



UNITED NATIONS DEVELOPMENT PROGRAMME

ITB 2015-072

Lot 3-A
WBS 1150

Bill of Quantities

Programme Title: Right to Education in the Gaza Strip

Project name: Extension and Rehabilitation Works For The Governmental Schools

PAL10- 00094739- LOT 3A

Extension and Rehabilitation Works of Al-Ma`ari Primary Boys School and Al-Ma`ari
Secondary Girls School



UNITED NATIONS DEVELOPMENT PROGRAMME

ITB 2015-072

Al Ma`ari Primary Boys School

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	<p>General Notes:</p> <p>1- Complete detailed shop drawings should be delivered to the Engineer to take his approval prior the commencement of work. Samples of all materials shall also be delivered to the Engineer to take his approval,</p> <p>2-Contractor shall take into consideration that all – direct and indirect works and their relevant expenses required for proper implementation of the project including temporary facilities, fencing, securing utilities (water, wastewater, telephone and electricity systems) as well as making access to project implementation location away from the one in use by the students and teachers such that the school is running safely without disturbance. The contractor will be accountable for all necessary equipment, materials and activities to assure the safety of people within the school buildings and vicinity, where an approved safety plan will be prerequisite to initiating activities along with installing all required components and materials necessary for safety of workers, project team as well as people at school. All relevant costs are deemed to be included in the unit price in addition to the required re-instatement works needed to bring the original facilities to its original status before addition of temporary works.</p> <p>3-The contractor will expect that more than one contractor will be carrying out works in the school at the same time, the Contractor is presumed to make all necessary coordination and facilitate accessibility to and other work-related issues</p> <p>4-All works and installations listed here below should be carried out, tested and commissioned by specialized responsible skilled labours in full coordination with MoEHE , all in accordance with drawings, specifications and relevant standards, and the instruction of the Engineer. The Engineer has the right to reject any component of the work not complying with the specifications and the terms of the contract.</p>				
Bill No (A): New Building					
Bill No (A) - 1. Excavation and earthworks					
	<p>Contractor shall take into consideration that all – direct and indirect works and expenses required for the completion of the coming items are included in the unit price. Measurement is engineering measurement.</p> <p>All works must be according to drawings, specification and engineer instructions. Rates shall include :</p> <p>1. Shoring the sides of excavation and preserving the adjacent buildings as well as existing infrastructure utilities (sewage, water, telecommunication and electricity works). In case of damages that may incur, all relevant necessary repairs will be the contractor responsibility to cover its relevant costs.</p> <p>2. Cleaning the site and removing all debris, surplus unwanted materials and rubbles to approved dump site.</p> <p>3. Backfilling in layers not more than 25cm thick for each layer and compaction to 98% of MDD.</p> <p>4. All required Tests by an accredited laboratory.</p> <p>5. The cadastral survey and leveling of existing status at grids not exceeding 5 m in both directions.</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	6.Leveling and backfilling from imported sand dune in case excavated materials are not approved for backfilling and up to the level of the top of external ground beams levels and to the formation level of apron and surrounding landscaping.				
1.1	Demolish and remove safely the existing buildings, concret stairs and keep the existing interlock tiels safe . The price shall include dismanteling of polypeed sheets ,aluminume windows, protctive steel screen,doors, laboratory marble benches, interlock tiels... etc and transport and deliver to M.O.E.H.E .and removing all defected materials inside and outside school buildings including but not limited to tiles , plaster , steel, foundations, ground beams, concrete debris, solid waste.... etc. to approved dump sites and backfilling with clean sand to the required levels, as per the engineer's instructions.	L.S	1		
1.2	Excavation from natural ground level in any type of soil to required designed level. The works including: The compaction of the soil surfaces to get (98% MDD). The excavated unwanted material should be removed out from the site to the approved places. The excavated selected material should be properly stored in the vicinity of site for reuse in backfilling. All to be executed as per specifications, drawings and the engineer's instructions.	M ³	350		
1.3	Supply, fill & compact Kurkar material with (CBR> 30) under the main building foundations (the mentioned soil improvement area) in two layers 25cm thick each layer (MDD 98%), to comply with the design bearing capacity of not less than (1.7Kg/cm2). The work must be carried out according to the specifications, design drawinfgs & the engineer's instructions (three load plate tests are required to verify the result)	M ³	100		
1.4	Backfilling with selected materials from excavation around foundations & any other element up to ground slab level in layers not more than 25cm thick for each layer with compaction to 98% of MDD. The works including compacting the design soil surfaces to get (98% MDD).	M ³	200		
1.5	Supply, fill by using approved material (sand dune) between ground beams & inside the building up to the required levels, which shall be spread in layers not exceeding 25cm each one & compacted (98%) to reach up the required levels (under floor slab), according to the specifications & the engineer's instructions.	M ³	300		
1.6	Dismantel carefully interlock tiles (350m2) and transport to M.O.E befor Excavation and remove any obisticals, Cleaning the site and removing all debris and rubbles to approved dump site.according to the specifications & the engineer's instructions	L.S	1		
Total					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
Bill No (A) - 2. Concrete Works.					
	<p>Rates of Concrete Works shall include:-</p> <ol style="list-style-type: none"> 1. All form works and shuttering (new lumber for shuttering painted by special oil (fuel or burnt oil is not accepted) in any form, shape and size . Making chamfered and curved edges, allowing for and making grooves and sleeves and using Tie Rods (Batant) for concrete walls ; removal of forms and cleaning of all exposed tie wires and rods. Steel forms must be used in shuttering the external decorations. 2. Supplying, Casting, vibrating and curing as per specifications. 3. Approved additives and admixtures. 4. Developing new Concrete Job Mix Designs, Sampling , testing and providing test results certificates, storing and saving of samples. 5. Painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer , the strokes of each layer to be opposite to each other. 6. Preliminary installations for Electrical, plumbing and floor drainage in floor slabs including final floor slab. 7. Compaction and testing under the foundation, ground beams, ground slabs and Apron. the compaction should not be less than 98% of MDD. 8. All works according to specifications , drawings and supervisor engineer instructions 9. Supply, fabricate and fix reinforcement steel ($f_y = 410$ N/mm²) for all the structural elements according to drawings and engineer's instructions for any grade, size and length as detailed in the drawings, storing on site including cutting, bending and fixing in position and providing all tying wires, spacers, shop drawings, testing and bar bending schedules .All works according to specifications , drawings and supervisor engineer instructions 10. In rehabilitation works, supply fabricate and fix steel dowels to the existing concrete using special materials. In case of lapping with existing steel reinforcement, rates will include cleaning rust and treatment with special materials 11. In case after excavation the new columns locations and relevant footings coincide with the existing ones, the contractor will make modification to adapt implementation to the existing conditions and deemed to include in his rates relevant costs accordingly. <p>All rehabilitation works will include the necessary extra steel reinforcement and concrete to be applied in layers if necessary in addition to the necessary special materials and accessories.</p>				
2.1	Supply and cast ready mix plain concrete B (200) kg/cm ² for Blinding beds 5 cm thick including polythene sheets as per specifications and drawings.	M3	13		
2.2	Supply and cast ready mix reinforced concrete B(250) kg/cm ² for the ground slab 10cm thick with steel mesh 8mm diameter every 20cm including polythene sheets below concrete slab and compacting the soil beneath the slab to 98% of MDD.as per specifications and drawings.	M2	340		
2.3	Ditto but 10cm thick entrance ramps and platform.	M2	10		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
2.4	Supply and cast ready mix reinforced concrete B (250) kg/cm ² for foundations (isolated, strip footing, strap & inverted T sec.) as per specifications and drawings.	M3	56		
2.5	Ditto but for ground beams including ground beam for the platform.	M3	23		
2.6	Ditto but for strap beams between the foundations.	M3	11		
2.7	Ditto but for canopies.	M3	10		
2.8	Ditto but for all elements of stair case including the entrance stairs.	M3	16		
2.9	Ditto , but for wall parapet in corridors under steel balustrade in the gnd. floor, ramp side walls, roof expansion joints walls & for stair case walls parapet. Item include fixation and other necessary materials and workmanship	M3	3		
2.10.	Ditto but for sills, lintels, coping, concrete wall (hunches for doors), gas room elements .etc.	M3	24		
2.11	Supply and cast ready mix concrete (B150) for stub columns at the roof.	M3	6		
2.12	Ditto but plain concrete B200 under water tank. 10 cm thick.	M3	1		
2.13	Supply and cast ready mix reinforced concrete B (300) kg/cm ² for columns and columns necks as per specifications and drawings.	M3	50		
2.14	Supply and cast ready mix concrete B (250) kg/cm ² for suspended hollow block slab 20 cm thick, including the reinforced steel, decorative arches in last slab, corridor concrete parapet, under steel balustrade for the typical slab, hollow cement block 40 x 25 x 14cm, all drop and inverted beams everywhere in the slab and all other materials as per specifications and drawings.	M2	1000		
2.15	Ditto, but for stair case slab	M2	75		
2.16	ditto, but B250 reinforced concrete for Apron (surface treated with mechanical steel troweled finish) the price include polythene sheets. Reinforcement Ø 8mm / 15 cm in both way and reinforced edge beam as well as expansion joints. The price including leveling, 15cm thick compacted base coarse to 100% of MDD and making of expansion joints including its approved filling materials (sika flex or equivalent) according to drawing and specification.	M2	100		
Total					
Bill No (A) - 3. Building Works					
	The price include: 1- supplying hollow or solid cement block from good and approved factory in perfect dimension and build it in good manner with a compressive strength 35 kg/cm ² for hollow block and 60 kg/cm ² for solid block. This item will include cement mortars, galvanized steel ties, reinforced concrete infill (B250) between columns & block walls (10-20 cm wide) with 1Ø8mm/40cm horizontally and 2Ø8mm vertically according to drawings, pipes encasement, false columns 20x20 cm/4.0m among the parapet wall with 4Ø12mm and bituminous paper between block work and drop beams and testing as well as all requirements needed to finish the works according to the drawings, specification and to the supervision engineer instructions.				
3.1	Supply and build hollow cement blocks 40x20x20cm	M2	750		
3.2	.Ditto but 40x20x 15 cm thick for the roof wall	M2	25		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
3.3	.Ditto but 40x20x 10 cm thick	M2	25		
3.4	Supply and build solid cement block 40x20x20 cm, under ground beams, and external boundary for building including painting the buried parts with one coat of primer and two coats .of hot bitumen (75/25) after primer layer	M2	100		
Total					
Bill No (A) - 4. Carpentry works					
	The items include supplying carpentry works from good wood grade "A" including frame cover mould, architrave, sanding sealer, prime coats , at least two coats of oil paint, 15cm Aluminum kick plate 1mm thick from both sides , hard ware, locke type Wally switch or equivalent and brass hinges 10cm height, door stopper and all other fitting according to specification and drawing.				
4.1	Supply, fix & paint flushed wooden external double leaves door type D1, overall size 125 x 220 x 4.5cm thick, complete with the above preamble.	No	8		
4.2	Supply and fix framed fibber bulletin board (cork sheet 2 mm thick) size 1.2 x 1.00 m from Kalboard (BC129) or equivalent. Price includes aluminum frame 5 x 1.5 cm silver painted, Plywood veneer 5 mm thick on the back, and all necessary fixings, fittings, accessories.	.No	12		
4.3	Supply and install wall mounted magnetic green chalk board Lina series, 25 mm profile kALBOARD MG 3612/L size 120x360 cm) with silver anodized elegant aluminum frame (19x25mm thick) and four strong rounded plastic (upvc) corners fixed internally with screws to the wall, and also with silver anodized aluminum try fixed by sliding through the profile which used for chalks, markers and duster and has UPVC edges for safety. The writing surface coated of steel polyester fixed by using automatic gluing machines to 11mm thick MDF wood covered automatically by aluminum foils. Price to include all related works as per drawings, specification and Engineer's Instructions.	.No	12		
4.4	Supply and fix 120x20mm soft wood coat hook rail smoothed , plugged and screwed to wall at 30cm center to center including priming and varnish painting with Galvanized steel coat hook 3mm thick, screwed to rail at 20cm center to center as per specifications and drawings and to be approved by the engineer.	Mr	45		
4.5	Supply and fix soft wood poster hanging rails size 50mm x 20mm with round edges, smooth surface , apply two coats of sanding sealer, sand lightly and apply two coats of varnish,one coat of Lucker paint. drill and fix to concrete or block walls using expansion steel bolts as per specification and drawings..	Mr	80		
4.6	Supply and fix soft wood rubbing rails size 150mm x 20mm with round edges, smooth surface , apply two coats of sanding sealer,one coat of lacquer paint. sand lightly and apply two coats of varnish, drill and fix to concrete or block walls using expansion steel bolts as per specification and drawings..	Mr	250		
Total					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
Bill No (A) - 5. Aluminum & Metal works					
	The items include supplying aluminum windows section 7000 matching the existing ones, with min. wall thickness 1.5mm (to be approved by representative engineer) as frame, glass 4 mm thick, ironmongery , accessories and hard ware along with fixing as per specification and drawings. All maintenance works include all needed materials for reinstatement and workmanship.				
	Steel work should be properly treated and prepared, painted with two coats of oil paint,one primer (polyzinc) and one undercoat.The price shall include removing the damaged aluminum and steel works and handing to the MoEHE				
5.1	Supply and fix coloured aluminum window section 7000 type W1. , overall size 250 x 120cm, complete with frame, white color, four sliding leaves ,clear glass 4mm thick, ironmongery and hardware. and as per specification and drawing.	No	24		
5.2	Ditto but, Type W2 overall size 125 x 120cm	No	12		
5.3	Ditto but type w3 over all size 250 x 80cm	No	22		
5.4	Ditto but type W4 overall size 1.25 x80cm (two leaves).	No	1		
5.5	Supply and fix steel protection for windows over all size W1 (ground floor) 250x110 cm .the prices including mild steel frame size 40 x 8mm thick, vertical steel plate size 20mm wide x 8mm thick fixed every 12cm (clear distance), decorative circles 20x2mm, all by welding to the frame. Fixed on walls by steel angle ties and plates, painting with one coat of primer, undercoat and at least two coats of oil paint, all according to drawing, specification and engineer instructions.	.No	8		
5.6	Ditto but window size W2 125x110cm (ground floor)	.No	4		
5.7	Ditto but window size W3 250x70cm.	.No	22		
5.8	Ditto but window size W4 125 x 80cm	.No	1		
5.9	Ditto but window size 250x80cm for first and second floor	No	16		
5.10	Ditto but window size 125x80cm for first and second floor	No	8		
5.11	Supply and fix mild steel balustrade 40cm high for the corridors comprising of M.S. hollow section tubes 40 x 20 x 2 mm verticals spacing 10 cm clear distance, and welded 60x40x2 mm top and bottom rails fixed to columns and bottom parapet using expansion bolts, rates includes M.S. end angles, painting with one primer, under coats and minimum two coats of oil paint, (the color to be approved By the Engineer and as drawings and specifications).	Mr	125		
5.12	Ditto but high 60cm for staircase handrail.	Mr	25		
5.13	Supply and fix galvanized steel balustrade for stair case pipe Ø 1.5" 2mm thick fixed to walls by steel plate and 4 bolts every 1m and 10cm space between wall and the pipe, the works include one primer coat, one under coat and minimum two coats of colored oil paint in addition to all Accessories needed to finish the work according to specifications, drawings and the engineer's instructions.	Mr	40		
5.14	Supply and fix flush galvanized steel double external door DS1 (125 x220x4.4cm), new double sheets (2-mm thick), complete with frame 3mm thick, ironmongery, hardware and one primer coat, one under coat and minimum two coats of colored oil paint, with hard ware locked type Wally switch or equivalent and all requirement as latches, locks...etc as specified in the drawings and specifications for ground floor.	.No	5		
5.15	Ditto but single door DS2 90x220cm.	No	5		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
5.16	Supply and fix double leaves Gas store door 250x105cm with steel wire mesh 50x50x3mm fixed be steel angle size 50x50x5mm and 40x40x4mm mild steel stiffener, complete with frame ironmongery, hard ware and oil painting. The price includes approved lock EU made and all requirement as latches, locks.. etc as specified in the drawings and specification and to be approved by the representative engineer.	No	1		
5.17	Supply and fix flush galvanized steel double grill external door DS3 (340 x320cm), complete with frame profile 60*30*3mm thick, ironmongery, hardware and oil painting, with hard ware locked type Wally switch or equivalent and all requirement as latches, locks...etc as specified in the drawings and specifications for ground floor.	No	1		
Total					
Bill No (A) - 6. Finishing works					
	<p>A- Plaster works All works must be according to drawings, specification and engineer instructions. Rates shall include : 1-Supply of all needed materials, including galvanized angles for the corners, windows and external decoration as well as the use of galvanized wire mesh between concrete and block work. 2-Preparation works by covering all conduits of electricity, water supplies , etc, with a galvanized wire mesh at least 20cm width coated by mortar (1:1) cement : sand and the work includes removal of wires and nails and cleaning of surfaces to be ready for plastering. 3- Contractor shall take into consideration that all – direct and indirect works and expenses required for the completion of the coming items are included in the unit price. 4-Trimming of concrete chippings, removing the wires and etc. and cleaning of existing surfaces to be ready for plastering. 5- Checking out all of the preliminary installation in ceilings and walls such as electrical, water supply and waste water pipes and repairing the damages if any. 6- Curing with water for at least three days for each coat. This should be done prior to commencement of plastering and after obtaining a written approval from the supervision engineer.</p> <p>B- Tiles works All works must be according to drawings, specification and engineer instructions. Rates shall include : 1. Samples for approval and all the required tests. 2. Cleaning, mechanical polishing and pointing using grout. 3.Insulation works under ceramic floor tiles for all wet areas and kitchens using primer coat, two hot bitumen coats (75/25) 4. Plastic angle beads for ceramic wall tiles at the corners and top and sides of ceramic edges. 5. Local marble must be Grade (A) free cracks and clay flaws. 6. Measuring the stockpiled quantities of tiles and obtaining the engineer approval prior to shipment to the site. 7.Transporting and carefully handling the stored quantities to the site.</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
6.1	Supply and make internal plastering 13 mm thick for ceiling ,walls and soffits. The work includes rough primer nail rendering to form a key with (mix 1:1) cement sand, second layer 13mm: Base-Coat "Rendering" with (1:3:0.25) cement: sand : lime and third layer: Finishing Coat with (1:1:1) cement: sand : lime . Works include all materials needed to finish the works according to specifications , drawings and supervisor engineer's instructions	M2	2750		
6.2	Supply and make external plastering 20mm thick to walls with four faces : the first is the rough nail rendering (mix 1:1) cement sand; the second is 5mm thick mortar (mix 1: 2) cement:sand, the third is the undercoat 13mm (mix 1: 3 :0.25) cement:sand:lime, the forth is two coats of Tyrolean finish (mix 1: 3) white cement to fine aggregate (Quartz) and all is according to specifications , drawings and supervisor engineer's instructions	M2	650		
6.3	Supply and make smooth external plastering 20mm thick for decoration at four faces : the first is the rough nail rendering (mix 1:1) cement:sand, the second is 5mm thick mortar (mix 1: 2) cement:sand, the third is the undercoat 13mm (mix 1: 3 :0.25) cement:sand:lime; the forth is make Finishing Coat, smooth surface with (1:1:1) cement:sand :lime. and all this is according to specifications , drawings and supervisor engineer's instructions	M2	550		
6.4	Supply and install terrazzo floor tiles (grade A) size 25cmx25cmx2.5cm with Basalt stone laid on 2.5cm mortar bed and 5 cm thick sand bed and terrazzo skirting 25cmx 7cmx1cm including all materials and testing as per specifications and drawings.	M2	950		
6.5	Supply and cast terrazzo edge beam 24cm wide x 6cm thick of the same kind and color of the floor tiles including smoothing the surfaces, expansion joints and edges (for corridors and thresholds.) as per specifications and drawings.	.Mr	125		
6.6	Ditto but for stair case handrail coping size 15cmx4cm.	Mr	25		
6.7	Supply and install local marble (grade A) size 25 cm wide x 3cm thick for windows sills laid on 2 cm thick mortar bed including polishing and grooving as approved by engineer and as specification and drawings..	Mr	140		
6.8	Supply and lay precast terrazzo stair treads size 35 cm wide x 4cm thick chamfered once , rebated once and laid on 2cm thick mortar bed same color and kind of the floor tiles and the price including terrazzo stair risers size 12.4cm high x2cm thick and skirting 20cm high x2cm thick on the both sides as specification and drawing.	Mr	120		
6.9	Supply and fix fire extinguisher, 6kg capacity filled with CO2, fixed at 2m height. According to, specification, drawings and as per Palestinian fire defiance requirements.	No	2		
6.10.	Ditto but filled with powder.	No	2		
6.11	Supply and install Gas supply system for laboratory, the system including all required brass pipe, fitting valves, distribution box, Burners.etc, and pipe should be pressure tested and guaranteed against chemical attack and approved by representative engineer and the civil defense. the contractor shall submit work shop drawing to be approve by the representative Engineer	.L.S	1		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
6.12	Supply and install high quality Granite 180x70x2cm thick (Tiger) for top cover of students preparing bench. The price includes local marble grade A for two direction supporting, floor, mid separators, marble necessary to close around and bottom of sink, and shelves, skirting and all accessories, fitting and making holes for sinks and water and gas supply as per specification and drawings and to be approved by the representative engineer.	Unit	8		
6.13	Ditto but for teacher bench 200x80x2cm including marble back	Unit	1		
6.14	Ditto but for laboratory store bench size 255x60x2.0cm including aluminum doors (kitchen doors) and including marble back	Unit	1		
Total					
Bill No (A) - 7. PLUMBING works					
	<p>(1) In general rates for plumbing works shall include for:</p> <ol style="list-style-type: none"> 1. Developing shop and as built drawings 2. Cutting and forming all chases, recesses, holes, and the like, 3. Pipe sleeves, 4. Building of concrete and/or brick ducts in floors, walls ...etc., 5. Excavation, forming of trenches for services, concreting, bedding and back filling and ramming after laying, 6. Fixing brackets, clips, holder bats, hangers, and the like, 7. Temporary and final fixing, 8. Nails, screws, bolts, nuts, washers, holes, plugs, sleeves and the like, 9. Building in or cutting and pinning, 10. Testing and drawings, 11. Painting of pipes, 12. All work of other trades in connection with plumbing work including all making good. <p>(2) Rates for manholes and pits shall include excavation, concrete, benching, plastering, backfilling and cover as per Drawings and Specifications,</p> <p>(3) Rates for sanitary fittings, isolated taps and gullies shall also include all pipe work in connection therewith and connections thereto including connection to the nearest manhole or gully and to the cold water storage tank.</p> <p>(4) Rates for pipe work including pipe work in frames to shading sheds shall include for:</p> <ol style="list-style-type: none"> 1. Joints in the running length, 2. Nipples, connections, sockets, ferrules, couplings, back nuts, unions, and the like, 3. Bends, elbows, tees, reducers, access doors, cleaning eyes, blank caps, stop valves, and the like, 4. Welded joints and connections including grinding, 5. Lagging and wrapping, 6. Excavation, bedding and backfilling. 				
7.1	Supply and fix white glazed fireclay laboratory sink size 60cmx40cm (HARSA Type) or equivalent, complete with water supply pipes ½", waste, fitting, trap, chain, long swan neck water tap (Hamat or equivalent), and the drainage line 2" to the nearest floor trap as specification and drawings	.No	10		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
7.2	Supply & fix 1" dia. galvanized pipe for main water supply connected from main water line or roof tanks including insulation with asphalt paper, excavation & backfilling with clean sand, jointing using all necessary fittings, valves and fixing with brackets screwed to concrete or block work as specification, drawings and engineer instruction.	.Mr	100		
7.3	Ditto but (3/4").	.Mr	30		
7.4	Supply and fix floor trap 4inch diameter, complete with heavy duty brass grating and 4" & 2" PVC drainage pipe to the nearest manhole or next F.T and including S trap if needed as specification and drawings.	No	16		
7.5	Supply and fix oil painted galvanized steel threaded pipe 3" including jointing, fittings Tee, elbows, shows, & fixing to walls with metallic brackets and 3 inch diameter wire balloon grating, caps on the top ends and floor traps in all floors as specification and drawings.	.Mr	70		
7.6	Supply and fix water storage plastic tank 1.5 m3 capacity with locks for cover, with approved type not less than 32 kg weight, complete with lockable cover, 1 inch diam. automatic float valve, overflow pipe (1" diam) and drip tray, with all connections for rising main and distribution pipe work and stop valves 1" with all accessories as specification and drawings, including painting tanks with white oil paint.	.No	2		
7.7	Supply and install UPVC pipes 160mm, SN8 for drainage, with sockets, work includes excavating of trenches (depth 0.75-1.5m), bedding, compacted backfilling with clean sand in layers not more than 25 cm, connecting to the manholes and hydraulic test according to the specifications and drawings	.Mr	50		
7.8	Ditto but 110mm diameter.	.Mr	30		
7.9	Supply and install concrete manhole of internal diameter 60 cm, and (50-100) cm depth according to the required level, 10cm thick plain concrete for walls and base, slab, with cast iron cover with frame 50cm opening, 8 ton bearing capacity, including excavation, backfilling, hunching and making good according to specification, drawing, and the engineer instructions.	No	5		
Total					
Bill No (A) - 8. Roofing works					
	(1) Rates for foam concrete/ cement and mortar work shall include for: 1. Supply and storage of cement. 2. Supply and storage of aggregates and water, 3. Mixing, 4. Hacking concrete, applying cement slurry or raking out joints of block work to form key, 5. Application to any surface, 6. Finish to surface, 7. Finish to falls and cross falls, 8. Forming bays including joints, 9. Finish to edges, 10. Making good around steel sections, pipes, tubes, bars, brackets, outlets, and the like, 11. Ends, intersections, ramps, and the like, on fillets,				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	<p>(2) Rates for waterproofing shall include for:</p> <ol style="list-style-type: none"> 1. Preparation of surface, 2. Any area or width, 3. Cutting in edges. 4. Over laps, priming and treatment at the corners and floor drains. 5. Testing for the roof with water 6. Dressing over parapets and stub columns including forming groove to receive edge of plasticised bitumen membrane and sealing with elastic sealer. <p>(3) Rates for roof sheets shall include for:</p> <ol style="list-style-type: none"> 1. Side and end laps, Fittings including bolts, hook bolts, screws and washers, 2. Sheets of any width or length. 				
8.1	Supply and cast foam concrete with fine aggregates for roof screeding of average thickness 8 cm as shown in drawing. The item will include making the angle fillet 5x5cm around the boundary of the parapet and around opening in roof if exists.	M2	350		
8.2	Supply and lay one layer of plasticized bitumen roofing membrane with chipping 4 mm thick, including priming concrete surface prior to laying, dressing into rain water outlets to form water proofing seal and cover the angle fillets. The rate include verticals parts skirting as per specification and drawings.	M2	350		
	Note: Measurement will be for the horizontal projection				
Total					
Bill No (A) - 9. Painting works					
	<p>Rates for painting and decorating work shall include for:</p> <ol style="list-style-type: none"> 1. Preparation of surface including puttying, sealing and priming, 2. Any area or width, 3. Any location, 4. Work in multi colours, 5. Cutting in edges, 6. Any taping and covering to protect areas and others. <p>All the painting materials should be approved and tested by approved local laboratory</p>				
9.1	Supply and Paint the internal walls up to a height of 2.2m above finishing floor level with one coat pendrole, two coats of putty, one undercoat primer and two coat of oil paint as specified in specification and approved by engineer.	M2	1150		
9.2	Supply and Paint one-primer and minimum two coats of Poliside for internal walls, ceiling and drop beams as specification and drawings.	M2	1600		
9.3	Supply and Paint, external walls with one coat of Pendrole primer and at least two coats of External quality of colored emulsion (Weather Shield) or equal approved as specification and drawings	M2	1200		
Total					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
Bill No (A) - 10.A. Electrical works for school building					
	General: *The items in general shall also include conduits, connection boxes, controls, wires, connectors, clamps, bolts, and connecting the cables to switchboards and common electric network are included in the unit price. * Contractor shall submit shop drawings for all electrical works to be approved by the Engineer before executing the work. * As-built drawings shall be submitted after handing over the work. * All the electrical works shall be executed according to Standards, drawings, specifications and supervisor engineer instructions. * Dismantling & Removing old lighting unit (fluorescent light fixture, glops, Etc) and move to school stores as per engineer instructions.				
LIGHTINGS FITTINGS					
10.1	Supply, install, connect and test Ac LED tube length 1200mm, (18-21)Watt , T8 lamp,Cap-Base G13, Efficacy more than 100 Lm/W, Flux more than 2000 Lumen, Color temperature 3000-4500, Power factor > 95%. The item includes dismantling and removing the existing flourecent tubes,ballasts ,condensers and rewiring to be compatible with instant Start and allows fixture to maintain original compliance.All works must be according to engineer's instruction. (Type is PHILIPS or equivalent)	NO	112		
10.2	Supplying and installing wires, PVC pipes and boxes for Lighting Unit or Ceiling Fan .The item includes all necessary equipments for installation and operation as per drawings, specifications and engineer instructions.	NO	20		
10.3	Supplying, installing connect and operating surface mounted LED lighting fixture 32W or 36W, European made. Model Vector 1258 LED # 180170 or equivalent (Type is LENA or equivalent). The item includes PVC conduits, J.bboxes, fixing screws (Galv.) and wiring and all necessary equipments for installation and operation as per drawings, specifications and engineer instructions.	NO	72		
10.4	Ditto but 1x16 w or 18w with special reflector for black board . Model Specto LED # 343858 or equivalent (Type is LENA or equivalent).	NO	24		
10.5	Ditto but round bulk head light, water proof IP65, LED lighting fixture 16W . (Type is GAASH #552r404 or equivalent).	NO	20		
10.6	Supply, install, connect and test Ac LED lamp 16W, Flux more than 1000 Lumen, Color temperature 3000-4500, Power factor > 95%. (Type is PHILIPS or equivalent).	NO	15		
10.7	Ditto but external security flood lighting fixture, water proof IP65, LED lighting fixture 50W . (Type is GAASH or equivalent).	NO	2		
LIGHTING SWITCHES AND OUTLETS WORKS					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.8	Supply, install connect and test single pole one way switch, 220v, 10A, complete with PVC conduits, J.bboxes, wiring,support frame, cover and all necessary accessories to complete the job. (Type is Bticino Matix or equivalent).	NO	4		
10.9	Ditto, but water proof. (Type is Bticino Matix or equivalent).	NO	2		
10.10	Ditto but double pole switch 10A and with cover plate (Type is Bticino Matix or equivalent).	NO	3		
10.11	Ditto, but water proof. (Type is Bticino Matix or equivalent).	NO	2		
10.12	Ditto but triple pole switches with cover plate (Type is Bticino Matix or equivalent).	NO	14		
10.13	Ditto but two ways switch "Fixle"1P 16N (Type is Bticino Matix or equivalent).	NO	8		
10.14	Ditto but Light Pushbutton 16A 1P (Type is Bticino Matix or equivalent).	NO	8		
10.15	Supply, install connect and, testing single socket outlet 16A, 220v, 2p+E for flush or surface mounting, complete with PVC conduits, J.bboxes, wiring, and all necessary accessories. (Type is Bticino Matix or equivalent)	NO	34		
10.16	Ditto but water proof for external uses, complete with all accessories. (Type is Bticino Matix or equivalent)	NO	20		
10.17	Supply, install telephone socket outlet 6 pin for surface/flush mounting, complete with PVC conduits, J.bboxes, cables, and all necessary accessories. (Type is GEWISS or equivalent).	NO	1		
10.18	Supply, install network(Computer) socket outlet complete with net cable Teldor STP cat 5 , Female RJ 45 cat 5 , cable should labled on both ends by high quality sticky plastic lables, 1m cable must be inside the rack (Type is GEWISS or equivalent).	NO	2		
10.19	Ditto, but satellite sockets.	NO	1		
10.20	Supply and install 10" school electrical two bell with three push buttons connected together ,complete with PVC conduits, J.bboxes, wiring, and all necessary accessories to complete the job	L.S	1		
10.21	Supply and install electrical ceiling fan 220V\125W, with its switch wires and connection , (Type is CHMC or equivalent)	No	2		
10.22	Supply , install and connect power amplifier as the following : Nominal max power 200w Frquacey response 50-1500HZ Signal To noise ratio > 80 db Outputs /ohms 4,8,16 ohm Outpust / volt 50, 100v the price includes supply & install 2 horn loud speakers , 100 W each, 2 microphones with stand and connection, include steel protection box around the loud speakers. (Type is Philips RCT or equivalent)	L.S	1		
10.23	Supply , install and connect amplifier socket out let,complete with PVC conduits, J.bboxes, wiring, and all necessary accessories to complete the job. (Type is Philips RCT or equivalent)	No	2		
EARTHING SYSTEM					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.26	Supply, install and commission complete Earthing system including all required galvanized 35x3 mm steel sheet, cables, earthing pits ,copper rods 19mm dia, 3m long, manholes,Cu stranded wire 35mm2 in 2" flixable pipe to connect between the electrodes and MDB , clamps ,Chemical treatment of the soil, all accessories to be the Ressistance less than 2 Ω. according to drawings, specification and engineers instructions.	L.S	1		
ELECTRICAL DISTRIBUTION BOARDS					
10.24	Supply and install electrical switch board of size 80x60x20cm one door, the frame work is made of galvanized steel sheets 2mm thickness, painted by antistatic and insulation paint.The item includes busbars, wiring, insulations, plastic ducts, terminal blocks and all necessary equipments for installation and operation as per drawings, specifications and engineer instructions (Type is MOELLER or equivalent)	No	1		
10.25	Ditto but size 60x40x20cm	No	3		
	Supply and install the followings				
10.26	e) Three phase C.B 3x50A. (MOELLER or equivalent)	No	1		
10.27	g) Three phase C.B 3x32A. (MOELLER or equivalent)	NO	1		
10.28	h) Three phase C.B 3x25A. (MOELLER or equivalent)	No	2		
10.29	i) two pole C.B 3x20A. (MOELLER or equivalent)	NO	3		
10.3	k) Single phase C.B 1x32A. (MOELLER or equivalent)	NO	1		
10.31	l) Single phase C.B 1x25A. (MOELLER or equivalent)	NO	1		
10.32	m) Single phase C.B 1x16A. (MOELLER or equivalent)	NO	20		
10.33	n) Single phase C.B 1x10A. (MOELLER or equivalent)	NO	15		
10.34	o) Three phase 4 poles residual current ELC.B 4x25A, 0.03A	NO	4		
10.35	q)Step relay 10A ,220V. (MOELLER or equivalent)	No	1		
10.36	T)3 indication lamps R S T with resistance 220V,with LTL fuse3x36/6A	SET	1		
10.37	U)Current transformer (60/5A).	No	3		
10.38	V)Amper Meter (0-100).	No	3		
10.39	W)Voltmeter 0-500V with 7 positions selector switchwith LTL fuse3x36/6A.	SET	1		
CABLES AND CONDUITS					
	Supply and install the following cable				
10.4	c) XLPE cable 5x16 mm2	MR	30		
10.41	d) XLPE cable 5x10 mm2	MR	50		
10.42	e) XLPE cable 5x6 mm2	MR	50		
10.43	Supplying and installing 60cm manhole with 8 ton cover, 15cm base coarse	No	3		
10.44	Supply, laying underground 4" PVC piping system for power cable at depth 90 cm The work includes excavation 50 cm width, backfilling with clean sand , laying pipes, warning tapes, all work must be according to supervisor engineer	MR	50		
10.45	Ditto but 3" PVC pipes	MR	20		
10.46	Ditto but 2" PVC pipes	MR	20		
MAIN ELECTRICAL CONNECTION TO GENERAL ELECTRICAL NETWORK					
10.47	Supply and install a wooden pole of 8.5m height and 1.5m to be driven in soil, the work includes painting the lower part of the pole by cold bitumen, all accessories should be used in connection.	NO	1		
10.48	Supply and install ABC cable 4x50mm ² with all accessories needed for connection Normally executed by "elec. Corporation" (optional)	MR	30		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
Total of Bill 10.A					
Bill No (A) - 10.B. Electrical works for PV solar system					
MAIN DISTRIBUTION BORD (MDB)					
10.49	Supply, install and commission main distribution panel board (MDB) size (100x80x30 cm) , one door,as specified and as shown on drawings, factory assembled wired and tested in accordance with international standards, including 2mm galvanized steel frame with antistatic paint, including busbars (160 A) ,neutral bus bar and earthing terminal ,and all necessary civil works for foundations,cable trenches and handing over clean, tested and in operating conditions as GEDCO specifications. (Type is MOELLER or equivalent)	NO	1		
10.5	Supply and installation of a manual changeover switch (MTS) 4X40 AMB for plug-and-play between the inverter and the main AC source as drawings and instructions of the supervising engineer ,(Type is Hager or equivalent).	NO	1		
10.51	Supply and install surge arrestor protection at the incoming feeder 3- phase 40KA including connection to the ground with flexible 25 mm2 yellow/green cable. The system shall protect the switch panel against the lightning shocks. (Type Furse or equivalent).	No.	1		
10.52	Supply and install LTL fuses 3x63A/100A, (JEAN MUELLER or equivalent)	Set	1		
10.53	Mulded Case Circuit Breaker MCCB 3X63A/NZMB-63A. (Type is Moeller or equivalent).	NO	1		
10.54	Miniature Circuit Breaker MCB 3X63A. (Type is Moeller or equivalent).	NO	1		
10.55	Miniature Circuit Breaker MCB 3X50A. (Type is Moeller or equivalent).	NO	2		
10.56	Miniature Circuit Breaker MCB 3X40A. (Type is Moeller or equivalent).	NO	2		
10.57	AC switch disconnecter 3X(32A/50A). (Type is Moeller or equivalent).	NO	3		
10.58	Miniature Circuit Breaker MCB 3X25A. (Type is Moeller or equivalent).	NO	10		
10.59	Ditto but residual current circuit breaker RCB 4X40/0.03A. (Type is Moeller or equivalent).	NO	1		
10.6	Ditto but MCB 2X25A. (Type is Moeller or equivalent).	NO	3		
Sub-Distribution Boards (SDB)					
10.61	Ditto but Sub distribution-board 24 CB capacity OUTDOOR IP65, (Type is HAGAR or equivalent)	NO	5		
10.62	Ditto but Sub distribution-board 36 CB capacity OUTDOOR IP65, (Type is HAGAR or equivalent)	NO	1		
10.63	Ditto but MCB 3X16A. (Type is Moeller or equivalent).	NO	10		
10.64	Ditto but MCB 2X10A. (Type is Moeller or equivalent).	NO	30		
10.65	Ditto but residual current circuit breaker RCB 4X25/0.3A. (Type is Moeller or equivalent).	NO	5		
10.66	Supply and install Contactor 4 poles,220V, with auxiliary contacts,220V coil, AC3 category (Type is MOELLER DILMP32-10 or equivalent).	No.	12		
10.67	Supply and install Time delay electronic relay, with one N.O. and one N.C. 10A output contacts, and 2 sensor input points, supply voltage 24V dc and/or 230V ac, according to specifications and engineer's instructions.(Type is KRK or equivalent).	No.	6		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.68	Supply and install Control relay, with N.O. and N.C. 10A output contacts, supply voltage 24V dc and/or 230V ac, according to specifications and engineer's instructions.(Type is Finder or equivalent).	No.	6		
Cables and conduits					
	supplying, connecting, and termination of the following XLPE CU cables with all required electrical and civil works, the item includes dismantling and re install the existing cables and laying under ground PVC piping system, manholes, excavation, warning tapes, backfilling and all required civil works to finish the work according specifications and demands of the supervising engineer, to connect cables terminals from source to destination. The work will include re distribution of all existing loads of the main panel to achieve the balance of each phase. According to drawings, specifications, instructions, and demands of the supervising engineer. as follow:				
10.69	N2XY-XLPE cable 5*16 mm2	MR	120		
10.7	N2XY-XLPE cable 5*10 mm2	MR	200		
10.71	Flexible Single core copper wire isolated with pvc size 4mm2	MR	50		
10.72	N2XY-XLPE cable 5*6 mm2	MR	200		
Total of Bill 10.B					
Bill No (A) - 10.C. PV solar system components					
	<p>The system is designed to cover the lighting loads in the School Buildings. The system will be grid interactive connected system, which will allow for many power sources options. The system will import from the grid when loads are being more than the generated from PV and supply surplus electricity to the batteries when PV generates more than the loads, the batteries can be charged from Grid if PV output is not enough for loads and batteries.</p> <ul style="list-style-type: none"> • Contractor shall submit shop drawings of all electrical ,civil and solar photovoltaic complete system works,including a single line diagram showing all the components of the PV system, DC and AC distribution boards, PV panels lay out and backup systems and wires cross section for all the system to be approved by the Engineer before executing the work. As well as the catalogs of each component showing the requested specifications stated at the bill of quantity. • As-built drawings shall be submitted after handing over the work. • All junction boxes and DBs will be lockable type. • Upon completion of the installation, the contractor shall organize an on site training program involving nominated employer's staff. Such a program shall be carried out during the commissioning phase. The cost of the training shall be deemed to have been included in the tendered rates. • The price includes all builders' works, making good and reinstatement including necessary materials and workmanship as well as removal of unwanted materials to dump sites approved by the engineer 				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.74	<p><u>PV Modules – 12 KWp:</u> Supply, install, connect and operate Mono Crystalline Photovoltaic Solar Modules with all mounting structure and other material needed to have complete job ready for installing high quality PV modules with total arrays capacity 12 KWp. (Type is Canadian Solar or equivalent), the Item Includes supply, install & connect the following:</p> <ul style="list-style-type: none"> • Water proof PV junction boxes IP65(combiner) for each array including DC Fuses, DC switch disconnectors, bus bars ,terminals, ducts, supports & labels suitable to the PV arrays loads. • Solar DC cables appropriately sized to connect the PV solar cells together and to the J.B and from J.B to the inverter to have a complete operational circuit with all conduits, clamps , trays and cable end terminations which shall be DC plug and socket connectors . The DC cables must be sized in accordance with the installation requirements applicable on site, the allowable voltage drop for DC cables between PV Arrays and inverter less than 3%. • The number of panels based on 250 Wp for each solar panel. The contractor should provide certified panel characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for each solar panel for a period not less than 20 years. The Manufacture testing certificate should be provided for the PV panels and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. <p>All works and materials must be according to the drawings, specifications and supervisor engineer instruction's and approval.</p>	Module	48		
	<p><u>Inverter – 15 KW:</u> Supply, install, connect and operate DC/Ac grid tie inverter 3-phase 15 KW with data communication unit with Ethernet connection .Type is (SMA or equivalent) with minimum 2 MPP inputs, efficiency 98% and suited to any PV module configuration, the inverter depending on the system design and installation proposed and for the future extended. The DC max power input rating should be equal 15 kWp of the PV modules capacity at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65.The rated AC output power should be 15 kW compatible with the AC loads design. The inverter must include the safety concepts such as (triple protection with optiprotect, electronic string fuse, self-learning string failure detection, DC surge arrester) to ensure max availability. The price includes :</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.75	<p>* Supply ,install and connect Sunny WEBBOX for the PV system installedall compatible with the inverter,Bluetooth &Wireless Technology ,with all data cables and connection needed to complete the job.</p> <p>* Supply ,install and connect all DC cables appropriately sized in accordance with the installation requirements and to connect the inverter with PV system designed with all conduits, clamps, trays and cable terminations end which shall be DC plug and socket connectors and workmanship needed to have a complete job, the allowable voltage drop for DC cables between inverter and PV system less than 3%.</p> <p>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and</p>	No.	1		
10.76	<p>Battery Inverter – 5 KW:</p> <p>Supply, install, connect and operate DC/Ac Battery Inverter 5kW nominal capacity compatible with on-grid, 1 & 3 phase system and connectable in parallel and modularly extendable. (Type is SMA or equivalent). The Battery Inverter must include the following concepts such as (Ac and DC coupling, High efficiency, intelligent battery management for maximum battery life, charge level calculation, extreme overload capability, and battery temperature sensing and battery current measurements).The rated AC output power should be 5 kW compatible with the AC loads design, and the maximum input AC power from the grid 12 kW .The price includes:</p> <p>* Supply ,install and connect Remote Control Unit for the PV system installedall SMA /SRC-20 with all data cables and connection needed to complete the job.</p> <p>*Supply ,install and connect DC cables appropriately sized in accordance with the installation requirements to connect the Backup unit with DC battery fuses box with all conduits, clamps, trays and cable terminations end which shall be DC plug and socket connectors and workmanship needed to have a complete job, the allowable voltage drop for DC cables between battery inverter and batteries less than 3%.</p> <p>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer , maintenance catalogues and manufacturers warrantee for each inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No.	3		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.77	<p>Battery Bank: Supply, install, connect and operate (VRLA) or (AGM) deep cycle Batteries with a 12-volt dc, the demand energy is 52 kWh per day, the total capacity of battery bank must include 60 % DOD @ C10. The battery bank voltage is 48 Vdc. Type is (Deka or equivalent). The battery must provide high-quality and achieving superior performance, the manufacturing date must be new and not more than 6 months, suitable for every type of applications specially for solar renewable energy, designed Service Life 10 years with low internal resistance, designed to be deeply discharged and recharged hundreds of times. The Battery should provide benefits of being maintenance free, case flame retardant & non-hazardous. The Item Includes supply, install & connect the following:</p> <ul style="list-style-type: none"> • All necessary DC cables between the batteries together and to the battery fuse box to have a complete operational circuit with all conduits, clamps, stainless steel bolts, washers and cable end terminations needed to fix, all DC cables must be sized in accordance with the installation requirements applicable on site ,the allowable voltage drop must be less than 3%. • Battery mounting structure from hot galvanized steel stand with shelves and dividers for hosting the batteries and all other material needed to have a complete job ready . • Complete earth system for neutrals including (electrodes 15mm², manhole with iron cover, earth joints, clamps, conduits and 50 mm² flexible copper wire from the neutral bus bar in the battery fuse box to the electrode. All precaution to have the resistance < 2Ω. • The number of batteries based on 210 amp-hours of capacity for each one. <p>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer , maintenance catalogues and manufacturers warrantee for each inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No.	37		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.78	<p><u>PV Mounting structure:</u> Supply and install Module mounting structure from hot galvanized steel foundation profile suitable to the dimension of selected PV modules and PV numbers, the mounting provides a fixed inclination of the modules from 30 degree to 32 degree with vertical supports, plates, screws and casting concrete foundations B250 (0.4*0.4*0.2) m3 for each leg, the structure profile includes bracing and double hot galvanized angles for dividers. The mounting structure components are bonded together to guarantee potential equalization. The price includes supply and install a complete earth system (electrodes 15mm², manhole with iron cover, earth joints, clamps and 25 mm² flexible copper cable from the structure to the electrode, all necessary copper wires to connect arrays and modules in one loop for earthen. All precaution to have the resistance < 2Ω. All works and materials must be according to drawings, specifications and supervisor instructions and approval.</p>	L.S	1		
10.79	<p><u>Battery Fuse Box:</u> Supply, install, connect and operate battery DC fuse box (500*375*225 mm) as an external DC distributor to protect the battery connections of the inverters .Type is (SMA or equivalent), the box must be water proof protection with IP65, simple wall mounting, suitable connections for three battery inverters and up to six DC connections inlet on the battery side, the item includes (2 LTL 250/400A , 6 fuses 250A , cable glands, with all necessary DC cables from the battery bank and to the fuse box and from the fuse box to the battery inverters to have a complete operational circuit with all conduits, clamps, stainless steel bolts, washers and cable end terminations needed to fix, all DC cables must be sized in accordance with the installation requirements applicable on site ,the allowable voltage drop must be less than 3%. The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer , maintenance catalogues and manufacturers warrantee for battery fuse box for a period not less than 3 years. The Manufacture testing certificate should be provided also. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No	1		
10.80	<p><u>Wall mounted exhaust:</u> Supply, install, connect and operate wall mounted exhaust fan of 8" diameter Capacity (250 cfm) type is (VENTA or equivalent) at static pressure 60 Pascal for the battery room , to be tightly installed complete with all necessary supports, and all required electrical cables, conduits, mcb 10A and needed to fix, all according engineer's approval. The price shall include opening duct in the block for the fan, plastering, painting, repair all damages and all other materials needed to have a complete job ready according to the engineer's instruction and approval.</p>	No	1		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.81	3-Phase Digital KWH Meter: Supply,install,connect and operate 3-phase digital KWH meter, 3*32 A (ISKRA or equivalent) with all other material needed to have a complete job ,The kWh meter has a digital interface for monitoring by the Remote Monitoring System .All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.	No	3		
Total of Bill 10.C					
Total of Bill 10					

SUBTOTAL OF BILL (A) - NEW BUILDING SUMMARY		
1	Excavation & Earthworks.	
2	Concrete Works.	
3	Building Works	
4	Carpentry works	
5	Metal works	
6	Finishing works	
7	Plumbing works	
8	Roofing works	
9	Painting works	
10	Electrical Works	
-	SUB TOTAL	

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
Bill No (B): Boundary wall works					
Bill No. (B) - 1. Boundary wall works					
	<p>-Compressive strength for solid block not less than 60kg/cm2.</p> <p>-Painting all the steel elements with one coat primer, under coat, 2 coats of oil paint</p> <p>* Rates of Concrete Works shall include:-</p> <ol style="list-style-type: none"> 1. All form works and shuttering (new lumber for shuttering painted by special oil) in any form, shape and size . Making chamfered and curved edges, allowing for and making grooves and sleeves and using Tie Rods (Batant) for concrete walls ; removal of forms and cleaning of all exposed tie wires and rods. Steel forms must be used in shuttering the external decorations. 2. Fuel or burned oil is not accepted to be used for painting the lumber before use the form. 3. Supplying, Casting, vibrating and curing as per specifications. 4. Approved additives and admixtures. 5. Incurred costs on New Concrete Job Mix Designs, Sampling , testing and providing test results certificates, storing and saving of samples. 6. Painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer , the strokes of each layer to be opposite to each other. 7.The excavation &backfilling with imported clean sand. 8. Compaction and testing under the foundation, ground beams, and ground slabs, the compaction should not be less than 98% of MDD. 9. All works according to specifications , drawings and supervisor engineer instructions 10.Supply, fabricate and fix reinforcement steel (fy= 410 N/mm2) for all the structural elements according to drawings and engineer's instructions for any grade, size and length as detailed in the drawings, storing on site including cutting, bending and fixing in position and providing all tying wires, spacers, shop drawings, testing and bar bending schedules .All works according to specifications , drawings and supervisor engineer instructions <p>* Compressive strength for solid block not less than 60kg/cm2.</p> <p>* Painting all the steel elements with one coat primer, under coat, 2 coats of oil paint</p>				
1.1	Excavation in sandy soil or any other soils including backfilling with selected or imported sand material around foundations & any other element up to ground slab level in layers not more than 25cm thick for each layer with compaction to 98% of MDD. The works including compacting the design soil surfaces to get (98% MDD), The price also includes transportation of the disapproved excavated material to approved dump area according to supervision engineer's instructions.	M3	80		
1.2	Supply and cast plain concrete B200 kg/cm2 for blinding beds 5cm thick including polythene sheet as per specifications and drawings.	M3	2.5		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
1.3	Supply and cast ready mix reinforced concrete B250 kg/cm2 for foundations (Strap footing, and gnd. beam) as per specifications and drawings for boundary walls.	M3	15		
1.4	Ditto, but for top beams, columns and column necks.	M3	6		
1.5	Supply and built solid cement blocks type A 40x20x15cm for boundary walls as per specifications and drawings.	M2	175		
1.6	Supply and fix polystyrene sheets 18mm thick and applying mastic sealant 2cm depth and aluminum strip at the both sides for boundary wall expansion joint at foundation and the super structure as per specifications and drawings.	Mr	20		
1.7	Supply and make external plastering 15mm thick and colored Tyrolean finish coats for walls and colored external painting finish for soffits and columns according to drawings, specifications and under supervision.	M2	400		
1.8	Supply, fix and paint two leaves steel gate size 450 cm wide x 310cm high comprising of steel angles 40x40x4mm for frame and stiffeners, 2mm steel sheets, each leaf will be fixed to reinforced concrete columns, three hinge pad lock 2" three tower bolts and all needed accessories and rubber wheels 15cm diam as per specification and drawings	.No	1		
Total					

SUBTOTAL OF BILL (B) - BOUNDARY WALL SUMMARY		
1	Boundary wall	
-	SUB TOTAL	

SUMMARY OF AI MA`ARI PRIMARY BOYS SCHOOL		
A	New Building	
B	Boundary wall	
-	TOTAL	



UNITED NATIONS DEVELOPMENT PROGRAMME

ITB 2015-072

Al Ma`ari Secondary Girls School

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	<p>General Notes:</p> <p>1- Complete detailed shop drawings should be delivered to the Engineer to take his approval prior the commencement of work. Samples of all materials shall also be delivered to the Engineer to take his approval,</p> <p>2-Contractor shall take into consideration that all – direct and indirect works and their relevant expenses required for proper implementation of the project including temporary facilities, fencing, securing utilities (water, wastewater, telephone and electricity systems) as well as making access to project implementation location away from the one in use by the students and teachers such that the school is running safely without disturbance. The contractor will be accountable for all necessary equipment, materials and activities to assure the safety of people within the school buildings and vicinity, where an approved safety plan will be prerequisite to initiating activities along with installing all required componenets and materials necessary for safety of workers, project team as well as people at school. All relevant costs are deemed to be included in the unit price in addition to the required re-instatment works needed to bring the original facilities to its original status before addition of temporary works.</p> <p>3-The contractor will expect that more than one contractor will be carrying out works in the school at the same time, the Contractor is presumed to make all necessary coordination and facilitate accessibility to and other work-related issues</p> <p>4-All works and installations listed here below should be carried out, tested and commissioned by specialized responsible skilled labours in full coordination with MoEHE , all in accordance with drawings, specifications and relevant standards, and the instruction of the Engineer. The Engineer has the right to reject any component of the work not complying with the specifications and the terms of the contract.</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
Bill No (A): New Building					
Bill No (A) - 1.Excavation and earthworks					
	<p>Contractor shall take into consideration that all – direct and indirect works and expenses required for the completion of the coming items are included in the unit price. Measurement is engineering measurement.</p> <p>All works must be according to drawings, specification and engineer instructions. Rates shall include :</p> <ol style="list-style-type: none"> 1. Shoring the sides of excavation and preserving the adjacent buildings as well as existing infrastructure utilities (sewage, water, telecommunication and electricity works). In case of damages that may incur, all relevant necessary repairs will be the contractor responsibility to cover its relevant costs. 2. Cleaning the site and removing all debris, surplus unwanted materials and rubbles to approved dump site. 3. Backfilling in layers not more than 25cm thick for each layer and compaction to 98% of MDD. 4. All required Tests by an accredited laboratory. 5. The cadastral survey and leveling of existing status at grids not exceeding 5 m in both directions. 6.Leveling and backfilling from imported sand dune in case excavated materials are not approved for backfilling and up to the level of the top of external ground beams levels and to the formation level of apron and surrounding landscaping. 				
1.1	<p>Demolish and remove safely the stair case slab of the existing building, stub columns, staircase walls, concrete walls, concrete of construction joint, foam concrete . The price shall include dismanteling of polypeed sheets ,aluminume windows, steel doors, protctive steel screen,... etc and transport to M.O.E.H.E .and removing all defected materials inside and outside school buildings including but not limited to tiles , plaster , steel, foundations, ground beams, concrete debris, solid waste etc. to approved dump sites and backfilling with clean sand to the required levels, as per the engineer's instructions.</p>	L.S	1		
Total					
Bill No (A) - 2. Concrete Works.					
	<p>Rates of Concrete Works shall include:-</p> <ol style="list-style-type: none"> 1. All form works and shuttering (new lumber for shuttering painted by special oil (fuel or burnt oil is not accepted) in any form, shape and size . Making chamfered and curved edges, allowing for and making grooves and sleeves and using Tie Rods (Batant) for concrete walls ; removal of forms and cleaning of all exposed tie wires and rods. Steel forms must be used in shuttering the external decorations. 2. Supplying, Casting, vibrating and curing as per specifications. 3. Approved additives and admixtures. 4. Developing new Concrete Job Mix Designs, Sampling , testing and providing test results certificates, storing and saving of samples. 				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	<p>5. Painting of exposed surfaces of underground reinforced concrete elements with two coats of hot bituminous paint (75/25) after primer layer , the strokes of each layer to be opposite to each other.</p> <p>6. Preliminary installations for Electrical, plumbing and floor drainage in floor slabs including final floor slab.</p> <p>7. Compaction and testing under the foundation, ground beams, ground slabs and Apron. the compaction should not be less than 98% of MDD.</p> <p>8. All works according to specifications , drawings and supervisor engineer instructions</p> <p>9. Supply, fabricate and fix reinforcement steel ($f_y = 410$ N/mm²) for all the structural elements according to drawings and engineer's instructions for any grade, size and length as detailed in the drawings, storing on site including cutting, bending and fixing in position and providing all tying wires, spacers, shop drawings, testing and bar bending schedules .All works according to specifications , drawings and supervisor engineer instructions</p> <p>10. In rehabilitation works, supply fabricate and fix steel dowels to the existing concrete using special materials. In case of lapping with existing steel reinforcement, rates will include cleaning rust and treatment with special materials</p> <p>11. In case after excavation the new columns locations and relevant footings coincide with the existing ones, the contractor will make modification to adapt implementation to the existing conditions and deemed to include in his rates relevant costs accordingly.</p> <p>All rehabilitation works will include the necessary extra steel reinforcement and concrete to be applied in layers if necessary in addition to the necessary special materials and accessories.</p>				
2.1	Supply and cast ready mix reinforced concrete B(250) kg/cm ² for canopies as per specifications and drawings..	M3	4		
2.2	Ditto but for all elements of stair case including the entrance stairs.	M3	5		
2.3	Ditto , but for wall parapet in corridors under steel balustrade in the gnd. floor, ramp side walls, roof expansion joints walls & for stair case walls parapet. Item include fixation and other necessary materials and workmanship	M3	1		
2.4	Ditto but for sills, lintels, coping, concrete wall (hunches for doors), gas room elements .etc.	M3	9		
2.5	Supply and cast ready mix concrete (B150) for stub columns at the roof.	M3	6		
2.6	Ditto but plain concrete B200 under water tank. 10 cm thick.	M3	1		
2.7	Supply and cast ready mix reinforced concrete B (300) kg/cm ² for columns and columns necks as per specifications and	M3	15		
2.8	Supply and cast ready mix concrete B (250) kg/cm ² for suspended hollow block slab 20 cm thick, including the reinforced steel, decorative arches in last slab, corridor concrete parapet, under steel balustrade for the typical slab, hollow cement block 40 x 25 x 14cm, all drop and inverted beams everywhere in the slab and all other materials as per specifications and drawings.	M2	340		
2.9	Ditto, but for stair case slab	M2	75		
Total					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
Bill No (A) - 3. Building Works					
	The price include: 1- supplying hollow or solid cement block from good and approved factory in perfect dimension and build it in good manner with a compressive strength 35 kg/cm ² for hollow block and 60 kg/cm ² for solid block. This item will include cement mortars, galvanized steel ties, reinforced concrete infill (B250) between columns & block walls (10-20 cm wide) with 1Ø8mm/40cm horizontally and 2Ø8mm vertically according to drawings, pipes encasement, false columns 20x20 cm/4.0m among the parapet wall with 4Ø12mm and bituminous paper between block work and drop beams and testing as well as all requirements needed to finish the works according to the drawings, specification and to the supervision engineer instructions.				
3.1	Supply and build hollow cement blocks 40x20x20cm	M2	300		
3.2	.Ditto but 40x20x 15 cm thick for the roof wall	M2	25		
Total					
Bill No (A) - 4. Carpentry works					
	The items include supplying carpentry works from good wood grade "A" including frame cover mould, architrave, sanding sealer, prime coats , at least two coats of oil paint, 15cm Aluminum kick plate 1mm thick from both sides , hard ware, locke type Wally switch or equivalent and brass hinges 10cm height, door stopper and all other fitting according to specification and drawing.				
4.1	Supply, fix & paint flushed wooden external double leaves door type D1, overall size 125 x 220 x 4.5cm thick, complete with the above preamble.	No	4		
4.2	Supply and fix framed fibber bulletin board (cork sheet 2 mm thick) size 1.2 x 1.00 m from Kalboard (BC129) or equivalent. Price includes aluminum frame 5 x 1.5 cm silver painted, Plywood veneer 5 mm thick on the back, and all necessary fixings, fittings, accessories.	.No	4		
4.3	Supply and install wall mounted magnetic green chalk board Lina series, 25 mm profile KALBOARD MG 3612/L size 120x360 cm) with silver anodized elegant aluminum frame (19x25mm thick) and four strong rounded plastic (upvc) corners fixed internally with screws to the wall, and also with silver anodized aluminum try fixed by sliding through the profile which used for chalks, markers and duster and has UPVC edges for safety. The writing surface coated of steel polyester fixed by using automatic gluing machines to 11mm thick MDF wood covered automatically by aluminum foils. Price to include all related works as per drawings, specification and Engineer's Instructions.	.No	4		
4.4	Supply and fix 120x20mm soft wood coat hook rail smoothed , plugged and screwed to wall at 30cm center to center including priming and varnish painting with Galvanized steel coat hook 3mm thick, screwed to rail at 20cm center to center as per specifications and drawings and to be approved by the engineer.	Mr	16		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
4.5	Supply and fix soft wood poster hanging rails size 50mm x 20mm with round edges, smooth surface , apply two coats of sanding sealer, sand lightly and apply two coats of varnish,one coat of Lucker paint. drill and fix to concrete or block walls using expansion steel bolts as per specification and drawings..	Mr	25		
4.6	Supply and fix soft wood rubbing rails size 150mm x 20mm with round edges, smooth surface , apply two coats of sanding sealer,one coat of lacquer paint. sand lightly and apply two coats of varnish, drill and fix to concrete or block walls using expansion steel bolts as per specification and drawings..	Mr	80		
Total					
Bill No (A) - 5. Aluminum & Metal works					
	The items include supplying aluminum windows section 7000 matching the existing ones, with min. wall thickness 1.5mm (to be approved by representative engineer) as frame, glass 4 mm thick, ironmongery , accessories and hard ware along with fixing as per specification and drawings. All maintenance works include all needed materials for reinstatement and workmanship. 8Steel work should be properly treated and prepared, painted with two coats of oil paint,one primer (polyzinc) and one undercoat.The price shall include removing the damaged aluminum and steel works and handing to the MoEHE				
5.1	Supply and fix coloured aluminum window section 7000 type W1. , overall size 250 x 120cm, complete with frame, white color, four sliding leaves ,clear glass 4mm thick, ironmongery and hardware. and as per specification and drawing.	No	36		
5.2	Ditto but, Type W2 overall size 125 x 120cm	No	4		
5.3	Ditto but type w3 over all size 250 x 80cm	No	8		
5.4	Ditto but type W4* overall size 1.00 x1.00.m (two leaves).	No	2		
5.5	Supply and fix steel protection for windows over all size W1 (window size 250x80c) .the prices including mild steel frame size 40 x 8mm thick, vertical steel plate size 20mm wide x 8mm thick fixed every 12cm (clear distance), decorative circles 20x2mm, all by welding to the frame. Fixed on walls by steel angle ties, painting with one coat of primer undercoat and at least two coats of oil paint, all according to drawing, specification and engineer instructions.	.No	8		
5.6	Ditto but window size W3 250x70cm.	.No	8		
5.7	Ditto but window size 125x80cm for first and second floor	No	4		
5.8	Supply and fix mild steel balustrade 40cm high for the corridors comprising of M.S. hollow section tubes 40 x 20 x 2 mm verticals spacing 10 cm clear distance, and welded 60x40x2 mm top and bottom rails fixed to columns and bottom parapet using expansion bolts, rates includes M.S. end angles, painting with one primer, under coats and minimum two coats of oil paint, (the color to be approved By the Engineer and as drawings and specifications).	Mr	38		
5.9	Ditto but high 60cm for staircase handrail.	Mr	15		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
5.10	Supply and fix galvanized steel balustrade for stair case pipe Ø 1.5" 2mm thick fixed to walls by steel plate and 4 bolts every 1m and 10cm space between wall and the pipe, the works include one primer coat, one under coat and minimum two coats of colored oil paint in addition to all Accessories needed to finish the work according to specifications, drawings and the engineer's instructions.	Mr	15		
5.11	Supply and fix flush galvanized steel double external door DS2 90x220x4.4cm), new double sheets (2-mm thick), complete with frame 3mm thick, ironmongery, hardware and one primer coat, one under coat and minimum two coats of colored oil paint, with hard ware locked type Wally switch or equivalent and all requirement as latches, locks...etc as specified in the drawings and specifications for ground floor.	.No	2		
Total					
Bill No (A) - 6. Finishing works					
	<p>A- Plaster works All works must be according to drawings, specification and engineer instructions. Rates shall include : 1-Supply of all needed materials, including galvanized angles for the corners, windows and external decoration as well as the use of galvanized wire mesh between concrete and block work. 2-Preparation works by covering all conduits of electricity, water supplies , etc, with a galvanized wire mesh at least 20cm width coated by mortar (1:1) cement : sand and the work includes removal of wires and nails and cleaning of surfaces to be ready for plastering. 3- Contractor shall take into consideration that all – direct and indirect works and expenses required for the completion of the coming items are included in the unit price. 4-Trimming of concrete chippings, removing the wires and etc. and cleaning of existing surfaces to be ready for plastering.</p> <p>5- Checking out all of the preliminary installation in ceilings and walls such as electrical, water supply and waste water pipes and repairing the damages if any. 6- Curing with water for at least three days for each coat. This should be done prior to commencement of plastering and after obtaining a written approval from the supervision engineer.</p> <p>B- Tiles works All works must be according to drawings, specification and engineer instructions. Rates shall include : 1. Samples for approval and all the required tests. 2. Cleaning, mechanical polishing and pointing using grout. 3.Insulation works under ceramic floor tiles for all wet areas and kitchens using primer coat, two hot bitumen coats (75/25) 4. Plastic angle beads for ceramic wall tiles at the corners and top and sides of ceramic edges. 5. Local marble must be Grade (A) free cracks and clay flaws.</p> <p>6. Measuring the stockpiled quantities of tiles and obtaining the engineer approval prior to shipment to the site. 7.Transporting and carefully handling the stored quantities to the site.</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
6.1	Supply and make internal plastering 13 mm thick for ceiling ,walls and soffits. The work includes rough primer nail rendering to form a key with (mix 1:1) cement sand, second layer 13mm: Base-Coat "Rendering" with (1:3:0.25) cement: sand : lime and third layer: Finishing Coat with (1:1:1) cement: sand : lime . Works include all materials needed to finish the works according to specifications , drawings and supervisor engineer's instructions	M2	950		
6.2	Supply and make external plastering 20mm thick to walls with four faces : the first is the rough nail rendering (mix 1:1) cement sand; the second is 5mm thick mortar (mix 1: 2) cement:sand, the third is the undercoat 13mm (mix 1: 3 :0.25) cement:sand:lime, the forth is two coats of Tyrolean finish (mix 1: 3) white cement to fine aggregate (Quartz) and all is according to specifications , drawings and supervisor engineer's instructions	M2	300		
6.3	Supply and make smooth external plastering 20mm thick for decoration at four faces : the first is the rough nail rendering (mix 1:1) cement:sand, the second is 5mm thick mortar (mix 1: 2) cement:sand, the third is the undercoat 13mm (mix 1: 3 :0.25) cement:sand:lime; the forth is make Finishing Coat, smooth surface with (1:1:1) cement:sand :lime. and all this is according to specifications , drawings and supervisor engineer's instructions	M2	200		
6.4	Supply and install terrazzo floor tiles (grade A) size 25cmx25cmx2.5cm with Basalt stone laid on 2.5cm mortar bed and 5 cm thick sand bed and terrazzo skirting 25cmx 7cmx1cm including all materials and testing as per specifications and drawings.	M2	320		
6.5	Supply and cast terrazzo edge beam 24cm wide x 6cm thick of the same kind and color of the floor tiles including smoothing the surfaces, expansion joints and edges (for corridors and thresholds.) as per specifications and drawings.	.Mr	38		
6.6	Ditto but for stair case handrail coping size 15cmx4cm.	Mr	15		
6.7	Supply and install local marble (grade A) size 25 cm wide x 3cm thick for windows sills laid on 2 cm thick mortar bed including polishing and grooving as approved by engineer and as specification and drawings..	Mr	45		
6.8	Supply and lay precast terrazzo stair treads size 35 cm wide x 4cm thick chamfered once , rebated once and laid on 2cm thick mortar bed same color and kind of the floor tiles and the price including terrazzo stair risers size 12.4cm high x2cm thick and skirting 20cm high x2cm thick on the both sides as specification and drawing.	Mr	35		
Total					
Bill No (A) - 7. PLUMBING works					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	<p>(1) In general rates for plumbing works shall include for:</p> <ol style="list-style-type: none"> 1. Developing shop and as built drawings 2. Cutting and forming all chases, recesses, holes, and the like, 3. Pipe sleeves, 4. Building of concrete and/or brick ducts in floors, walls ...etc., 5. Excavation, forming of trenches for services, concreting, bedding and back filling and ramming after laying, 6. Fixing brackets, clips, holder bats, hangers, and the like, 7. Temporary and final fixing, 8. Nails, screws, bolts, nuts, washers, holes, plugs, sleeves and the like, 9. Building in or cutting and pinning, 10. Testing and drawings, 11. Painting of pipes, 12. All work of other trades in connection with plumbing work including all making good. <p>(2) Rates for manholes and pits shall include excavation, concrete, benching, plastering, backfilling and cover as per Drawings and Specifications,</p> <p>(3) Rates for sanitary fittings, isolated taps and gullies shall also include all pipe work in connection therewith and connections thereto including connection to the nearest manhole or gully and to the cold water storage tank.</p> <p>(4) Rates for pipe work including pipe work in frames to shading sheds shall include for:</p> <ol style="list-style-type: none"> 1. Joints in the running length, 2. Nipples, connections, sockets, ferrules, couplings, back nuts, unions, and the like, 3. Bends, elbows, tees, reducers, access doors, cleaning eyes, blank caps, stop valves, and the like, 4. Welded joints and connections including grinding, 5. Lagging and wrapping, 6. Excavation, bedding and backfilling. 				
7.1	Supply and fix floor trap 4inch diameter, complete with heavy duty brass grating and 4" & 2" PVC drainage pipe to the nearest manhole or next F.T and including S trap if needed as specification and drawings.	No	3		
7.2	Supply and fix oil painted galvanized steel threaded pipe 3" including jointing, fittings Tee ,elbows ,shows,& fixing to walls with metallic brackets and 3 inch diameter wire balloon grating, caps on the top ends and floor traps in all floors as specification and drawings.	.Mr	35		
Total					
Bill No (A) - 8. Roofing works					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	<p>(1) Rates for foam concrete/ cement and mortar work shall include for:</p> <ol style="list-style-type: none"> 1. Supply and storage of cement. 2. Supply and storage of aggregates and water, 3. Mixing, 4. Hacking concrete, applying cement slurry or raking out joints of block work to form key, 5. Application to any surface, 6. Finish to surface, 7. Finish to falls and cross falls, 8. Forming bays including joints, 9. Finish to edges, 10. Making good around steel sections, pipes, tubes, bars, brackets, outlets, and the like, 11. Ends, intersections, ramps, and the like, on fillets, <p>(2) Rates for waterproofing shall include for:</p> <ol style="list-style-type: none"> 1. Preparation of surface, 2. Any area or width, 3. Cutting in edges. 4. Over laps, priming and treatment at the corners and floor drains. 5. Testing for the roof with water 6. Dressing over parapets and stub columns including forming groove to receive edge of plasticised bitumen membrane and sealing with elastic sealer. <p>(3) Rates for roof sheets shall include for:</p> <ol style="list-style-type: none"> 1. Side and end laps, Fittings including bolts, hook bolts, screws and washers, 2. Sheets of any width or length. 				
8.1	Supply and cast foam concrete with fine aggregates for roof screeding of average thickness 8 cm as shown in drawing. The item will include making the angle fillet 5x5cm around the boundary of the parapet and around opening in roof if exists.	M2	350		
8.2	Supply and lay one layer of plasticized bitumen roofing membrane with chipping 4 mm thick, including priming concrete surface prior to laying, dressing into rain water outlets to form water proofing seal and cover the angle fillets. The rate include verticals parts skirting as per specification and drawings. Note: Measurement will be for the horizontal projection	M2	350		
Total					
Bill No (A) - 9. Painting works					
	<p>Rates for painting and decorating work shall include for:</p> <ol style="list-style-type: none"> 1. Preparation of surface including puttying, sealing and priming, 2. Any area or width, 3. Any location, 4. Work in multi colours, 5. Cutting in edges, 6. Any taping and covering to protect areas and others. <p>All the painting materials should be approved and tested by approved local laboratory</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
9.1	Supply and Paint the internal walls up to a height of 2.2m above finishing floor level with one coat pendrole, two coats of putty, one undercoat primer and two coat of oil paint as specified in specification and approved by engineer.	M2	400		
9.2	Supply and Paint one-primer and minimum two coats of Poliside for internal walls, ceiling and drop beams as specification and drawings.	M2	600		
9.3	Supply and Paint, external walls with one coat of Pendrole primer and at least two coats of External quality of colored emulsion (Weather Shield) or equal approved as specification and drawings	M2	500		
Total					
Bill No (A) - 10.A. Electrical works for school building					
	General: *The items in general shall also include conduits, connection boxes, controls, wires, connectors, clamps, bolts, and connecting the cables to switchboards and common electric network are included in the unit price. * Contractor shall submit shop drawings for all electrical works to be approved by the Engineer before executing the work. * As-built drawings shall be submitted after handing over the work. * All the electrical works shall be executed according to Standards, drawings, specifications and supervisor engineer instructions. * Dismantling & Removing old lighting unit (fluorescent light fixture, glops, Etc) and move to school stores as per engineer instructions.				
LIGHTINGS FITTINGS					
10.1	Supply, install, connect and test Ac LED tube length 1200mm, (18-21)Watt , T8 lamp,Cap-Base G13, Efficacy more than 100 Lm/W, Flux more than 2000 Lumen, Color temperature 3000-4500, Power factor > 95%. The item includes dismantling and removing the existing flourecent tubes,ballasts ,condensers and rewiring to be compatible with instant Start and allows fixture to maintain original compliance.All works must be according to engineer's instruction. (Type is PHILIPS or equivalent)	NO	238		
10.2	Supplying and installing wires, PVC pipes and boxes for Lighting Unit or Ceiling Fan .The item includes all necessary equipments for installation and operation as per drawings, specifications and engineer instructions.	NO	20		
10.3	Supplying, installing connect and operating surface mounted LED lighting fixture 32W or 36W, European made. Model Vector 1258 LED # 180170 or equivalent (Type is LENA or equivalent). The item includes PVC conduits, J.bboxes, fixing screws (Galv.) and wiring and all necessary equipments for installation and operation as per drawings, specifications and engineer instructions.	NO	24		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.4	Ditto but 1x16 w or 18w with special reflector for black board . Model Specto LED # 343858 or equivalent (Type is LENA or equivalent).	NO	8		
10.5	Ditto but round bulk head light, water proof IP65, LED lighting fixture 16W . (Type is GAASH #552r404 or equivalent).	NO	10		
10.6	Supply, install, connect and test Ac LED lamp 16W, Flux more than 1000 Lumen, Color temperature 3000-4500, Power factor > 95%. (Type is PHILIPS or equivalent).	NO	30		
10.7	Ditto but external security flood lighting fixture, water proof IP65, LED lighting fixture 50W . (Type is GAASH or equivalent).	NO	2		
LIGHTING SWITCHES AND OUTLETS WORKS					
10.12	Ditto but triple pole switches with cover plate (Type is Bticino Matix or equivalent).	NO	5		
10.13	Ditto but two ways switch "Fixle"1P 16N (Type is Bticino Matix or equivalent).	NO	3		
10.14	Ditto but Light Pushbutton 16A 1P (Type is Bticino Matix or equivalent).	NO	3		
10.15	Supply, install connect and, testing single socket outlet 16A, 220v, 2p+E for flush or surface mounting, complete with PVC conduits, J.bboxes, wiring, and all necessary accessories. (Type is Bticino Matix or equivalent)	NO	10		
10.20	Supply and install 10" school electrical two bell with three push buttons connected together ,complete with PVC conduits, J.bboxes, wiring, and all necessary accessories to complete the job	L.S	1		
10.21	Supply and install electrical ceiling fan 220V125W, with its switch wires and connection , (Type is CHMC or equivalent)	No	3		
10.22	Supply , install and connect power amplifier as the following : Nominal max power 200w Frquacey response 50-1500HZ Signal To noise ratio > 80 db Outputs /ohms 4,8,16 ohm Outpust / volt 50, 100v the price includes supply & install 2 horn loud speakers , 100 W each, 2 microphones with stand and connection, include steel protection box around the loud speakers. (Type is Philips RCT or equivalent)	L.S	1		
10.23	Supply , install and connect amplifier socket out let,complete with PVC conduits, J.bboxes, wiring, and all necessary accessories to complete the job. (Type is Philips RCT or equivalent)	No	2		
ELECTRICAL DISTRIBUTION BOARDS					
10.25	Supply and install electrical switch board of size 80x60x20cm one door, the frame work is made of galvanized steel sheets 2mm thickness, painted by antistatic and insulation paint.The item includes busbars, wiring, insulations, plastic ducts, terminal blocks and all necessary equipments for installation and operation as per drawings, specifications and engineer instructions (Type is MOELLER or equivalent)	No	1		
10.26	Ditto but size 60x40x20cm	No	1		
	Supply and install the followings				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.27	a) NZMB- 63A/MCCB 3X63A, (MOELLER or equivalent)	NO	1		
10.28	c) LTL fuses 3x63A/100A, (JEAN MUELLER or equivalent)	Set	1		
10.29	d) KWH Meter 3X60A. (ISKRA or equivalent)	NO	1		
10.30	h) Three phase C.B 3x25A. (MOELLER or equivalent)	No	1		
10.31	i) two pole C.B 3x20A. (MOELLER or equivalent)	NO	1		
10.32	l) Single phase C.B 1x25A. (MOELLER or equivalent)	NO	1		
10.33	m) Single phase C.B 1x16A. (MOELLER or equivalent)	NO	5		
10.34	n) Single phase C.B 1x10A. (MOELLER or equivalent)	NO	5		
10.35	o) Three phase 4 poles residual current ELC.B 4x25A, 0.03A	NO	1		
10.36	q)Step relay 10A ,220V. (MOELLER or equivalent)	No	2		
10.37	R)KVAR Meter 3ph 60A. (ISKRA or equivalent)	No	1		
10.38	S)Capacitor unit 10KVAR complete with mcb 3X25A and resistor	No	1		
10.39	T)3 indication lamps R S T with resistance 220V,with LTL fuse3x36/6A	SET	1		
10.40	U)Current transformer (60/5A).	No	3		
10.41	V)Amper Meter (0-100).	No	3		
10.42	W)Voltmeter 0-500V with 7 positions selector switchwith LTL fuse3x36/6A.	SET	1		
CABLES AND CONDUITS					
	Supply and install the following cable				
10.43	c) XLPE cable 4x25 mm ²	MR	50		
10.44	d) XLPE cable 5x10 mm ²	MR	0		
10.45	e) XLPE cable 5x6 mm ²	MR	30		
10.46	Supplying and installing 60cm manhole with 8 ton cover, 15cm base coarse	No	4		
10.47	Supply, laying underground 4" PVC piping system for power cable at depth 90 cm The work includes excavation 50 cm width, backfilling with clean sand , laying pipes, warning tapes, all work must be according to supervisor engineer	MR	50		
10.48	Ditto but 3" PVC pipes	MR	20		
10.49	Ditto but 2" PVC pipes	MR	20		
MAIN ELECTRICAL CONNECTION TO GENERAL ELECTRICAL NETWORK					
10.50	Supply and erecting 3 phase electrical subscription 3x60A, the work includes municipality charges and connection all according to GEDCO requirements. Note: Any charges due to net improvement is not included	L.S	1		
10.51	Supply and install a wooden pole of 8.5m height and 1.5m to be driven in soil, the work includes painting the lower part of the pole by cold bitumen, all accessories should be used in connection.	NO	1		
10.52	Supply and install ABC cable 4x50mm ² with all accessories needed for connection Normally executed by "elec. Corporation" (optional)	MR	30		
Total of Bill 10.A					
Bill No (A) - 10.B. Electrical works for PV solar system					
MAIN DISTRIBUTION BORD (MDB)					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.53	Supply, install and commission main distribution panel board (MDB) size (100x80x30 cm) , one door,as specified and as shown on drawings, factory assembled wired and tested in accordance with international standards, including 2mm galvanized steel frame with antistatic paint, including busbars (160 A) ,neutral bus bar and earthing terminal ,and all necessary civil works for foundations,cable trenches and handing over clean, tested and in operating conditions as GEDCO specifications. (Type is MOELLER or equivalent)	NO	1		
10.54	Supply and installation of a manual changeover switch (MTS) 4X40 AMB for plug-and-play between the inverter and the main AC source as drawings and instructions of the supervising engineer ,(Type is Hager or equivalent).	NO	1		
10.55	Supply and install surge arrestor protection at the incoming feeder 3- phase 40KA including connection to the ground with flexible 25 mm2 yellow/green cable. The system shall protect the switch panel against the lightning shocks. (Type Furse or equivalent).	No.	1		
10.56	Supply and install LTL fuses 3x63A/100A, (JEAN MUELLER or equivalent)	Set	1		
10.57	Mulded Case Circuit Breaker MCCB 3X63A/NZMB-63A. (Type is Moeller or equivalent).	NO	1		
10.58	Miniature Circuit Breaker MCB 3X63A. (Type is Moeller or equivalent).	NO	1		
10.59	Miniature Circuit Breaker MCB 3X50A. (Type is Moeller or equivalent).	NO	2		
10.6	Miniature Circuit Breaker MCB 3X40A. (Type is Moeller or equivalent).	NO	2		
10.61	AC switch disconnecter 3X(32A/50A). (Type is Moeller or equivalent).	NO	3		
10.62	Miniature Circuit Breaker MCB 3X25A. (Type is Moeller or equivalent).	NO	10		
10.63	Ditto but residual current circuit breaker RCB 4X40/0.03A. (Type is Moeller or equivalent).	NO	1		
10.64	Ditto but MCB 2X25A. (Type is Moeller or equivalent).	NO	3		
Sub-Distribution Boards (SDB)					
10.65	Ditto but Sub distribution-board 24 CB capacity OUTDOOR IP65, (Type is HAGAR or equivalent)	NO	5		
10.66	Ditto but MCB 3X16A. (Type is Moeller or equivalent).	NO	10		
10.67	Ditto but MCB 2X10A. (Type is Moeller or equivalent).	NO	30		
10.68	Ditto but residual current circuit breaker RCB 4X25/0.3A. (Type is Moeller or equivalent).	NO	5		
10.69	Supply and install Contactor 4 poles,220V, with auxiliary contacts,220V coil, AC3 category (Type is MOELLER DILMP32-10 or equivalent).	No.	12		
10.7	Supply and install Time delay electronic relay, with one N.O. and one N.C. 10A output contacts, and 2 sensor input points, supply voltage 24V dc and/or 230V ac, according to specifications and engineer's instructions.(Type is KRK or equivalent).	No.	6		
10.71	Supply and install Control relay, with N.O. and N.C. 10A output contacts, supply voltage 24V dc and/or 230V ac, according to specifications and engineer's instructions.(Type is Finder or equivalent).	No.	6		
Cables and conduits					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
	supplying, connecting, and termination of the following XLPE CU cables with all required electrical and civil works, the item includes dismantling and re install the existing cables and laying under ground PVC piping system, manholes, excavation, warning tapes, backfilling and all required civil works to finish the work according specifications and demands of the supervising engineer, to connect cables terminals from source to destination. The work will include re distribution of all existing loads of the main panel to achive the balance of each phase. According to drawings, specifications, instructions, and demands of the supervising engineer. as follow:				
10.72	N2XY-XLPE cable 5*16 mm2	MR	120		
10.73	N2XY-XLPE cable 5*10 mm2	MR	200		
10.74	Flexible Single core copper wire isolated with pvc size 4mm2	MR	50		
10.75	N2XY-XLPE cable 5*6 mm2	MR	200		
Total of Bill 10.B					

Bill No (A) - 10.C. PV solar system components

	<p>The system is designed to cover the lighting loads in the School Buildings. The system will be grid interactive connected system, which will allow for many power sources options. The system will import from the grid when loads are being more than the generated from PV and supply surplus electricity to the batteries when PV generates more than the loads, the batteries can be charged from Grid if PV output is not enough for loads and batteries.</p> <ul style="list-style-type: none"> • Contractor shall submit shop drawings of all electrical ,civil and solar photovoltaic complete system works,including a single line diagram showing all the components of the PV system, DC and AC distribution boards, PV panels lay out and backup systems and wires cross section for all the system to be approved by the Engineer before executing the work. As well as the catalogs of each component showing the requested specifications stated at the bill of quantity. • As-built drawings shall be submitted after handing over the work. • All junction boxes and DBs will be lockable type. • Upon completion of the installation, the contractor shall organize an on site training program involving nominated employer's staff. Such a program shall be carried out during the commissioning phase. The cost of the training shall be deemed to have been included in the tendered rates. • The price includes all builders' works, making good and reinstatement including necessary materials and workmanship as well as removal of unwanted materials to dump sites approved by the engineer 				
--	---	--	--	--	--

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.77	<p><u>PV Modules – 13 KWp:</u> Supply, install, connect and operate Mono Crystalline Photovoltaic Solar Modules with all mounting structure and other material needed to have complete job ready for installing high quality PV modules with total arrays capacity 13 KWp. (Type is Canadian Solar or equivalent), the Item Includes supply, install & connect the following:</p> <ul style="list-style-type: none"> • Water proof PV junction boxes IP65(combiner) for each array including DC Fuses, DC switch disconnectors, bus bars ,terminals, ducts, supports & labels suitable to the PV arrays loads. • Solar DC cables appropriately sized to connect the PV solar cells together and to the J.B and from J.B to the inverter to have a complete operational circuit with all conduits, clamps , trays and cable end terminations which shall be DC plug and socket connectors . The DC cables must be sized in accordance with the installation requirements applicable on site, the allowable voltage drop for DC cables between PV Arrays and inverter less than 3%. • The number of panels based on 250 Wp for each solar panel. <p>The contractor should provide certified panel characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for each solar panel for a period not less than 20 years. The Manufacture testing certificate should be provided for the PV panels and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. All works and materials must be according to the drawings, specifications and supervisor engineer instruction's and approval.</p>	Module	49		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.78	<p><u>Inverter – 15 KW:</u> Supply, install, connect and operate DC/Ac grid tie inverter 3-phase 15 KW with data communication unit with Ethernet connection .Type is (SMA or equivalent) with minimum 2 MPP inputs, efficiency 98% and suited to any PV module configuration, the inverter depending on the system design and installation proposed and for the future extended. The DC max power input rating should be equal 15 kWp of the PV modules capacity at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65.The rated AC output power should be 15 kW compatible with the AC loads design. The inverter must include the safety concepts such as (triple protection with optiprotect, electronic string fuse, self-learning string failure detection, DC surge arrestor) to ensure max availability. The price includes : * Supply ,install and connect Sunny WEBBOX for the PV system installedall compatible with the inverter,Bluetooth &Wireless Technology ,with all data cables and connection needed to complete the job. * Supply ,install and connect all DC cables appropriately sized in accordance with the installation requirements and to connect the inverter with PV system designed with all conduits, clamps, trays and cable terminations end which shall be DC plug and socket connectors and workmanship needed to have a complete job, the allowable voltage drop for DC cables between inverter and PV system less than 3%.</p> <p>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer), maintenance catalogues and manufacturers warrantee for inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No.	1		
	<p><u>Battery Inverter – 5 KW:</u> Supply, install, connect and operate DC/Ac Battery Inverter 5kW nominal capacity compatible with on-grid, 1 & 3 phase system and connectable in parallel and modularly extendable. (Type is SMA or equivalent). The Battery Inverter must include the following concepts such as (Ac and DC coupling, High efficiency, intelligent battery management for maximum battery life, charge level calculation, extreme overload capability, and battery temperature sensing and battery current measurements).The rated AC output power should be 5 kW compatible with the AC loads design, and the maximum input AC power from the grid 13 kW .The price includes: * Supply ,install and connect Remote Control Unit for the PV system installedall SMA /SRC-20 with all data cables and connection needed to complete the job.</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.79	<p>*Supply ,install and connect DC cables appropriately sized in accordance with the installation requirements to connect the Backup unit with DC battery fuses box with all conduits, clamps, trays and cable terminations end which shall be DC plug and socket connectors and workmanship needed to have a complete job, the allowable voltage drop for DC cables between battery inverter and batteries less than 3%. The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer , maintenance catalogues and manufacturers warrantee for each inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No.	3		
	<p>Battery Bank: Supply, install, connect and operate (VRLA) or (AGM) deep cycle Batteries with a 12-volt dc, the demand energy is 52 kWh per day, the total capacity of battery bank must include 60 % DOD @ C10. The battery bank voltage is 48 Vdc. Type is (Deka or equivalent).The battery must provide high-quality and achieving superior performance, the manufacturing date must be new and not more than 6 months, suitable for every type of applications specially for solar renewable energy, designed Service Life 10 years with low internal resistance, designed to be deeply discharged and recharged hundreds of times. The Battery should provide benefits of being maintenance free, case flame retardant & non-hazardous. The Item Includes supply, install &connect the following:</p>				

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.80	<ul style="list-style-type: none"> • All necessary DC cables between the batteries together and to the battery fuse box to have a complete operational circuit with all conduits, clamps, stainless steel bolts, washers and cable end terminations needed to fix, all DC cables must be sized in accordance with the installation requirements applicable on site ,the allowable voltage drop must be less than 3%. • Battery mounting structure from hot galvanized steel stand with shelves and dividers for hosting the batteries and all other material needed to have a complete job ready . • Complete earth system for neutrals including (electrodes 15mm², manhole with iron cover, earth joints, clamps, conduits and 50 mm² flexible copper wire from the neutral bus bar in the battery fuse box to the electrode. All precaution to have the resistance < 2Ω. • The number of batteries based on 210 amp-hours of capacity for each one. <p>The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer , maintenance catalogues and manufacturers warrantee for each inverter for a period not less than 10 years. The Manufacture testing certificate should be provided for the inverter and the contractor will provide the necessary arrangements for inspecting of the supervision team of the panels before transporting to Gaza. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No.	38		
10.81	<p><u>PV Mounting structure:</u></p> <p>Supply and install Module mounting structure from hot galvanized steel foundation profile suitable to the dimension of selected PV modules and PV numbers, the mounting provides a fixed inclination of the modules from 30 degree to 32 degree with vertical supports, plates, screws and casting concrete foundations B250 (0.4*0.4*0.2) m3 for each leg, the structure profile includes bracing and double hot galvanized angles for dividers. The mounting structure components are bonded together to guarantee potential equalization. The price includes supply and install a complete earth system (electrodes 15mm², manhole with iron cover, earth joints, clamps and 25 mm² flexible copper cable from the structure to the electrode, all necessary copper wires to connect arrays and modules in one loop for earthen. All precaution to have the resistance < 2Ω.</p> <p>All works and materials must be according to drawings, specifications and supervisor instructions and approval.</p>	L.S	1		

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
10.82	<p><u>Battery Fuse Box:</u> Supply, install, connect and operate battery DC fuse box (500*375*225 mm) as an external DC distributor to protect the battery connections of the inverters .Type is (SMA or equivalent), the box must be water proof protection with IP65, simple wall mounting, suitable connections for three battery inverters and up to six DC connections inlet on the battery side, the item includes (2 LTL 250/400A , 6 fuses 250A , cable glands, with all necessary DC cables from the battery bank and to the fuse box and from the fuse box to the battery inverters to have a complete operational circuit with all conduits, clamps, stainless steel bolts, washers and cable end terminations needed to fix, all DC cables must be sized in accordance with the installation requirements applicable on site ,the allowable voltage drop must be less than 3%. The contractor should provide certified characteristics, shop test performance curves, spare parts regular (as recommended by manufacturer , maintenance catalogues and manufacturers warrantee for battery fuse box for a period not less than 3 years. The Manufacture testing certificate should be provided also. All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No	1		
10.83	<p><u>Wall mounted exhaust:</u> Supply, install, connect and operate wall mounted exhaust fan of 8" diameter Capacity (250 cfm) type is (VENTA or equivalent) at static pressure 60 Pascal for the battery room , to be tightly installed complete with all necessary supports, and all required electrical cables, conduits, mcb 10A and needed to fix, all according engineer's approval. The price shall include opening duct in the block for the fan, plastering, painting, repair all damages and all other materials needed to have a complete job ready according to the engineer's instruction and approval.</p>	No	1		
10.84	<p><u>3-Phase Digital KWH Meter:</u> Supply,install,connect and operate 3-phase digital KWH meter, 3*32 A (ISKRA or equivalent) with all other material needed to have a complete job ,The kWh meter has a digital interface for monitoring by the Remote Monitoring System .All works and materials must be according to the drawings, catalogues, specifications and supervisor engineer instruction's and approval.</p>	No	3		
Total of Bill 10.C					
Total of Bill 10					

Item No.	Description	Unit	Quantity	Unit Rate US \$	Total Amount US \$
<u>SUBTOTAL OF BILL (A) - NEW BUILDING SUMMARY</u>					
1	Excavation & Earthworks.				
2	Concrete Works.				
3	Building Works				
4	Carpentry works				
5	Metal works				
6	Finishing works				
7	Plumbing works				
8	Roofing works				
9	Painting works				
10	Electrical Works				
-	SUB TOTAL				

<u>SUMMARY OF AI MA`ARI SECONDARY GIRLS SCHOOL</u>					
A	New Building				
-	TOTAL				

OVERALL SUMMARY

NO.	Description	Total price (\$)
1	Total of Al Ma`ari Primary Boys School - US\$	
2	Total of Al Ma`ari Secondary Girls School - US\$	
Total		

Total in numbers:

Total in letters:

Name of the contractor:

Authorized signature:

Signature and Sealing:.....

Title:

Telephone:.....

Fax:

Mobile: