air and exhaust air terminals, cowls and louvers.

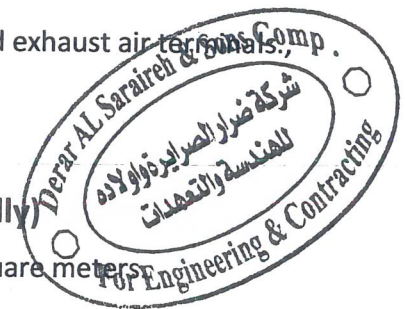
Ductwork shall be measured in square meter (m²)

1.11.3. Duct Insulation and Acoustic Duct Liners (Generally)

Work to ducting is given separately. Work to ductwork is given in square meters.

The unit rate is deemed to include:

- Smoothing the material and working around supports.
- Special protection or finish at openings through wall, and the like.
- Working duct insulation around fittings.
- Working duct insulation and around special fitting and for ancillaries.
- All joints, sealant compounds, bands, vapour barrier and all finishing, coating, and protection with all accessories as called for in the specification.



- All coating, painting, protection and cladding,
- All access doors and openings which are deemed necessary to maintain equipment without damaging the insulation and all accessories as called for in the specifications
- Duct insulation & liners shall be measured in square meter (m2) for the installed insulated ducting.

1.11.4. Accessories for Ductwork

Diffusers, registers, grilles, slot diffusers, bar grilles and louvers are enumerated or given in Linear meter with all necessary fixings, fittings, accessories, connections and decoration.

The unit rate is deemed to include:

- Frames and plenum boxes.
- Acoustic lining to plenum boxes.
- Wood frames.
- Supports and hangers.

1.11.5. Equipment (Generally)

Each kind of equipment is given separately, stating the reference

Equipments are enumerated.

The unit rate is deemed to include:

- Factory assembled components and controls.
- Loose equipment supplied by the manufacturer.
- Electrical connections to the nearest isolator.
- Refrigerant, piping, thermal insulation, wiring and accessories for air conditioning split equipment.
- Plate work and supporting steel works of concrete work.
- Supports and fixing.
- Concrete foundation and anti-vibration mountings, including anti-vibration materials, sound-insulating material, and acoustic enclosures.



1.11.6. Fans

The price shall include the unit as shown on drawings, equipment schedules, specifications and the following items:

General

The unit price shall also include vibration isolators resilient mountings, supporting system, insect screen, electric shutter,

All civil works including steel skids, frame and all accessories as shown on the Drawings and as called for in the Specifications.

All electrical works to nearest isolating switches, as shown on the Drawings and called for in the Specifications.

Fans shall be measured in No (Number).

1.11.7. Roof Top Packaged Unit

The price shall include the unit as shown on drawings, equipment schedules, specifications and the following items: -

The price shall also include all related valves and trimmings including:

Connection to each Coil:

- One gate valve,
- One commissioning set,
- Control valve,
- One strainer,
- Manual air vent.
- Flushing bypass U connection and fitting
- Two flexible connections
- Two pressure gauges complete with isolation and drain cock and pigtail connection
- Two thermometers of suitable ranges complete with immersed thermo wells
- One measuring orifice
- Two Dielectric unions
- Condensate drain siphon arrangement.



All vibration isolators, flexible connection on fan discharge, orifice plates.

All civil works including concrete plinth, kinetic inertia base, all electrical works from the nearest isolating switch, all control, power and sensing devices panel, power and control wiring and cables other components as shown on the Drawings and as called for in the Specifications.

Roof top packaged unit shall be measured in No (Number).

1.11.8. Split Air Conditioner (Split Unit)

The unit price shall include the unit as shown on drawings, schedules and specifications and shall include the following:

All refrigeration pipes between the indoor and outdoor units.

Their fittings, insulation and supports, all condensate piping, sleeves, drain pan, communication card (for split units for schools in Aqaba or Jordan Valley), room thermostats

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and all power and control lines from outdoor to indoor units, and from isolation switches installed by outdoor unit to the equipment.

The price shall also include the reinforced concrete base and steel skids for outdoor units, vibration isolators, all interconnecting power and control wiring as shown on the Drawings and as called for in the Specifications.

Split Units shall be measured in No (Number).

1.11.9. Pumps

The price shall include the unit as shown on drawings, equipment schedules, specifications and the following items: -

All kinds of pumps for all services.

General

The unit price of each pump shall also include:

All isolating valves, check valves, strainer (ALL of size equal to the interconnecting pipe size not pump suction/discharge sizes), pressure gauges, two flexible connections, pressure vessels, vibration isolators, anti vibration pad, All electrical works to nearest isolating switches all related electrical works and civil works including and as shown on drawings and requested in specifications.

In general, all pumps shall be measured in No (Number) unless otherwise mentioned.

Packaged Set of Water Pumps and Booster Pump set.

The unit price shall include all pumps, factory skid, reinforced concrete base, weather proofing and shading to protect all roof exposed pumps, all interconnecting pipe work and headers, control panel, pressure vessels, pressure sensors installed on locations as per manufacturers recommendations, and all other accessories as per specifications main isolating valves, flexible connections and strainers and concrete base,

The unit price of each pump shall also include:

Two isolating valves check valves, two pressure gauges complete with stop/drain cock and pig tail connection, differential pressure switch, and vibration isolators, anti vibration pad.

Packaged Domestic Water Pump set shall be measured in number (No.).

Fire Fighting Pumps:

The unit price of fire pump set shall also include complete pump unit with interconnecting pipe work, pump control panel, pressure switches, all power and control wiring and conduiting.

Fire fighting pump to include two valves, one check valve, one drain, two pressure gages, weather proofing and shading to protect all roof exposed pumps, concrete base, vibration isolators, anti vibration pad, all wiring connections to main power supply and all components and accessories as called in specifications and shown on the drawings.

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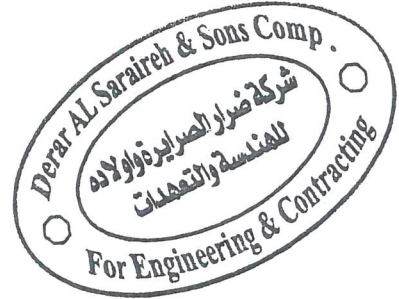


Fire Fighting Pump shall be measured in LS (lump Sum).

Submersible Pumps Set

The unit price of Submersible pumps shall include:

- All pumps,
- All isolating valves check valves for each pump.
- All sliding rails and lifting chains
- All duck foot
- Pits and valves chambers including covers
- All studs, bolts, nuts, screws and washers
- All adjustable level controller switches and alarms including indication relayed to control panel.
- Weather proof control panel, including indication lights switches, and controllers.
- Access covers, step cast iron and sump vents.
- Local isolators located adjacent to the sump for isolation of units during maintenance



Submersible Pumps Set shall be measured in LS (lump Sum).

1.11.10. Water Tanks

Including Galvanized steel tanks.

The unit price shall include:

- Tanks complete with steel saddle base and supports.
- access manholes and covers
- All piping connections to tanks, including water inlets and outlet connections,
- All isolating valves, vents, bird and insect screens
- Level indicator and gauge overflows,
- Float switches
- Drain outlets and valves,
- All power and control wiring complete with conduits and sleeves,
- Supports and all other accessories as shown on drawing and called for in the specification.

Water Tanks shall be measured in No (Number).

1.11.11. Water Reservoir Accessories

Including fire fighting tanks, domestic water tanks, rain water and irrigation tanks.

The unit price shall include all piping connections to reservoir, floor plates, all water inlets connections, all isolating valves, vents, bird and insect screens, girded Plexiglass gauge set

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and protector rods with floating indicators, level switches, overflows, water ball floating valves, access openings and doors, stainless steel access openings doors frames and covers, stainless steel cat ladder of each side of the opening, drain outlets and valves, all of conduits and sleeves, and all other accessories as shown on drawing and called in specifications.

Water Reservoir Accessories shall be measured in LS (Lump Sum).

1.11.12. Municipality Water Meter (Totalizer)

The unit price shall include installation of the municipality water meter.

Prices shall also include supply and installation of two isolating valves, Strainer, Check valve, Weatherproof cabinet with insulation and hinged door. All other accessories as shown in the drawing and called for in the specifications.



1.11.13. Manholes

The unit price shall include all materials and works for the construction of manhole such as reinforced concrete, blinding, base, walls, pipe to manhole connectors, cover, benching, iron steps, plastering, caulking, excavation, backfilling, framework shuttering etc. The price shall also include all related civil works including excavation, backfilling, compacting, protections and making good. and accessories as specified and shown on drawings.

Manholes shall be measured in No (Number).

1.11.14. Valve Chamber and Valve Box

The unit price shall include all materials and works for the construction of chamber and valve box, such as reinforced concrete, blinding, base, walls, cover iron steps, plastering, framework, shuttering etc. the price shall also include the excavation and backfilling.

Valve Chamber and Valve Box shall be measured in No (Number).

1.11.15. Sanitary Fixtures

The unit price shall include the complete supply and installation of all of the sanitary fixtures, complete with their mixers, taps, water savers, fittings, hanger, and all other accessories.

The unit price shall also include the supply installation and commissioning of the all angle valves, flexible conduits, all types of traps, including the chrome plated bottle traps, P-traps, all flanges and escutcheons. All adaptors and connectors, all types of sealants and fasteners, as called for in the specification and drawings and as detailed in the architectural design drawings and specifications.

Sanitary Fixtures shall be measured in No (Number).

1.11.16. Fire Hose Reel Cabinet

The unit price shall include hose reel, with powder portable fire extinguisher, globe valve and cabinet. All related civil works such chasing in walls, concrete reinforcing, and making good after installation, and as shown on drawings and called for in specifications.

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Fire Hose Reel Cabinet shall be measured in No (Number).

1.11.17. Heating Water Boiler

The price shall include the unit as shown on drawings, equipment schedules, specifications and the following items: -

The unit price shall include the boiler and burner complete with control with all accessories. The Unit price shall include supply, install, test and commission boilers, valves and trimmings including safety valves, air release vents, one lockable right angle cast steel stop valve, a double regulating valve with measuring orifice drain valve, pressure gauges with combined shut off and drain cock and water siphon, thermometers on the supply and return headers inspectors' test gauge connection with cock , feed water line connections with double check valve and vacuum breaker, support, vibration isolators, access limit. Labeling, hangers and supports and all related pipe work, all electrical works to nearest isolating switches, electrical connections to nearest valves and controls. All civil works including steel skids, concrete plinth, kinetic base, and floating slabs, as shown on the Drawings and as called for in the Specifications.

Heating Water Boilers shall be measured in No (Number).

1.11.18. Chimney (Smoke Stack and Breaching)

The unit price shall include the double skinned metal sheets ducting flues, elbows, tees, draught regulators, motorized shut off dampers, clean outs, wall sleeves, condensate collectors, rain caps, and the inner insulation. Complete with all joints, captive fasteners, cowl, holding bands hangers and supports, brass earthing bolts, bracing bracket, base plates, gussets, and holding down bolts, reinforcing angles, flexible connections, draft regulating and relief dampers, expansion with rod and lock screws, concrete foundations and coating and painting and all other accessories as shown on drawings and called for in the specification.

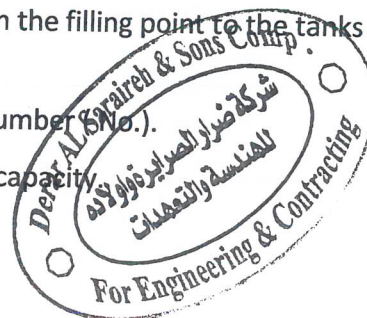
Chimney shall be measured in Linear meter (m).

1.11.19. Above Ground Fuel Oil Tank

The unit price shall include: all tanks air vents, overflow line, all valves, dislodge drain line and valve, oil content gages, one access opening with covers, all painting, and corrosion resist coating and final painting, earthing, level indicator, anchoring and steel base frame and support. The unit price shall also include all pipes from the filling point to the tanks and from the tanks to the boilers.

Above ground fuel oil storage tank shall be measured in number (No.).

The price shall include filling all fuel tanks with fuel to full capacity.



1.11.20. Heating Radiators

The unit price shall include the radiators, supports, angle valves and flow regulating valves, and all related civil works.

Heating Radiators shall be measured in No (Number).

1.11.21. PEX Pipes

In addition to what is mentioned in pipe work, the unit price shall include the pex pipe, pipe sleeves (pipe in pipe), all pipe fittings and joint such as the brass elbows with its UPVC housings, compression fittings, nuts, O rings, nipples and sockets, fixing bends, excavation and back-filling, chasing in walls, pipe protections, testing, cleaning, flushing and commissioning system.

PEX Pipes shall be measured in Linear meter (m).

1.11.22. Heating Cabinet

The unit price shall include:- heating water supply and return manifolds, steel cabinet with locks decoration to suit the interior finishes, isolating valve, double regulating valve, all branch valves, and flow regulators and all pipe fittings and joints including sockets, nipples, compression fittings, nuts, O rings, hangers and supports, fixing bands, pressure gages adapters and dielectric unions for connecting dissimilar materials, All related civil works including excavation back-filling, chasing in walls, painting, pipe protection. Testing, cleansing, flushing and commissioning the system.

Heating Cabinet shall be measured in Linear meter (m).

1.11.23. Electronic Anti-Scale Unit

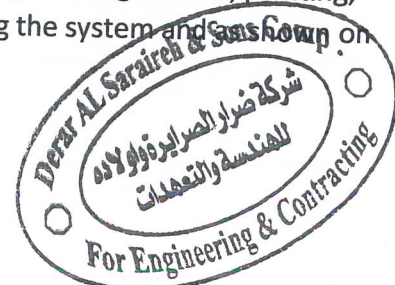
The unit price shall include all cables, cable clips, impulse bends and all related electrical works as shown on drawings and requested in specifications.

Electronic anti-scale unit shall be measured in No (Number).

1.11.24. Water Manifold Cabinets

The unit price shall include:- the hot and cold water manifolds, steel cabinet with locks decoration to suit the interior finishes, two main isolating valves, all branch valves, and flow regulators and all pipe fittings and joints including sockets, nipples, compression fittings, nuts, O rings, hangers and supports, fixing bands, hammer arrestors & automatic air vents with isolating valves, pressure gages adapters and dielectric unions for connecting dissimilar materials, All related civil works including excavation back-filling, chasing in walls, painting, pipe protection. Testing, cleansing, flushing and commissioning the system and as shown on drawings and called for in specifications.

Water Manifold Cabinets shall be measured in No (Number).



1.11.25. Water Cooler

The unit price shall include: Activated carbon type water filter, angle valve and flexible copper tube complete with all connectors and accessories. The unit price shall also include all the drain connection and electrical wire from the nearest power outlet and also one spare set of filters for each unit.

1.11.26. Electric Water Heater

The unit price shall include all angle valves, check valves, safety valves, automatic air vent, thermometer, electric coil element, with copper tubes connections, high temperature cut outs. All fixation and supports, all electrical wiring to nearest isolating switch, automatic controls and switches, brackets and bolts.

- Electric Water Heater shall be measured in No (Number).

1.11.27. Pressure Vessels/Expansion Vessels

The price shall include the unit as shown on drawings, equipment schedules, specifications and the following items: -

- Expansion vessels including relief valve, with rubber diaphragm (bladder), air and nitrogen filling connection.
- Isolating valve
- Non-Return Valves.
- Pressure relief valve
- Pressure gages
- Pressure sensors
- All pressurizing tap
- Concrete bases and all other related accessories
- All accessories as shown on drawing

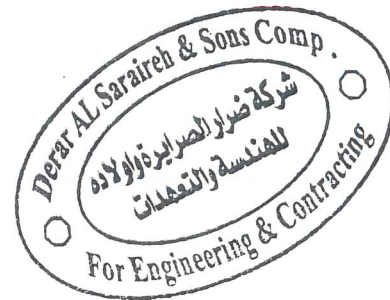
Expansion/ Pressure vessels shall be measured in No (Number).

1.11.28. Air Separator

The price shall also include: -

- Isolating valve
- Concrete bases and all other related accessories
- All accessories as shown on drawing

Air Separator shall be measured in No (Number).



1.11.29. Irrigation Tap

The unit price shall include all isolating valves, backflow preventers, supports and all necessary fittings and civil works. All as per drawings, specifications and Engineer's instructions.

Irrigation Tap shall be measured in No (Number).

1.11.30. LPG Cylinders Shelter

The unit price shall include all banks of cylinders complete with the LPG cylinders completely filled, all pipe headers complete with isolating valves flexible connections pressure gages, main cut-off solenoid valves, pressure relief outlet with ASME certified pressure relief valve, manual change over with LPG control panels, earthing, anchoring The Price shall also include the concrete plinth ,anti vandals cages and chains with locks. Louvers. All necessary wiring and conduittings.

LPG Cylinders Shelter shall be measured in LS (Lump Sum).

1.11.31. Gas Leak Detection System

The unit price shall include the supply & installation of the control panel, remote detectors, all electronic gas leak detector, sirens, panic push buttons, the unit price shall also include all power cables and control wirings and conduittings between all systems components and to fire main alarm panel and all needed accessories for this system as called in specifications and shown on drawings.

Gas Leak Detection System shall be measured in No (Number).



1.12. Division 16 - Electrical Works

The Bills of Quantities shall be read in conjunction with the Instructions to Bidders, General and Special Conditions of Contract, Technical Specifications, Appendices and Drawings. The documents are to be taken as - explanatory and inter-related to one another.

The bills of quantities, specifications, equipment schedules and drawings and all other contract documents are complementary to each other.

It is the responsibility of the Contractor to check the locations and quantities of the materials and equipment to be executed in accordance with the contract drawings.

Any discrepancy between the Drawings and Specifications and Bill of Quantities shall be brought to the notice of The Engineer in writing for his decision as to which is the correct interpretation before the work is commenced. Dimensions and sizes shown on Drawings shall generally take preference over those stated in the Specifications.

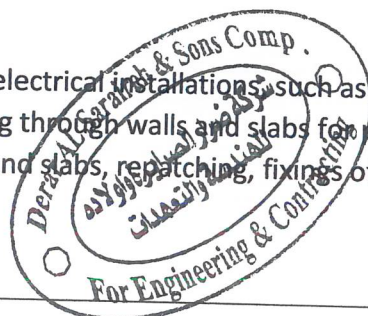
The Unit rate and the rates inserted in the Bills of Quantities respectively shall be comprehensive and shall include for complying in all respects with the requirements of the Technical Specifications, drawings and all other related tender documents. This shall cover all the obligations under the contract and all matters deemed necessary for the proper construction, completion of and remedy of defects in the works.

The unit rate of the materials and equipment shall be based on the specification, all components as required for proper operation of all systems and specified under each item concerned in the specifications, technical data, contract drawings, and all other contract documents.

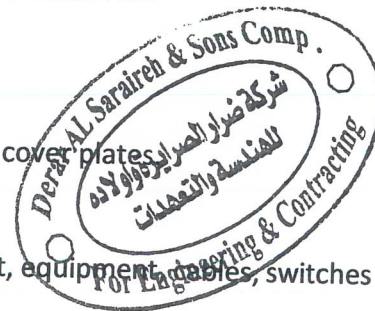
All measurements and evaluation of the executed works called for in the Contract shall be based on the unit price stated in the Bills of Quantities and made according to the specifications. Any work done by the Contractor, but not called for in the Contract or not requested in writing by the Engineer, shall not be included in the measurement and evaluation.

In addition to the above mentioned requirements, the unit rate of mentioned items in the B.O.Q shall include the following:

1. Supply of materials and equipment. All equipment shall be manufactured by a worldwide well known manufactures, high quality, approved standard and test certificate from independent third party. All materials and equipment to be supported by all details and technical data.
2. Off loading and handling from trucks on site to place of installation.
3. Installation of materials and equipment.
4. All civil work required and connected with the electrical installations such as: equipment concrete bases and supports, cutting through walls and slabs for passage of conduits, chasings in concrete and block walls and slabs, repatching, fixings of pipe and



- supports to structure, excavation and backfilling, riggings, hoisting, water proofing, cleaning, protections and painting.
5. All testing balancing, adjusting, commissioning and handing over to client complete operational systems and equipment including materials necessary for testing.
 6. Allowance for cleaning and for proper protection of all equipment plants, electrical installations and structures during installation.
 7. All labor , materials, tools, scaffolding instruments, electric power supply and tools required for installation, testing, balancing, adjusting, operation and commissioning.
 8. System identifications, tags, labels, nameplates and charts.
 9. Shop-drawings and as-built drawings.
 10. Spare parts and components for ideal running of all services and equipment during for a period of two years after the date of substantial completion of the works.
 11. Operation and maintenance manuals.
 12. The contractor shall provide free training for the employees of the Client; training shall cover all aspects of using running commissioning and maintaining of all electrical works.
 13. Samples as required by the Engineer, including field test of materials.
 14. Onsite inspection and testing of all materials and workmanship.
 15. Maintenance of all items supplied by contractor as per Contract Conditions.
 16. The Contractor shall be fully responsible for the coordination and liaison with all Government Departments and Semi Government Departments such as (JEPCO, IDECO, Civil Defense Department, Telecommunication Service provider...etc) for obtaining all required approvals, permits and licenses for all electrical/telecom systems and service.
 17. Marking the positions of and cutting or forming holes, mortises, chases and the like in any surface and making good all work disturbed.
 18. The contractor shall maintain all the safety procedures at the site to protect manpower and machinery.
 19. All systems that have direct relation to each other shall be computable and shall be supplied from the same qualified supplier and manufacture as:
 - Fire alarm system.
 - All circuit breakers.
 20. Sleeves through walls, ceilings and floors including cover plates.
 21. Brackets and supports.
 22. Plates, labels and tags for the identification of plant, equipment, cables, switches and the like.



23. Cutting and pinning ends of supports for equipment, ancillaries, fittings, trunking, trays and the like.
24. Builder's work in connection. Except where required to be measured separately.



1.12.1. Method of Measurement

1.12.1.1. Main Distribution and Final Distribution Boards

- a. Main distribution board and each kind of distribution boards are given separately.
- b. Main distribution board and final distribution boards are given in numbers & (No.).
- c. The rate is deemed to include:
 - Enclosure, busbar, circuit breakers, contactors
 - All instruments such as voltmeter, ammeters selector switch...etc.
 - Termination of incoming and outgoing cables including cable glands, terminations and accessories.
 - Fixing and support structures and materials required for installation of wall or floor mounted equipment as indicated.

1.12.1.2. Wires, Cables, Feeders and Related Accessories

- a. 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.
- b. Wires and cables are given in meters, measured the net length.
- c. The unit rate is deemed to include:
 - Conduits and fittings draw wires and the like (except where conduit work is required to be measured separately).
 - Cables 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 panels.
 - Necessary components and accessories for fixing cables on walls, ceiling and on cable trays/ladders.
 - Cable trenches including excavation, conduits, protective tiles, warning tape, Backfilling, disposal of surplus excavated material and earthwork support.
 - Cable trench chequres plate cover.

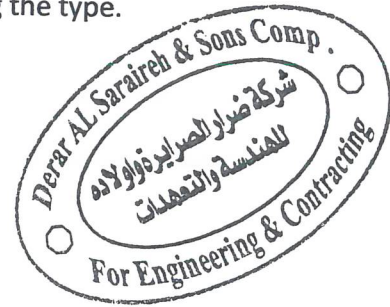
1.12.1.3. Earthing System

- a. Each kind of the following earthing systems given separately, stating the type and details, as appropriate.
- b. Earthing system is given as a lump sum item.
- c. The price is deemed to include a complete system including protective earthing conductor, connection of the cable armor with to the earth bar at both ends, earthing rods, earthing pit with cover.



1.12.1.4. Lighting System

- a. Each kind of lighting fixture is given separately, stating the type.
- b. Lighting fixtures are given in numbers (No.).
- c. The rates are deemed to include:
 - Wires including protective earthing conductor.
 - Lamps.
 - Ballasts, igniters, starters...etc.
 - Fixing and supporting material.



1.12.1.5. Data System & Telephone

The job includes but not limited to supply, install, test, terminate, labeling, commission and performance warranty of UTP CAT6 cables (data & Voice) , 2Px0.6mm Telephone cable (telephone), RJ45 outlets (data & Voice) and RJ11 (Telephone) faceplate, PVC conduits, patch panel, cabinets, fittings and any civil work may required to complete the job.

Each kind of RJ45/RJ11 outlets, Data cabinet, Patch panels and termination boxes are given separately and given in numbers (No.).

Cables (UTP CAT6) & telephone cable and conduits from outlets till patch panel and/or telephone box are included with outlets price.

Backbone Cables and UPVC and trenches shall be re-measured for actual required length as described in BOQ.

1.12.1.6. Fire Alarm System

The job includes but not limited to supply, install, test, terminate, labeling, commissioning and shop drawing approval from civil defense department of fire devices fire alarm devices system, wiring, conduits, civil work as described in BOQ. The devices given separately in BOQ , and given in numbers (No.) .the wiring and conduits are included in the devices prices.

1.12.1.7. School Bell

The job includes but not limited to supply, install, test school bell, the school bells devices mentioned in BOQ are given in numbers (No.).

The rates are deemed to include:

- Wires including protective earthing conductor.
- PVC Conduits, boxes.
- Fixing and supporting material.

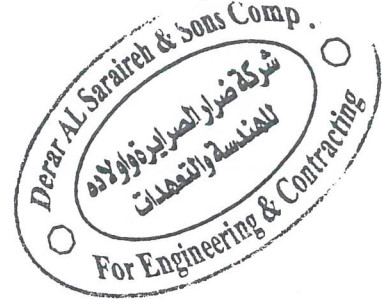
1.12.1.8. Audio Visual System

The job includes but not limited to supply, install, test stage lighting Parcan , truss , Dimmer , ceiling mounted projector , Wall mounted motorized screen ,Speakers and amplifier, the job

also included the rack and all equipment included the devices mentioned in BOQ are given in numbers (No.).

The rates are deemed to include:

- Wires including protective earthing conductor.
- PVC Conduits, boxes.
- Fixing and supporting material.



1.12.1.9. Builder's Work

1.12.1.9.1. Generally

- a. Builder's work in connection with electrical installations is not given separately (except where specifically required) and is deemed to be included in the rates for electrical installations.
- b. Bases/foundations and supports where not forming an integral part of the building structure are deemed to be included with the equipment rates.

1.12.1.9.2. Manholes, Hand holes and other Underground Structures

- a. Manholes and other underground structures (where not forming an integral part of the building structure or included specifically where appropriate) are each given separately, stating the type and /or size.
- b. Manholes, handholes and other underground structures are enumerated.
- c. The rate is deemed to include:
 - Excavation including backfilling, disposal of surplus excavated material and earthwork support.
 - Concrete, reinforcement, formwork and water-proofing.
 - Block work, brickwork and rendering.
 - Concrete covers.

1.12.1.9.3. Shop Drawings

The Contractor shall prepare Shop Drawing for the installation of all electrical systems. These shall be based upon the actual equipment to be installed, selected for use by the Contractor according to manufacturers subsequently approved by the Engineer. The Contractor shall make such adjustments to the design as are necessary to accommodate the technical and physical requirements of the selected equipment in the preparation of the Shop Drawings.

Such adjustments shall at all items ensure that the final performance of the completed installations is achieved as intended.

Shop Drawings shall be checked and coordinated with the work of all trades involved before submission for the approval of the Engineer and shall bear the Contractor's stamp of

approval as evidence of such checking and co-ordination. Drawings submitted without this stamp of approval may be returned to the Contractor for re-submission.

Drawings shall be initially submitted in the form of a reproducible print made by process approved by the Engineer and accompanied by a letter of transmittal. After return of the Engineer-approved reproducible, the Contractor will furnish the number of additional prints specified by the Engineer.

Each detail drawings shall have a blank area , title block. The title block shall display the following:

- a. Number and title of drawings (s).
- b. Date of drawings or revision.
- c. Name of project and employer.
- d. Name of Contractor and Subcontractor submitting the drawings (s).
- e. Clear identification of contents and location of work.
- f. Specification title and number.
- g. Scale of drawing.



The Contractor shall show the following in the shop drawings:-

- a. Actual conduit routes with circular junction boxes indicating the size of conduit, number and size of wires it is carrying, where it is rising up or bending down etc.
- b. Separate drawing shall be prepared for each small power and lighting.
- c. Light fittings and other ancillary equipment.
- d. Mounting arrangement of light fittings, cables, cable trays, trunking, etc.
- e. Sectional views for coordinating the electrical wiring and other services i.e. air conditioning, drainage and plumbing etc, to the engineer's requirements.

The drawings shall be to a minimum scale of 1:50 and in complex area, such as plant rooms and service ducts, scales of 1:20 and 1:10 shall be employed.

The Contractor shall submit all drawings for checking and appropriate action at least fifteen working days in advance of construction requirements.

The approval of drawings will be general, but approval shall not be construed as permitting any departure from the Contract requirements, nor relieving the Contractor of the responsibility for any errors, including details, dimensions, materials, etc.

PROJECT: Schools for Knowledge Economy Project (SKEP)

Method of Measurements

Vol.3 of 4 - Bills of Quantities.



Bills of Quantities



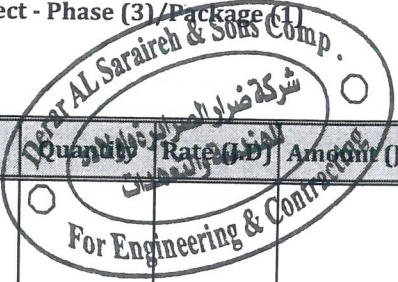
Bill No.1: General Requirements



BILL OF QUANTITIES

PROJECT NAME: Schools for a Knowledge Economy Project - Phase (3)/Package (1)
 DATE: June/2020

Bill No.1: General Requirements



Item No.	Description	Unit	Quantity	Rate (J.D)	Amount (J.D)
1	<p><u>DIVISION 1 - GENERAL REQUARMENTS</u></p> <p>These General Requirements are applicable to the whole of the works</p> <p>All Requirements specified in the contract conditions and technical specifications under Division "1".</p> <p>General Requirements or otherwise indicated in the contract documents , are not necessarily listed in the Bill of Quantities. The cost of such requirements shall be deemed to be included in the rates for measured items elsewhere in the Bill of Quantities, and will not be paid separately.</p>				
1.1	<p><u>SECTION 01500: Construction Facilities and Temporary Control</u></p>				
a.	Provide complete prefabricated temporary site offices (3Nos.) for the Engineer, as indicated in specifications and approved by the Engineer.	m ²	260	150,-	39000,-
*	Offices of 120 square meter for the main site and 70 square meters for each of the other two sites.				
b.	Provide furniture and equipment to the three site offices , as indicated in specifications and approved by the Engineer, which shall be become the Employer's property at the end of the contract.	L.S	1	34808,-	34808,-
c.	Provide all services to site offices, including but not limited to appliances, gas , heating , AC , stationary , consumables, drinking water, service boys ,cleaning, maintenance and other services as indicated in the specifications and approved by the Engineer.	month	17	3500,-	59500,-
Carried Forward					133308,-

BILL OF QUANTITIES



PROJECT NAME: Schools for a Knowledge Economy Project Phase 3 Package 40
 DATE: June/2020

Bill No.1: General Requirements

Item No.	Description	Unit	Quantity	Rate (J.D)	Amount (J-D)
	<i>Brought forward from previous page</i>				
	Note: The contractor shall bear all supervision staff and employer's representative costs and expenses including fees, offices, cars and transportation, etc. resulting from any extension of the period of this contract or from the need for overtime . The Employer will not be responsible or liable for such costs.				
d.	Provide steel fence of 2 m high around construction site; equip with vehicular gates with locks for the construction site, of galvanized corrugated steel sheets 0.5 mm thick with steel transoms, all as per specifications and the Engineer's approval.				
*	Khadija Bint Khwailed Basic Mixed School- Al Shouna Al Janobia	L.M	450	27, -	12150, -
*	Um Al Dananir Basic Mixed School- Amman	L.M	420	27, -	11340, -
*	Al Khansa'a Basic Mixed School- Al Balqa	L.M	410	27, -	11070, -
1.2	SECTION 01580: Project Identification and Sign				
1.2.1	Supply and install steel sign boards of shape and design as indicated in the technical specifications, including fixing, welding, accessories , painting and all required as per drawings , specifications and the Engineer's instructions.				
a.	Size (180x282.5)cm	No.	6	680, -	4080, -
Carried to Summary					171948, -

BILL OF QUANTITIES



Bill No.1 Summary

PROJECT NAME: Schools for a Knowledge Economy Project - Phase (3)/Package (1)

DATE: June/2020

Division No.	Description	From Page	Amount (JD)
1	Division 1- General Requirements	2	
	Grand total of Bill		1719481 -