



Bills of Quantities - REVISED 24.10.2018

**Renovation of Science Laboratories of Al-Quds University- Abu Dis in Jerusalem
(PHASE I)**

Reference Number: ITB-2018-PAL-0000053045

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AL-QUDS UNIVERSITY
Science Education Project

RENOVATION OF SCIENCE LABORATORIES

BILLS OF QUANTITIES - REVISED

Oct-18

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PRICING PREAMBLES

1. Introduction

These pricing Preambles set out the basis on which the Bills of Quantities have been prepared. Notwithstanding the provisions of these pricing preambles, the Contractor is reminded that the Tender Drawings and the Specifications form part of the Tender Documents and as such mutually refer to the intent of the Tender Documents.

Where a discrepancy occurs, it is deemed that the Contractor has allowed for the intent of the Tender Documents unless this is clarified specifically at the time of Tender.

The priority to apply national local products according to Palestinian standards for measurements and specification

2. Bill of Quantities;

The Bills of Quantities define the items which are measurable, and the units of measurements represents the entire work to be carried out in accordance with the Drawings and the Specifications. The measurement items in the Bills of Quantities are to be accepted as the full interpretation of the requirements of the Drawing and Specifications. "Descriptions "are given in outline only, the contractor is to refer to the Specifications and Drawings and make himself familiar with the requirements.

No additional measured items will be allowed to interpret further the information so given Other requirements which are not measurable in items of quantity of labor and materials (e.g. specialist supervision, shop drawings bar bending schedules, as built drawings, tests, mock-ups, maintenance, materials, guarantees and the like) and are not given as specific items in the bills, are to be included in the prices of the measured items and units of the measurement in the Bills of Quantities. No other measurements method shall be used to measure the executed works, the same method of measurement and no other will be in re-measuring the executed work

3. Pricing:

The Contractor shall satisfy himself as to the meaning of every item in the Bills of Quantities and the rates and prices inserted by him shall cover all Works required by the Contract Documents All coats in connected with the proper and successful construction, completion and maintenance of the works including but not limited to completion of all temporary works, furnishing all material equipment supply and appurtenance, providing all construction plants , equipment , tools, sampling ,testing profits, overheads, charges , provision of guarantees , performing all necessary labor an supervision and other coats of whatsoever nature necessary to fully complete the Works , shall be included in the unit and lump sum prices called for in the bills of Quantities All works not specifically set fourth as a pay item in the Bills of Quantities shall be considered as subsidiary obligation of the contractor and all coasts in connection therewith shall be included in the priced tender . prices shall be deemed to include for all straight ranking and circular cutting and consequent waste. all prices shall include fees, levies and taxes excluding VAT.

4. Quantities:

All estimated quantities stipulated in the Bills of Quantities or other Tender Documents are approximate and are to be used only;

A) As a basis for estimating the probable coast of the work and

B) For the purpose of comparing the bids submitted for the work

The actual amount of work done under each unit price items may differ from the estimated quantities, the basis of payment for work. the basis of payment for work will be the actual quantities. the Contractor agree that he will make no claim for damages anticipated profits or otherwise on account of any difference between the amounts of work actually performed and the estimated amount.

5. Items in Bills of Quantities

Such items are the subject of re-measurements of completion in accordance with Clause 56 of the General Conditions of Contract. Quantities given in the Bills are based upon measurement from the Contract Drawings and Specifications.

6. Measurement

Metric measurements and weight have been used throughout the Bills of Quantities Work is measured net as fixed in position and each measurement is taken to the nearest centimeter. Fractions of a centimeter less than half are disregarded and all other fractions are regarded as whole centimeters, this principle shall not apply to dimensions stated in item descriptions. Where minimum deductions of voids are dealt with they refer only to openings or voids, which are wholly within the boundaries of measured areas. openings or voids which are at the boundaries of measured of measured areas are always the subject of deduction irrespective of size.

7. Descriptions

The Order of stating dimensions in description is generally in the sequence of length width and height. unless otherwise stated in the bills of Quantities or herein all measured items are deemed to include supply and fix in place complete, thus all measured items shall include all incidentals to complete the work in place in a proper manner such as but not limited to the following.

- (a) Labor
- (b) Materials included all as in connection herewith (e.g. conveyance, delivery unloading, storing handling, lowering into position and the like)
- (c) Customs and import duties as applicable, insurance, levies and the like.
- (a) All shop treatment of materials (e.g. preservation of timbers, galvanizing, priming, chrome plating stove enameling, anodizing and the like, pipe wrapping, coatings, etc.).
- (b) Fitting and fixing materials in position including all necessary fixing devices and materials.
- (c) Commissioning and use of plant
- (d) Disposal of waste of material
- (e) Square, raking or curved cutting
- (f) Work in volumes, areas and length of any size, no separate items being measured for isolated work or work in small quantities, short length, narrow widths, etc.
- (g) Establishment charges, on-costs, overhead charges profits and I income tax.

junction between straight, raking and curved work are in all cases included with the work in which they occur

certain items are referenced directly to detail drawing eliminate detailed description. all such references include all work to execute the detail.

Where specification clauses and / or detail drawing number are referred to in a description such information is provided for convenience only and the contractor is to note that all other relevant specification requirements and relevant drawing and details are to be taken in to account

8. Abbreviations

The following abbreviations are used throughout the bills of quantities

Mm	millimeter
Cm	centimeter
M.R	linear meter
M. S	square meter
L.S	Cubic Meter
No	Lump Sum
Kg	Kilogram
Ref	Reference

9. Definitions

The terms "include ", "is included ", "including ", and similar, are used herein to indicate that the items and are not specifically mentioned in the description but the cost of which are to be included in the measured items.

Such references are not comprehensive and are for convenience only and the contractor is to note that all relevant requirements of the specification and drawings are to be taken into account in the measured items

The word "site " used in the bills of quantities means the whole of areas within the contract limit lies for this contract as shown on the contract drawings . with reference to the clearance of debris , rubbish , trash , excavated materials and the like the definition is extended to include the whole of the site

The word "ditto " used in the bills of quantities means the repetition of all or part of the preceding item as application to complete the sense of the item .

The word "extra" used in the bills of quantities means the additional cost of the item of work in question over and above the cost of work already measure

10. Protection

All rates in the bills of quantities shall include of protection as required and deemed necessary

11. Shop drawings / co-ordinate drawings

All rates shall include where required for producing shop drawing and co-ordinate drawings

12. As built drawings

All rates shall include where required for producing as built drawing and supporting calculations

13. Cutting and patching

The contractor shall we responsible for all cutting,patching and marking good for all trades for all work and his prices will be deemed to include for all such cutting and patching and marking good:

1. Sitting out of buildings, yards, car parks guardroom, retaining walls & boundaries are to
2. Rates and prices shall be clearly spelled out alphabetically and numerically
3. Sanitary units located within the main university building. quantities of substructure,
4. No items are to be measured twice under separate headings.

<p align="center">Bills of Quantities- REVISED</p> <p align="center">Project: Al-Quds University - Renovation of Science Laboratories</p> <p align="center">Civil Works</p>					
No	Item Name and Description	UNIT	QUANTITY	RATE US\$	AMOUNT US\$
	<p>(SECTION NO .1)</p> <p>Demolition Works</p> <p>PREAMBLE</p> <p>1- Price to include dismantling all exiting doors, windows ,lab existing units and fixtures (electrical)</p> <p>2- All necessary rerouting of infrastructure works, such as piping, conduits etc. and taking all safety</p> <p>3- Removal of all floor tiling and filling and removal of debris to a location acceptable to local authority</p> <p>4- Co-ordination with University officials to facilitate the works, removal of obstacles, defining etc. is the contractor's responsibility and are deemed to be included in his rates.</p>				
1.1	Dismantling, Storing and Removal of Debris Dismantling all exiting doors, windows lab exiting units and fixtures, (electrical, plumbing etc.) in an orderly and safe manner keeping all items in their original state for reuse and coordinating with university officials to define which items to be stored and storing all these items in a space as required by university officials and removal of all other items and debris from site	job	1		
1.2 modified	Removal of all Tiling and filling in all the four laboratories, corridors and directly related rooms (Lab preparation rooms) and removal of debris	job	1		
New Added item to the BOQ1.3	excavation of min. 30 cm in depth and compaction process in any kind of soil including soft and hard rock beds after removal of tilling and fill under the tiles to reach the desired levels	MS	450		
New Added item to the BOQ1.4	supply and implement; 20cm thick of compacted basecourse, all works shall be in accordance to the approved basecourse and the engineer instructions.	MS	450		
New Added item to the BOQ1.5	supply and cast B250 concrete ground slab, the price shall include polotherne layyer of 250 micron thicknessand steel reinforcement of 8 mm in dia. In both directions. All concrete works shall include the supply of ready mix concrete and curing in addition to whatevere needed for the completion of the work	MS	450		
	TOTAL				
	TOTAL CARRIED TO SUMMARY				

	(SECTION NO .2) INTERNAL FINISHES 1.TILING ,FLOORING, CEILING AND MARBEL WORKS PREAMBLE 1.ALL tiling works (terrazzo, ceramics, and marble)shall be measured net in square meters 2.Marble works for door and window sills and other openings shall be measured net in squared meters 3.Rate shall includes preparation of surfaces under tiles, including importing and placing of sand filling, mortar, etc, Finish to falls and cross falls, special tile piece's for edges and all incidental as per specifications. 4.Rate shall include 7cm skirting to all boundaries with the same type used for floor tiles				
2.1.1	1-Tiling Works Supply and Install Non –Slip Porcelain Floor Tiles , first choice and free from all defects.(Spanish made or equivalent – GRADE A) Price to include concrete bedding, sand with cement filling (GRADE B-100) pointing with (Eopxy - Acid resistance) and cleaning on site. Type and color shall be approved by Engineer, which should be 40*40*0.9 cm. Price also includes 7cm skirting with the same type to all boundaries.	M.S	750		
2.1.2	Glazed Wall Tiles: Supply, Install and finish Ceramic Wall Tiles Fixed with cement mortar. Work includes round edges tiles perimeters, plastic angles for edges, cutting, patching around the services bedding in cement mortar, grouting, pointing with white cement and 2 coats of plaster in accordance with drawings & specification. Engineer should approve color. Glazed Wall Tiles 300x300x6mm thick, Spanish made or equivalent- Grade A. First choice and free from all defects. Note: color of tiles should be decided by engineer	M.S	420		
2.1.3	Supply and Install Local Marble Sills and Thresholds (3cm.thick) for all windows, doors, corridors and where required, Set in cement mortar bedding. Price to include grouting, polishing of face and seen edges.	M.S	15		
	TOTAL				
	TOTAL CARRIED TO SUMMARY				

	(SECTION NO .2) INTERNAL FINISHES 2-Ceiling Works PREAMBLE Rates for all items includes Preparing of complete shop drawings and coordination between all civil, electrical and mechanical works. Engineer's approval on shop drawings is required before starting work Price for all gypsum boards works at walls and ceiling shall include apply of Synthetic plastic - Water proofing (emulsion) paint to gypsum boards from an approved source equal to Tanbour product - Super cryil 2000 (prepare surface, two putty coats, one prime coat and two coat of water proof paint) Gypsum board suspended ceiling, 12mm thick, including suspension system, access panels, fixings, fittings, accessories and skim coat fire resistance complete as shown on drawings and as per specifications. price including Paint , for interior ceiling of high quality on one priming coat and two finishing coats for application to ceiling using two coats of complete tal's putty for the entire area of the ceiling as per satisfaction of the supervisor engineer				
2.2.1	Acoustic Ceiling Tiles Supply and install 60x60 cm acoustic tiles false cieling with drop edge (Type Armstrong Sand or equivalent). Tiles are of best quality and free of any defect.. Fire rated. Price includes appropriate suspension system as per detailed drawings and L+Z profiles and all necessary fixing complete as specified and according to manufacturer instructions.	M.S	750		
2.2.2	Gypsum Board Suspended Ceiling Supply and install 12.50 mm thick single face gypsum board suspended ceiling from approved source (Taken). Price includes all metallic profiles (min 0.6 mm thickness and max distance is 40 cm) for suspending system,steel brackets and access panels, openings for lighting and ventilation fixtures etc. all complete and according to engineer's directions. Price includes paint as described above. Measurement for Ceiling should be in square meter and superficially for the plan area of Gypsum Ceiling. No allowance shall be for edges, hidden lights, difference of levels, and drop beams.price including Paint and coats of complete putty etc	M.S	250		
	TOTAL				
	TOTAL CARRIED TO SUMMARY				

	<p>(SECTION NO .2)</p> <p>INTERNAL FINISHES</p> <p>3-CARPENTRY AND JOINERY WORKS</p> <p>PREAMBLE.</p> <p>Sizes of carpentry works given in the bills of Quantities are finished sizes and shall be as per Drawings.</p> <p>Size of doors and other items mentioned in the bills of Quantities shall allow for tolerance to suit the structural openings to be measure on site.</p> <p>Rate for carpentry and joinery work shall include:</p> <p>a)shop and coordinated drawings</p> <p>b)Allowance for plastering and tiling and the like.</p> <p>c) Cutting and fitting around obstructions, Bedding and painting.</p> <p>d)Grounds, blocking and backings.</p> <p>e)Plugging concrete, block work, and making well.</p> <p>f) Ironmonger including wally cylindrical locks handles stoppers, screws, temporary fixing re-fixing, oiling and adjusting.domicile or equivalent 3 hinges</p> <p>g) Providing 3 keys for each lock including tagging.</p> <p>h)Glass and glazing including cutting to size and putty.</p> <p>i) Preparing surfaces to receive finishes.</p> <p>j) Painting, varnishing, oiling and the like, to any area or width in any location including work in multicolor and cutting in edges and putty.</p> <p>h)Providing and fixing Room Removable Title Plate ,aluminum (30x20)cm</p> <p>l)ALL laboratory units to be preassembled modular system from an approved manufacturer (Finlabe, Finish,Waldner or equivalent). ALL surface finish of thermoformed fire retardant plastic material resilient to UV rays, acid, solvents and dyes Colour and model to be approved by supervising engineer. The system should allow for the integration of power, communication, gas and air supply as required for each laboratory to be fed invisibly to outlets above working benches. Price to include all accessories as per drawings, details and manufacturing instructions</p>				
2.3.1	<p>Supply and Install 4.5-cm thick wooden door with pinewood frame, plywood veneer 5mm thick , including ironmongery, glass , 3 hinges cylindrical lock Wally type or equivalent, kick plates, panic handles, door closers , door stoppers, painting with one prime coat, two putty coats, one undercoat and two oil – paint in accordance with the specifications and detailed drawings (drawing D1)</p> <p>a.Door type D.1 of structural opening size 120x210cm</p>	NO.	8		
	TOTAL				
	TOTAL CARRIED TO NEXT PAGE				

	(SECTION NO .2) INTERNAL FINISHES 3- CARPENTRY AND JOINERY WORKS				
2.3.2	Supply and Install 4.5-cm thick wooden door with pinewood frame, plywood veneer 5mm thick , including ironmongery, glass , cylindrical lock Wally type or equivalent, door closers , door stoppers, painting with one prime coat, two putty coats, one undercoat and two oil – paint in accordance with the specifications and detailed drawings b.Door type D.2 of structural opening size 90x210cm	NO.	5		
2.3.3	Supply and install instructor magnetic panel board's venolium type for flomaster pen use of over all size 360x130cm with 16-mm thick sandwich board. The price to include a metallic frame around board and magnetic panel with a chalk shelf with 3mm steel sheet magnetic display and light hood in accordance with the specifications and detailed drawings	NO.	4		
2.3.4	Supply and install preassembled modular wall hung open cabinets (type SC1-1 , depth 30cm .shelves , sashes and partitions 17 mm thick plywood covered on both sides and edges with thermoformed fire retardant plastic material resilient to UV rays , acid, solvents and dyes. Color and model to be approved by supervising engineer. Price to include all accessories as per drawings, details and manufacturing instructions including glass. Size M.R x30dx100cm (type SC1-1)	M.R.	36		
2.3.5	Supply and install preassembled modular edge benches for laboratories size M.Rx55dx76cm (Type SC2-2).shelves, sashes and partitions 17 mm thick plywood covered on both sides and edges with thermoformed fire retardant plastic material resilient to UV rays , acid, solvents and dyes. Colour and model to be approved by supervising engineer. (Finlab, Finish, Waldner or equivalent) Price to include all accessories as per drawings, details and manufacturing instructions.	M.R.	36		
	TOTAL				
	TOTAL CARRIED TO NEXT PAGE				

	(SECTION NO .2) INTERNAL FINISHES 3- CARPENTRY AND JOINERY WORKS				
2.3.6	Supply and install bench cabinets for chemistry and biology laboratories (Type WBB1.WBB2.WBC1.WBC2) .1 double bench (4 working stations) with head sink..shelves , sashes and partitions 17 mm thick plywood covered on both sides and seen edges with thermoformed fire retardant plastic material resilient to UV rays , acid, solvents and dyes. Colour and model to be approved by supervising engineer. (Finlab, Finish, Waldner or equivalent) Price to include sink module oe stone ware of equivalent, working top HPL (High Pressured Laminate) outlets for water , gas, compressed air , power and communication and all accessories as per drawings, details and manufacturing instructions (Drawing #A8.A9): each bench should have 3 polypropylene acid-dye resistant sinks; one wash basin size 60*43 and 2 poly sinks size 30*15 cm.				
	a- For Biology lab (Type WBB1)	NO.	6		
	b-For Biology lab (Type WBB2)	NO.	4		
	c-For Chemistry lab (Type WBC1)	NO.	6		
	d-For Chemistry lab (Type WBC2)	NO.	6		
2.3.7	Supply and install preassembled modular tall storage cabinets cm .shelves , sashes and partitions 17 mm thick plywood covered on both sides and seen edges with thermoformed fire retardant plastic material. Color and model to be approved by supervising engineer.(fin lab ,finish ,waldner or equivalent) all accessories a Per manufacturing instructions				
	a- (type SC10)size 328w x40dx 250h	NO	1		
	b- (type SC4)size 220w x40dx 250h	NO.	4		
	c- (type SC4)size 200w x40dx 250h	NO	1		
2.3.8	Adjustable Laboratory Chairs - Adjustable Height: 570 - 850 mm Foot form: glides Seat height adjustment by gas-lift Anatomically designed seat and backrest Washable, easy to clean, robust and durable Laboratory chair, made from artificial black leather, backrest adjustable in height and inclination, backrest pendular embedded. The glides are wearproof plastic and have a large surface area and offer a high level of stability	NO.	108		
	TOTAL				
	TOTAL CARRIED TO SUMMARY				

	(SECTION NO .2) INTERNAL FINISHES 4- STEEL AND ALUMINUM WORKS Preamble. Metal works shall be measured in M.S for Architectural Openings Rates for metal work shall include for : - preparing shop drawings - drilling counters inking, screwing, bolting and riveting. - lugs ,plugs, holdfasts and the like - gaskets, sashes, double weather strips and external and internal silicon filling around frames - ironmongery including locks stoppers handles, temporarily fixing , prefixing, oiling and adjusting - providing three keys for each lock and padlock including tagging - hardware including cramps, dowels and the like - Glass and glazing including cutting to size putty and rubber - preparing surfaces for and painting one coat of primer before fixing - sealing and painting to any area or width in any location including work in multicolor and cutting in edges - All other accessories and incidentals required executing the work - Providing and fixing Room Removable Title Plate, aluminum (30x20)cm 2.4.1 Supply, install and operate Aluminum Windows Type W1 Section ROM 80 or equal for all external widows with lower sliding panques 3 runs for horizontal and upper awing pane including fly screen mesh, with protective electrostatic applied polyester powder paint of 70-80 microns. Type and color to be approved by the Engineer with double 6-6-6mm glass . price to include floats clear glazing and all other accessories and fitting to complete works as per drawings and specifications (drawing A13. W1.)				
2.4.2	Supply install and operate Aluminum Windows Type W2 Section ROM 50 (upper hung opening in)or equal for all internal widows with protective electrostatic applied polyester powder paint of 70-80 microns. Type and color to be approved by the Engineer with double6-6- 6mm glass Price to include floats clear glazing and all other accessories and specifications .(drawing A13.W2)	M.S	50		
	TOTAL				
	TOTAL CARRIED TO SUMMARY				

	(SECTION NO .2) INTERNAL FINISHES 5- GLASS WORKS Tempered Glass Walls (securit) Supply and install the clear tempered glass Doors 12mm thick complete in accordance with specifications and as detailed in drawings. Price to include fixing in u-shape frames, adjusting, All accessories (Dorma or equivalent) for door fixing machine and stainless steel handle and locks walley or equivalent, complete with all required according to manufacturer specifications. Price for doors includes (From inside of room) in size and shape as per drawings. Stickers are white or silver color as determined by engineer. Note : the price included dismantled existing steel doors in corridor				
2.5.1	A-Tempered Glass Walls (securit) Tempered Glass Door of type D3 of size (298*218cm), with single leaf at proposed concrete block walls.	NO	1		
2.5.2	B-Tempered Glass Door of type D4 of size (298*310cm), with single leaf at exiting concrete walls	NO	1		
	TOTAL				
	TOTAL CARRIED TO SUMMARY				
	(SECTION NO .2) INTERNAL FINISHES 6- PAINTING WORKS FORWARDED TOTAL Preamble. Painting and decorating to walls ceilings and the like shall be measured net in meter square Painting to other works shall be included in the related items Paints shall be supplied to site in sealed container , as approved by the Engineer, and site mixing shall not be permitted The Contractor rates shall include for supply materials workmanship, samples primes surface preparation protection of painted surfaces, application to all heights as required of works repair of all damaged surface at the contractors expenses and all other requirements as stated in the Specification				
2.6.1	Emulsion PVA- Based Paint , for interior walls Of high quality on one priming coat and two finishing coats for application to walls using two coats of complete tals putty for the entire area of the wall as per satisfaction of the supervisor engineer	M.S	900		
2.6.2	Oil Paint Supply, and apply mat oil paint to cement plaster on walls in accordance with specifications and from local materials or approves equal to Tambour or equivelant products. Price includes surface preparation, one prime coat, two putty coats and two oil paint coats	M.S	400		
2.6.3	Repair the remaining existing Steel Protection of windows . Work includes oil paint (3 coats) for all parts. Color to be selected by engineer.	M.S	45		
	TOTAL				
	TOTAL CARRIED TO SUMMARY				

Bills of Quantities- REVISED
Project: Al-Quds University - Renovation of Science Laboratories

Mechanical Works

Item	Description	Unit	Qty.	Unit Rate USD	Amount USD
	PLUMBING,SANITARY AND MECHANICAL WORKS				
3	SANITARY SYSTEM				
3.1	Wash Basins:				
A	Supply and install Counter-top wash basin with size cmx43cm complete with Touchless heavy-duty deck mounted faucet (medical type), chrome plated 13 mm angle valves, supports, 2" waste outlet, down to floor drain, and 16mmPEX pipes, chrome plated P-trap, stainless touchless soap dispenser, stainless touchless hand drying paper,chrome plated 13 mm hoses and other needed accessories to complete the job.	No	28		
3.2	Cleanouts:				
	Supply and install floor cleanouts including cover and well sealed,price include all works to complete the job. All according to drawings and engineering approval.				
A	Size 4" with 15x15 cm sealed screw chrome plated cover	No	8		
3.3	Floor Drains:				
	Supply and install Floor drain including 15x15 cm ABS cover and connections as located on drawings,price include all works to complete the job. All according to drawings and engineering approval.				
A	Floor drain size 4/2" diameter with 15x15 cm screwed preforated and sealed plated cove	No	31		
3.4	Drainage Pipes:				
	Supply and install HDPE for drainage pipes from sanitary fixtures and floor drains down to manholes with all required fittings including excavation, back filling, incasing with concrete or sand where needed and roof vent caps, including connections, and flexible joint where required,price include all works to complete the job .All according to drawings and engineering approval.				
A	1 1/4" - 2"	L.M	110		
B	2"	L.M	100		
C	4"	L.M	95		
3.5	WATER SUPPLY SYSTEM				
3.5.1	Water Distribution Cabinet:				
	Supply and install and test Jacomini or equivalent metal distribution cabinet with double doors (thermal painting) of 2 mm thickness with all necessary manifolds, fixing supports of manifolds, compression fittings, main valves, branch valves, automatic vents, end pieces, and any other necessary parts, materials or fittings, rate to include any civil works needed to complete the works, price to include 16 mm switch for all outlets and all works necessary to complete the job. All according to drawings and engineering approval.				
A	1" Collector 9 outlets	No	12		
B	3/4" collector 1 outlets	No	4		
TOTAL OF SANITARY SYSTEM					

Item	Description	Unit	Qty.	Unit Rate	Amount
				USD	USD
3.6	Cold Water Supply Pipes:				
	Supply and Install Domestic Cold Water Distribution Networks (for drinking & sanitary use). Of :-				
	Pexgol 32 mm main pipes from the roof to collectors and Jacomini				
	type 1.5 inch collectors with vales for every branch. All fittings of copper. Price to include workshop drawings, coordinated drawings , all fittings, valves , vents , sleeves , bends, hangers, insulation and covering with Vidoflex thermal insulation for hot water pipes as per specifications. Starting from Water Mains from on roof tanks ending with indoor ant outdoor outlets (taps ,valves, mixer, collectors, etc...). Including second return loop pipe for hot water collectors and External Distribution Network, pipes, (with all fittings and pressure Taps all as per approval of the engineer. The price is based on the number of collector outlets.				
A	16mm outlet	ML	800		
B	25 mm outlet	ML	50		
3.7	Exhaust Fan:				
	Glass mounted axial fan 6”dia ; 280 m3 /hr extract capacity (vortice S&P) or E.A incl; operating switch automatic shutter and all required wiring	No	8		
TOTAL OF Cold Water Supply					
3.8	Fire Fighting System				
	Fire Extinguisher				
3.8.1	class ABC fire extinguisher of capacity 5 K.G Price includes: Hangers	No	8		
TOTAL OF Fire Fighting System					
3.9	Air Conditioning				
3.9.1	Split –type air condition Unit, as by (Carrier, Trane, Petra) or E.A includes fan coil unit, condensing, unit refrigerant piping. Insulation with plastic protection , electric installation and all necessary for operation capacity of 18.000 BTU/hr	No	8		
Total Air Conditioning					

Item	Description	Unit	Qty.	Unit Rate	Amount
				USD	USD
3.10	Cocking gas distribution Network for labs including protected copper gas pipes .price to include collector valves fitting support protection P.V.C pipes connection to existing source and all related works as per drawings & specification.				
A	3/8" diameter	L.M	20		
B	1/2" diameter	L.M	260		
3.11	Bench mounted LPG outlet with 2 valves (180) and left turn safety bandless from Brass and Nickel. Nitric seal and loctite glue. Lubricant should be approved for burning gas.	No	28		
3.12	Compressed air supply points including 16 mm PEX pipe inside 32 mm P.V.C protection sleeve pipe from collector to points located in drawings. price includes any required digging or excavation	No	28		
3.13	Compressed air main pipes including 25 mm PEX pipe inside 50 mm P.V.C protection sleeve pipe from collectors to compressors room. Price includes any required digging or excavation	L.M	50		
3.14	Combined emergency eye wash and body shower Combined Body and eye shower with 6 adjustable heads, wall mounted in brass with chemical resistant Poly-coat with self-draining shower head. Water inlet at the top or bottom. Eye shower with built-in FLOWFIX (6.7 g/pm). Eye shower, combined wall mounted with two heads in brass with chemical resistant Poly-coat. Water is regulated with a built in FLOWFIX (6.7 g/pm). Body shower 3/4" NPT male inlet. In brass with chemical resistant Poly-coat, all as Broen 17455909, or quivelent.	No	6		
3.15	Sink: 25*10*15 highly corrosion resistant PP,with all accessories which needed	No	8		
3.16	Fume Hood: (Model: EFA-4UDRVW-8) High Performance Fume Hood Esco frontier Acela Fume Hood Consist Of - EFA-4UDRVW-8 Esco Frontier* Acela Fume Hood, 4ft/1.2m Vertical Sash. - SXL-EFA Sentinel XL Airflow Monitor, Field Installed. - WT-4UDR-0 4' Worktop, Phenolic Resin, No Cup-Sink cutout. - EBA-4UDG-0 EBA Base Cabinet For 4' Fume Hood. - Exhaust System with Exhaust duct work & connection and blower (Locally).	No	8		
Total Of Mechanical Work					

Bills of Quantities- REVISED Project: Al-Quds University - Renovation of Science Laboratories Electrical Works						
Item No.		Item Name and Description	Unit	Quantity	Rate	Amount
					US\$	US\$
4-01		General Provisions of Electrical Works				
4-01-01		Preambles				
		Rates of electrical installations shall includes for:-				
	1	Electrical works including all required materials, accessories, labor, all as required according to drawings, specifications and bill of quantities.				
	2	Cutting, and pining including all making good				
	3	Forming, or cutting haies, chases, channels etc.in reinforced concrete structure, block works or existing walls.				
	4	Plugging and screwing				
	5	Preparation of all required workshop drawings and as built drawings.				
	6	Testing electrical installations including providing and personal necessary for testing, providing written reports & certificates by authorized test engineer approved by consultant .				
	7	Preparing working drawings by authorized Fire Alarm Engineer, testing the works during & after completion including providing and personal necessary for testing, providing written reports & certificates by authorized fire alarm inspector approved by consultant				
	8	Protection of all electrical works				
	9	Removing all unneeded electrical installations and keeping in good condition in coordination with the engineer				
	10	Labeling should be according to section 16075 - Electrical Identification				
	11	All conduits used should be fire retardant and color coded.				
	12	providing Operating and Maintenance Manual Mechanical and Electrical Services including as made drawings as specified.				
4-02		Raceways				
4-02-01		Cable Trays, and Ladders				
		Supply, install, test and commission cable trays, cable ladders, cable trunking and sleeves as per drawings and specifications complete with supports, fixing devices, separators, clamps, end caps, draw wires, elbows, joints, branches, reducers, offsets,...etc. with all accessories needed to complete the work as shown on drawing, as per the preamble, the specifications and supervision				
	1	Wiremesh cable tray 20x8 cm	MR	80		
	2	Wiremesh cable tray 40x8 cm	MR	80		
	3	20 cm wide PVC cable trunk, 2 channels for power & LV complete with Tees, angels & end caps as describe above.	MR	120		
4-02		Total Cable Trays, and Ladders Carried to Electrical Summary				

Item No.		Item Name and Description	Unit	Quantity	Rate	Amount
					US\$	US\$
4-03-01		600 Volt Cables				
		Supply, install, test and commission 600/1000 volts N2XY copper cables with all required accessories for proper installation and operation conduits, cable lugs, ties... etc. as shown on drawing, as per the preamble, the specifications and supervision engineer's requirements				
	1	5x10mm ² , N2XY cable	MR	50		
	2	5x6mm ² , N2XY cable	MR	150		
	3	5x16mm ² , N2XY cable	MR	20		
	4	Add 50A MCCB Inside floor Panel	No	2		
4-03		Total Cables and Wires Carried to Summary				
4-04		Supporting Devices				
4-04-01		Power sockets				
		Supply, install, test and commission the following power sockets/points as shown on drawing, as per the preamble, rate includes conduits, N2XY cables (individual wires not allowed) up to related panels,... the specifications and supervision engineer's requirements				
		Legrand, Biticino or Unica/Schneider				
	1	16A power socket outlet normal (N2XY 3x2.5 mm ²)	NO	4		
	2	16A power double socket outlet (N2XY 3x2.5 mm ²)	NO	4		
	3	16A power UPS socket blue color surface mount above false ceiling (N2XY 3x2.5 mm ²) FOR WI-FI	NO	4		
	4	16A power UPS socket blue color normal (N2XY 3x2.5 mm ²)	NO	4		
	5	16A power double UPS socket blue color with indicated isolation switch trunk mounted.	NO	80		
	6	Emergency trip push button.	NO	4		
		Total Supporting Devices Carried to Summary				
4-05		Feeders & Isolating switches for mechanical equipment's				
		Supply, install, connect, test and commission complete with all wiring up to 4.0 mm ² size, conduits, galvanized steel trunking, boxes, isolating switch and all other accessories form the appropriate distribution board or MCC as specified and detailed on drawings for the following:				
	1	Ceiling/Wall mounted 16 A single phase socket including boiler switch & cabling to related panel for AC .	NO	8		
		Total Feeders & Isolating switches for mechanical equipment's Carried to Summary				
4-06		Electrical Distribution Panels				
		Supply, install, connect, test and commission complete approved factory made sub-main distribution boards including digital instruments, signal lamps, (MCCB) circuit breakers bus bars, space for cables, cable clamps/terminals, cable shoes, current transformers, protection equipment, as per drawings, specifications and local electric authority requirements.				
	1	DB-Lab 1	NO	2		
	2	DB-Lab 2	NO	2		
4-06		Total Electrical Distribution Panels Carried to Summary				

Item No.		Item Name and Description	Unit	Quantity	Rate	Amount
					US\$	US\$
4-07		Lighting				
4-07-01		Lighting point				
		Supply, install, connect, test and commission a complete lighting point including all conductors, fire retardant PVC conduits, N2XY cables (3*1.5mm2), switches , boxes, ceiling rose, fire retardant silicon flexible connection cables and all other accessories. as per drawings specifications and related standards.				
	1	lighting point (N2XY 3x1.5 mm2)	NO	50		
		Total Lighting points Carried to Summary				
4-07-02		Lighting Fixtures				
		Supply, install, connect, test and commission complete lighting fixture, including all supports, lamps (LED -Philips Cree 4000K), suspensions, Drivers, internal conductors and/or cables, and all other accessories necessary as per drawings, specifications and related standards.				
	1	60x60 cm LED panel as per Philips LED panel 4200K	No	72		
	2	3W LED Non-Maintained Emergency Down light in Cool White, LED Down light, min. 3 hours, electrozen or Eq.	No	14		
	3	LED EXIT Sign similar to Elecrozen or eq.	NO	12		
		Total Lighting Fixtures & Poles Carried to Summary				
4-08		Grounding / Earthing System				
4-08-01		Earthing System				
		Supply, install, connect, test and commission a complete earthing system for the project including all conductors, termination to PEC ,19 mm dia steel copper rods, cables, clamps, conduits, hand holes with heavy duty cast iron cover, fixing, etc., as per specification, drawings, local electric authority regulations, engineers approval and related codes.				
	1	10 mm2 non isolated earthing of all metal parts that includes cable trays, water pipes, gas pipes, cable ladder, ac units, distribution boards bodies	JOB	1		
	2	4mm2 earthing of false ceiling	NO	10		
		Total Grounding / Earthing System Carried to Summary				
4-09		Low Voltage Points				
4-09-01		Fire Alarm System Points				
		Supply, install, connect, test and commission addressable fire-alarm system points including fire retardant conduits, 2*0.8mm fire resistance cables and boxes (850c) and all accessories as per drawings, specifications engineers approval and related codes .				
	1	fire alarm system point(smoke, heat, gas, break glass, siren, horn/strobe,...)	NO	26		
4-09-02		Data Points (Data, Telephone< Camera, intercom, Monitor)				
		Supply, install, connect, test, label and commission complete data point including boxes, RJ-45 (3M, DATWYLER or R&M) socket outlet with 8 pins being crimped and also earth pin for (Cat 6A) FTP data cables as per drawings, specification and related codes.				
	1	Data socket point including CAT6A cable, fire retardant conduit including boxes,.. To be used as data or telephone or Camera or intercom or monitor	NO	96		
	2	Cat 7 Backbone cable to Main Data Cabinet	Mr	300		
		Total Low Voltage Points Carried to Summary				

Item No.		Item Name and Description	Unit	Quantity	Rate	Amount
					US\$	US\$
4-10		Fire Alarm System				
		Rate includes in this section:				
	1	Fire Alarm System shall be UL-FM listed				
	2	All works should be according specification of fire alarm system attached to this section				
	3	All required materials, accessories, labor, all as required according to drawings, specifications and bill of quantities.				
	4	Cutting, and pinning including all making good				
		Forming, or cutting haies, chases, channels etc.in reinforced concrete structure, block works or existing walls.				
	5	Plugging and screwing				
	6	Protection of all materials				
	7	Labeling				
	8	All conduits used should be fire retardant and color coded.				
	9	Providing all maintenance & operation manuals, training and warranties				
	10	Preparing working drawings by authorized Fire Alarm Engineer, testing the works during & after completion including providing and personal necessary for testing, providing written reports & certificates by authorized fire alarm inspector approved by consultant				
4-10-01		Fire Alarm System				
	1	Supply, install, connect, test and commission 1Loops addressable fire-alarm system controller including back-up batteries, charger, cabinet, with IP connection and all accessories as per drawings, specifications and related codes	SET	1		
	2	Addressable photo smoke detector	NO	10		
	3	Addressable manual call point(break glass)	NO	3		
	4	internal sounder with flasher	NO	3		
	5	Auto dialer	NO	1		
	6	Fire Alarm remote panel, repeater	NO	1		
	7	Indication Lamp	NO	2		
	8	Addressable photo smoke detector above false ceiling with indication lamp	NO	2		
		Total Fire Alarm system Carried to Summary				
4-11		Public Address/Voice Evacuation System				
		Speakers				
		Supply , Install , connect and testing public address/ voice alarm system speakers including fire retardant conduits, 2x1.5mm2 audio cables and all related cabling to AMP. connection boxes as described in specification & shown on drawing &Connection to existing sound system				
	1	Toa Amplifire 120 Watt with 2 zone output	No	1		
	2	Ceiling recessed speaker as Toa PC-580RVU with fire dome.	No	10		
	3	Table Mount microphone with 2 zone selector	No	1		
		Total Public Address/Voice Evacuation System Carried to Summary				

Item No.		Item Name and Description	Unit	Quantity	Rate	Amount
					US\$	US\$
4--12		CCTV System				
		Rate includes in this section:				
	1	All works should be according specification of IP CCTV system attached to this section				
	2	Rates of electrical installations shall includes for:-				
	3	Preparation of separate VLAN for the CCTV system.				
	4	POE switches & points for the system components by others				
		Rate shall also includes for:-				
	5	Electrical works including all required materials, accessories, labor, all as required according to drawings, specifications and bill of quantities.				
	6	Cutting, and pining including all making good				
	7	Forming, or cutting hales, chases, channels etc.in reinforced concrete structure, block works or existing walls.				
	8	Plugging and screwing				
	9	Preparation of all required workshop drawings and as built drawings.				
	10	Protection of all materials				
	11	Labeling				
	12	Providing all maintenance & operation manuals, training and warranties				
4-12-1		CCTV SYSTEM/ IP CAMS				
		Supply, install, test & commission complete IP, CCTV system as shown on drawings & specifications rate includes all needed for the installation and operation such as arms, suspensions as per Existing cams or approved equal				
	1	Indoor Cameras (IP Network)				
		Power over Ethernet (PoE), Hikvision 4mp IP, PoE, 2.8mm, Doom	No	4		
	2	Outdoor Cameras (IP Network)				
		Power over Ethernet (PoE), Hikvision 4mp IP, PoE, 2.8mm, Doom	No	2		
		Total CCTV system				

Item No.		Item Name and Description	Unit	Quantity	Rate	Amount
					US\$	US\$
4--13		Data Center & Cabinets				
		Rate includes in this section:				
		Supply, install, connect, test and commission complete data rack cabinets with all needed accessories as per drawings, specification, <u>engineers approval and related codes.</u>				
	1	All works should be according to section 16760 Data system <u>specification attached to this section</u>				
	2	Rates of electrical installations shall includes for:-				
	3	Data works including all required materials, accessories, labor, all as required according to drawings, specifications and bill of <u>quantities.</u>				
	4	Cutting, and pinning including all making good				
		Forming, or cutting haies, chases, channels etc.in reinforced <u>concrete structure, block works or existing walls.</u>				
	5	Plugging and screwing				
	6	Preparation of all required workshop drawings and as built <u>drawings.</u>				
	7	Protection of all materials				
	8	Labeling				
	9	Providing all maintenance & operation manuals, training and <u>warranties</u>				
	10	Contractor's prices should also include:				
	a.	Supply, install, connect, and test of two main feed lines for each information network cabinet from the main room in the building (CAT 7)				
	b.	Install the information network cabinet and extend all points to it. (Cabinet 10u, 3 doors, 60cm Depth at least)				
	c.	All extensions are using Cat6 or higher cables. TIA / EIA-568-B points are scored by ticking and checking all points.				
	d.	Establishment of an electronic lock for all internal and external doors.				
	e.	Wireless network point extensions and cameras are carried into the main room of the building rather than into the sub-compartment.				

Item No.		Item Name and Description	Unit	Quantity	Rate	Amount
					US\$	US\$
4--13		Data Center & Cabinets				
4-13-1		Data Rack cabinets				
		Supply, install, connect, test and commission complete data rack cabinets with all needed accessories as per drawings, specification, <u>engineers approval and related codes.</u>				
	1	Data rack communication cabinet as per APC or equal 25U/60cm depth including fans set	NO	4		
	2	24 port patch panel including nickel RJ45 OUTLETS CAT6A WITH cover and fully terminated, labeled..	NO	8		
	3	Surge Power strip	NO	2		
	4	1/2U, Air patch panel, brush	NO	8		
	5	Patch Panel, 3M, 24port Cat6+ populated	NO	4		
	6	Patch Cable, 2m Patch Cable, Cat6, 3M	MR	100		
	7	Patch Cable, 0.5m Patch Cable, Cat6, 3M	MR	100		
	8	Switch 48 port				
		Cisco Catalyst 2960-Plus Switch, 24 10/100 ports with PoE, 2 1000BASE-T or SFP uplinks, LAN Base image (WS-C2960+24PC-L) End of Life and End of Support are not announced by cisco, else supply the replacement as announced on Cisco Web site	NO	4		
	9	Cisco Controller Based Access Points 4x External Antenna series 1000 or above	NO	5		
	10	Cabinet 19" 10U, All open door, 55cm Depth at least	NO	4		
	11	Teldor Cat6+ Cable, 500m	NO	1		
	12	Patch Panel, 3M, 24port Cat6+ populated	NO	4		
		Total Data Center & Cabinets				
4--14		Uninterruptible power supply (UPS)				
		Rate includes in this section:				
	1	Supply, install & operate all required materials, accessories, labor, all as required according to drawings, specifications and bill of quantities.				
	2	Cutting, and pining including all making good				
	3	Forming, or cutting haies, chases, channels etc.in reinforced concrete structure, block works or existing walls.				
	4	Plugging and screwing				
		Preparation of all required workshop drawings and as built drawings.				
	5	Protection of all materials				
	6	Labeling				
	7	Providing all maintenance & operation manuals, training and warranties				
4--14-1		Uninterruptible power supply (UPS)				
	1	UPS Device 2 kva, Online, Rach mount inside Data Cabinet ,	No	4		
4--15		Wireless access point				
		Cisco Access Point: AIR-AP1852E-I-K9: Dual-band, controller-based 802.11a/g/n/ac, Wave 2, Inc 4x Antennas (AIR-ANT2524DW-R) End of Life and End of Support are not announced by cisco, else supply the replacement as announced on Cisco Web site.	No	4		

Item No.	Item Name and Description	Unit	Quantity	Rate	Amount
				US\$	US\$
4--16	LCD Projector, Epson: EP-2142	No	4		
	- Suitable for classroom 10mx10m				
	- WXGA (1280 x 800) (min)				
	- Brightness 4000 ANSI Lumens (min), Contrast: 6000:1 (min)				
	- Support Focus and optical zoom				
	- Minimum Lamp Life: 5,000 hours				
	- Remote Control				
	- Input: USB, HDMI, VGA, ...etc				
	- Including ceiling mount kit				
	- VGA, HDMI, DP wall socket with outlets				
	- Including Cables for HDMI, VGA, DP (15m)				
	- Cables for HDMI, VGA, DP from Wall Socket to Laptop (2m)				
	- Including installation with all requirements				
	- Warranty: at least 1year				
4--17	Projection Screen	No	4		
	Motorized Projection Screen				
	~200x200cm				
	Include installation and all requirements, power switches, cables, remote control...				
	Electrical Summary				
4--02	Total Cable Trays, and Ladders				
4--03	Total Cables and Wires				
4--04	Total Supporting Devices				
4--05	Total Feeders & Isolating switches for mechanical equipment's				
4--06	Total Electrical Distribution Panels				
4--07-1	Total Lighting points				
4--07-2	Total Lighting Fixtures & Poles				
4--08	Total Grounding / Earthing System				
4--09	Total Low Voltage Points				
4--10	Total Fire Alarm system				
4--11	Total Public Address / Voice Alarm System (PAVA)				
4--12	Total CCTV system				
4--13	Total Data Center & Cabinets				
4--14	Total Uninterruptible power supply (UPS)				
4--15	Wireless access point				
4--16	LCD Projector, Epson: EP-2142				
4--17	Projection Screen				
4	Total Electrical Works				

AL-QUDS UNIVERSITY

Science Education Project

Renovation of Science Laboratories of Al-Quds University- Abu Dis in
Jerusalem (PHASE I)

Bills of Quantities- REVISED Summary

SECTION	Title	Amount US\$
Section 1	Demolition Works	
Section 2	Internal finishes	
	1- Tiling, flooring and marble works	
	2- Ceiling works	
	3- Carpentry and joinery works	
	4- Steel and aluminum works	
	5- Glass Works	
	6- Painting works	
Section 3	Mechanical works	
Section 4	Electrical works	
Grand total		
Percentages % discount or addition		
Net Grand Total		

All prices are VAT excluded

The sum of :-

Signed and sealed