



THE UNITED NATIONS OFFICE FOR  
PROJECT SERVICE(UNOPS)

PROJECT NAME  
RENOVATING EXISTING BASEMENT FLOOR AT  
RAMALLAH MEDICAL CENTERS IN WB

The Palestinian Medical Complex  
Ramallah Centre

**BOQ**

DIVISION NO. 0 - Mobilization					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
	<b>Mobilization ( Please read carefully)</b> Items under this section will not be priced independently; all costs generated by the following items are included in the unit rates of the different items in the Bills of Quantities.	-	-	-	-
	Contractor to provide a Project Identification sign size (2m × 2m) , Contractor to submit shop drawing for UNOPS Engineer Approval, also one safety sign (1.2m*1.2m) UNOPS will provide detail. In addition, the contractor will be required to supply and install a plaque stone first choice marble (80*80 cm ) will be required to be installed after the renovation work completion ( stone marble sample, details will be agreed with UNOPS)	-	-	-	-
	On each site:2 No (Minimum) Safety Harness with lanyards , 3 fire powder 6Kg fire extinguishers, and selection of gloves & safety glasses to be kept in UNOPS Office at all time, also contractor should in his price include the cost of providing all his staff and workforce with suitable PPEs ( i.e. Hard Hat, Safety Boot, Dust Masks, Safety Vests and Safety Glasses) .Any safety requirements and safety PPE generated by the items in this bill of quantities for the entire project are included in the unit rates of the different items in the bill of quantities	-	-	-	-
	The Contractor shall provide and maintain prefabricated porta-cabin offices on the site ( one office with two desks and meeting table with chairs) or construct at site for the accommodation of his staff and supervision staff including all necessary temporary electrical, HVAC and plumbing works, and such office shall be open at all reasonable hours to receive instructions, notices or other communications. On completion of the works the Contractor's site office shall be removed from site and the area made good to the satisfaction of the Engineer.	-	-	-	-
	The contractor shall provide all testing required by an approved material testing lab including testing walls, proposed MEP openings in walls before demolishing and any other integrity check requested by the engineer. The contractor shall submit a report of the walls assessment prior demolishing together with the demolishing works method statement prior the works commencement. The lab tests are required once the false ceiling is dismantled and prior any demolition works, then the lab need to check, test and report the integrity status : *Any existence of bearing walls. *Confirm the thicknesses of the existing block walls and for the ones that will be demolished that no harm can occur to the existing structural members. *Confirm the status of the concrete slab and beams above the false ceiling. *Highlight any structural defects ( if any ) in the existing structural frame.	-	-	-	-

DIVISION NO. 1 - EXCAVATION, DEMOLISHING WORKS					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
<b>1</b>	<b><u>EXCAVATION, DEMOLISHING WORKS</u></b> The price include removal of materials from site.				
<b>1.1</b>	Demolition for any required demolition for existing buildings as per the site demolition plan , removal of all demolished materials, and making good to accept new works. Price includes complete preparation of site for new works, including demolition and removal of reinforced concrete elements , masonry walls , hollow concrete block partitions, plaster, gypsum board partitions, gypsum boards falseceiling, metal falseceiling, falseceiling with other type, steel and wooden doors, windows, floor and wall tiles, thresholds, skirting, tile and skirting end units in place of demolished walls, bathroom units, mechanical, sanitary and electrical installations, existing lighting fixtures and ceiling fans..etc....., pipes, trunking, kitchen cabinets and counter tops, water tanks, piping, protection steel, sun breakers, and all required to prepare for new works.  Price to include the disposal of all excess demolished and uninstalled materials and debris to a location outside the site and to a location approved by the local authorities.	LS	1		
<b>Total of (Division No. 1) To be carried to Summary</b>					

DIVISION NO. 2 -SKELETON WORKS - CONCRETE WORKS					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
2.1	<b>Slab on Grade</b> Supply and Cast reinforced Concrete Grade B200 (fcu(10x10x10cm)=20N/mm2)) for slabs on grade, including 1 Dia 12 mm @20 cm reinforcement for the SOG and 2 Dia 12 mm top & bottom with Dia 8mm stirrups @ 15 cm for the 20*20 cm ground beam, well compacted base coarse 20 cm watered, leveled and compacted to a min of 100% field density, and all necessary formwork complete as per drawings, specifications and as per engineer instructions.				
2.1.a	120mm thick slab on grade (external) with polyethelene sheets (two layers of 200micron sheets) underneath & where required including ground beams, ramps,staris.(AD08,AD09,AD10)	m3	5		
2.1.b	Ditto, but for the outdoor VRF units base.	m3	4		
Total of (Division No. 2) To be carried to Summary					

DIVISION NO. 3 -SKELETON WORKS - STONE WORKS					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
<b>3.1</b>	<b>Stone Work</b> Supply and build JMMAEEN ,TAFAWWH first quality (Class A) stone cladding to walls where needed and as indicated on drawings,40 mm thick yellow , white stone, mulatash, brushed , dressing without trim, including special stones for angles,special stones courses where cladding overall thickness converted, openings, sills ,lintels arches with variuos shapes & dimensions etc..., chamfers, grooves, cutting, jointing, cleaning using sand blower machine and pointing using white cement and sand, price also includes applying and treatment of compression joints under the slab row, and the expansion joint (of stones). The price also includes 3cm extruded polystyrene thermal insulation sheets, 4mm galvanized steel welded mesh (15cm each way),(10-15cm) concrete filling of plain concrete Grade B-250. complete as per drawings, specifications and as per engineer instructions.				
3.1.a	Supply and Build Stone Walls course height 250mm,4cm stone, concrete (B-200) backing for ramps & Flower boxes price inlcuded drainge water by using pvc pipe 2" and where indicated in drawing.(AD09)	m2	15		
<b>3.2</b>	Supply and install stone tiling mattabeh running (سراحي) not stack bond, dressing without trim, price includes cement and sand mortar bed, sand and fine aggregate fill material mixed with cement (80kg/m3 of fill) , cutting, fittings, trims, edges, pointing, cleaning, price also includes spacers 5mm between tiles complete as per drawings, specifications and as per engineer				
3.2.a	stone tiling mattabeh for Ramps.(AD08,AD09)	m2	18		
<b>3.3</b>	<b>Coping</b> supply and build JMMAEEN first Quality "Local stone" coping 50mm thick including cement and sand mortar bed, and all necessary fixings dowels, chamfering, mattabeh dressing, weep groove, fittings, jointing, pointing using white cement and sand, and accessories complete as per drawings, specifications and as per engineer instructions.				
3.3.a	Coping for flower box.(AD09)	m2	5		
Total of (Division No. 3) To be carried to Summary					

DIVISION NO. 4 -SKELETON WORKS - CONCRETE BLOCK WORKS					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
4.1	<b>Block Works</b> Supply and build hollow concrete block walls, density not less than 2000kg/m³, compressive strength not less than 3.5N/mm² at 28 days. including all lintels, reinforcement and all necessary formwork, 30mm elastic joint between wall & Ceiling (backing rod 30mm from each side, approved joint sealant from each side ), end wall fixing accessories , and all related works. complete as per drawings, specifications and as per engineer instructions.accordaing to (A06)				
4.1.a	100mm thick internal walls.	m2	260		
4.2.c	200 mm thick internal wall including the internal ramp side wall	m2	70		
Total of (Division No. 4) To be carried to Summary					

DIVISION NO. 5 - INTERNAL FINISHES - PLASTERING					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
5.1	<b>Internal Plastering</b> 20mm thick smooth-finished ready mixed plastering in two coats over one slurry coat, including all necessary angle beads and wire mesh, thickness gage, plaster stop on both sides. complete as per drawings, specifications and as per engineer instructions accordaing to (AD11). On site mix can be submitted, agreed and applied as agreed with the UNOPS team. Angles and accessories will be installed at doors edges, corners ... etc)				
5.1.a	To block walls	m2	520		
Total of (Division No. 5) To be carried to Summary					

DIVISION NO. 6 - INTERNAL FINISHES - Tiling Flooring & Marble Works					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
<b>6.1</b>	<b><u>Ceramic Wall Tiles</u></b> First quality European made, glazed ceramic wall tiles price includes cement and sand mortar rough plastering coat under, all necessary fixings, aluminum angles at corners & edges, accessories, adhesives, spacers (3mm) between tiles, pointing with cement base grout and cleaning, complete as per drawings, specifications and as per engineer instructions				
6.1.a	For bathrooms and kitchen walls 400x800x8mm or (any other size approved by UNOPS engineer ) as per wet area Tiles detail shown on drawings (A08,AD01,AD02,AD03)	m2	155		
	<b><u>Floor Tiles</u></b>				
<b>6.2</b>	<b><u>Ceramic floor Tiles</u></b> First quality European "anti slip" ceramic floor tiles, cement and sand mortar bed, sand and fine aggregate fill material(min10cm) mixed with cement (80kg/m3 of fill), cutting, fittings, trims, spacers (3mm) between tiles, pointing with anti bacterial type grout, and cleaning complete as per drawings, specifications and as per engineer instructions				
6.2.a	For bathroom and Kitchens floors size 400x800x8 mm as per Ceramic Tiles detail shown on drawings (A08,AD01,AD02,AD03). Other tiles size can be submitted and approved as agreed with the UNOPS team	m2	35		
<b>6.3</b>	<b><u>Porcelain Tiles</u></b> Supply and install Tiles Porcelain of approved European best quality (matte tiles ), price includes skirting (100mm height) , (1:4) cement sand mortar bed, sand and fine aggregate fill material mixed with cement (50kg/10m2 of fill), cutting, fittings, trims, spacers (2mm) between tiles, pointing with cement base grout, and cleaning complete as per drawings, specifications and as per engineer instructions <b>Note1:</b> All Tiles should meet high standards (Through Testing) of Abrasion, Absorption, dimension and plane accuracy. <b>Note2:</b> Skirting of all types will not be measured (it should be held to the floors' measurements).				
6.3.a	To floors, size 50x50x10 mm tiles as per Porcelain Tiles detail shown on drawings. according to (A08). Other tiles size can be submitted and approved as agreed with the UNOPS team	m2	450		
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<b>6.4</b>	<b><u>Marble</u></b> Supply and install local marble tiles price includes cement and sand mortar bed, sand and fine aggregate fill material mixed with cement (80kg/m <sup>3</sup> of fill) , cutting, fittings, trims,curve edges,pointing with stock, polishing, and cleaning complete as per drawings, specifications and as per engineer instructions. Skirting of all types will not be measured but are included in the measurement unit down.				
6.4.a	Local marble to thresholds, 30 mm thick (AD07 )	M.R	20		
<b>6.5</b>	<b><u>Stairs Tiling</u></b> Supply and install local marble for stairs & landings tiles price includes cement and sand mortar bed, sand and fine aggregate fill material mixed with cement (80kg/m <sup>3</sup> of fill) , cutting, fittings, trims,curve edges,water stop edge, pointing with stock, polishing, and cleaning complete as per drawings, specifications and as per engineer instructions. Skirting of all types will not be measured but are included in the measurement unit down. price also include backfilling for first two steps to raised the landing level to 0.34 m.(AD08,AD10)				
6.5.a	For landing 500x500x30mm tiles.	m2	16		
6.5.b	For treads 30mm thick with nosing chamfered, price includes stair riser thickness of (20mm) thick.	M.R	5		
<b>6.6</b>	Supply and Apply Pvc Roll 4 mm thick . Price to include adhesives and welding and all required complete as per specifications and as per engineer instructions .(A08). Tiling under these sheets will be measures as per the related tiling BoQ item	m2	100		
<b>Total of (Division No. 6) To be carried to Summary</b>					

DIVISION NO. 7 - Carpentry and Joinery WORKS					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
<b>7.1</b>	<b><u>Wooden Doors (Veener Finished)</u></b> Supply and install 45mm Soft solid Wood Core, with 5 mm Hard Wood With Resinbonded Veneer Mahogany Wood Both Side, metal frame Gauge 16 Dark Color, Stainless Steel Lever Handle, including frames and sub-frames, ironmongery, glass, cylinder min length 6.5cm of top quality (Wally type) or equivalent, handles, kick plates, door Stoppers, painting: two putty coats, under coat and two finishing oil paints coats in accordance to the specifications, Edge protection rubber strip along the whole height of the door. complete as per drawings, specifications and as per engineer instructions(A11,A16)				
7.1.a	Type WD1, size 0.75x2.10m, aluminum louvered	No	4		
7.1.b	Type WD2, size 1.10x2.10m, aluminum louvered	No	2		
7.1.c	Type WD3, size 1.00x2.10m, aluminum louvered	No	2		
7.1.d	Type WD4, size 0.90x2.10m, aluminum louvered	No	7		
<b>7.2</b>	<b><u>Wooden Doors (Plastic Laminated Finished)</u></b> Minimum 45mm fire rated solid wood core with 5mm hard wood with laminated plastic sheets (Both side). Metal frame gauge 16 dark color. Stainless steel lever handle, stainless steel panic push bar, including frames and sub-frames, ironmongery, glass, cylinder, handles, 4mm clear glass with vision, door Stoppers, in accordance to the specifications, Edge protection rubber strip along the whole height of the door complete as per drawings, specifications and as per engineer instructions.(A11,A17)				
7.2.a	Type WD5, size 1.80x2.10m (90 minute fire rated)	No	1		
<b>7.3</b>	<b><u>Kitchen Cabinets</u></b> Supply and install floor and wall mounted cabinets, including shelves, sashes, handles, hinges of first quality, and partitions, comprising of 17mm thick plywood body, 17mm thick MDF leaf, all covered on both sides and exposed edges with thermoformed fire retardant plastic material (Formica) including all necessary fixings, fittings, hardware, accessories, complete complete as per drawings, specifications and as per engineer instructions (Color and design to be approved by the Supervising Engineer)				
7.3.a	For lower cabinets 900mm height including natural granite top (30mm), water stop around and skirting according to details.(AD03,AD04). Shop drawings to be submitted for UNOPS approval	M.R	2.5		
7.3.b	For upper cabinets 750mm height.(AD03,AD04)	M.R	2.5		
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<b>7.4</b>	<b><u>Reception's counters</u></b>				
	Supply and install Counter consisting of work surface and transaction counter; including brick support structure MDF and plywood core, backing and support framing; treated soft wood blocking, glazing and concealed galvanized steel fixings and accessories, 20mm natural granite counter top, skirting all works complete as per drawings, specifications and as per engineer instructions				
7.4.a	Counter at basement Floor.(AD06)	M.R	3.4		
<b>Total of (Division No. 7) To be carried to Summary</b>					

DIVISION NO. 8 - STEEL AND ALUMINUM WORKS					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
<b>8.1</b>	<b><u>Fire Rated Steel Doors</u></b> Supply and install Hollow Steel With 20 Gauge Face Skin & 18 Gauge Ribs In Between, Metal Frame Gauge 16 Dark color, Stainless steel Lever Handle, Stainless Steel Panic Push Bar, Door Closer, fire rated (90 minutes) failure time and (30min primary failure time ), including all necessary fixings, fittings, locks with master key, glazing, insulation foam, accessories, mastic, hardware and painting complete as per drawings, specifications and as per engineer instructions . Note :the price also include convert window opening to door opening , demolished and remove in the external wall and transfer all waste from the site to approved site by authorities (A11,A17)				
8.1.a	Type SD01, size 1.10x2.10m.	No.	2		
<b>8.2</b>	<b><u>Aluminum Windows and Doors</u></b> Supply and install locally made double glazed , and Double Thermal insulated aluminum profile windows and doors Extrusion Section 7700 for window , 9000 for door or equal With approved Color comprising 4 mm thick Tempered clear glass (European made GLAVERBEL or equal) ,for inner panels, outer panel of 4 mm thick Tinted Reflective Tempered glass Thermal Self cleaning glass panel (U value =1.7 W/m2.K) and 6 mm thick air gap between, Solar Factor 32% weather shield silicon between two panels (As Spectrem 2 from TREMCO or equal) including double framing rubber, Sections' curving according to window shapes Fixed or sliding or hinge or tilt and turn Panels, aluminum woven mesh fly screen, sand blasted decorations according to details, door's closers (Jacks by Manufacturer or YALE or equal), doors stoppers, cylinders of approved quality with Master key System, brushed stainless steel (316)cylindrical handles (1600mm height), all necessary frames, sub frames, fixing, fittings, accessories weather stripping and hardware. complete as per drawings, specifications and as per engineer instructions (A11,A18) <b><u>Note 1:</u></b> All Hardware and fittings should be made by the Manufacturer. <b><u>Note 2:</u></b> All certifications should be submitted.  <b><u>Note 3:</u></b> price also include,Make opening in external wall				
8.2.a	Type W01, size 2.30X1.00m	No.	2		
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<b>8.3</b>	<b>External Canopy</b>				
	Supplying and installing all aluminum works for a canopy consist of aluminum extruded panel ,steel tube ,aluminum gutter , fixing, welding, fittings, accessories, painting complete as per drawings, specifications and as per engineer instructions.(AD11)				
8.3.a	At Entrances	m2	6		
<b>8.4</b>	<b>Handrails and Railings</b>				
	Supply and install galvanized steel railings; welded construction; 50 mm diameter pipe posts and handrail, 30 mm pipe auxiliary rails, 100 mm diameter cover plates at base of posts, galvanized steel anchor bolts and fixings price to include tubes, fixing, welding, fittings, accessories, painting complete as per drawings, specifications and as per engineer instructions.				
8.4.a	Handicapped Ramps Handrails of 50mm steel pipes. Price to include Fixing complete, oil paint three coats in addition to primer coat.(AD08,AD09)	M.R	33		
<b>8.5</b>	Supply and fix all toilet accessories for all the toilets as a job, including toilet paper holders, hand paper containers, soap dispenser, grab bar, Mirrors with stainless steel frame, as follows, All to be done as per drawings, specifications and the approval of the Engineer.				
8.5.a	Heavy duty 304 Stainless Steel toilet paper holder, as manufactured by BOBRICK model B-543 or equal, for single roll to be fixed at wall with all fixing accessories needed.	No.	4		
8.5.b	Heavy duty 304 Stainless Steel Spare toilet paper holder, as manufactured by BOBRICK model B-541 or equal, for single roll to be fixed at wall with all fixing accessories needed.	No.	4		
8.5.c	Heavy duty 304 Stainless Steel towel paper dispenser, as manufactured by BOBRICK model B-4262 or equal, to be fixed at wall with all fixing accessories needed.	No.	4		
8.5.d	Heavy duty 304 Stainless Steel vertical tank -soap dispenser, as manufactured by BOBRICK model B-2111 or equal, to be fixed at wall with all fixing accessories needed.	No.	4		
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8.5.e	Heavy duty 304 Stainless Steel two wall horizontal grab bar 40x80cm as manufactured by BOBRICK model B-6861 or equal, to be fixed at wall with all fixing accessories needed.	No.	4		
8.5.f	Heavy duty 304 Stainless Steel wall mounted swing up grab bar as manufactured by BOBRICK model B-4998 or equal, to be fixed at wall with all fixing accessories needed.	No.	4		
8.5.g	Mirror with 304 Stainless Steel frame wall mounted with tempered glass size (40X60cm) as manufactured by BOBRICK or equal, to be fixed at wall with all fixing accessories needed.	No.	4		
<b>8.6</b>	Supply and Fix Galvanized or PVC coated Steel mesh , including 6.5cm diameter, 3mm thick GI railings and 50mm gauge no.09 (3mm) woven galvanised or PVC coated mesh or an approved equivalent, top and bottom rails welded to vertical posts fixed on 20x20x30cm concrete column stubs and mesh fixed to GI post and rails, all as per Manufacturer's specifications and detail drawings. (Prices to include double swing Steel gates access to inside within the system) Price also includes corrugated sheets 1 mm for the roofing of this area including all nessessary support works ( 4*8*3 mm steel tubes for coulms and beams)				
8.6.a	Cover round outdoor VRF units	MR	12		
Total of (Division No.8) To be carried to Summary					

DIVISION NO. 9 - PAINTING and FALSE CEILING WORKS					
Item	Description	Unit	Qty.	Rate	Amount
				USD(\$)	USD(\$)
<b>9.1</b>	<b><u>Suspended Ceiling (PERFORATED METAL SHEETS)</u></b>  Supply and install metal tiles with plain surface, suspended ceiling, the price includes all the necessary accessories, Aluminum angles, galvanized suspension system "Donn-USG" type or equivalent, with anchors to structure, and protective electrostatic applied polyester powder paint of 70-80 micron, complete as per drawings, specifications and as per engineer instructions(A10).				
9.1.a	For Wcs, Bathrooms & where indicated on plans	m2	32		
<b>9.2</b>	<b><u>Suspended Ceiling ( Accoustic Tiles)</u></b>  Supply and install accoustic tiles with plain surface, fire proof, sound absorption in the low frequency range "Armstrong" or Equivalent type 60X60 cm, the price includes all the necessary accessories, (Z + L ) Aluminum angles, galvanized suspension system "Donn-USG" type or equivalent, with anchors to structure, complete as per drawings, specifications and as per engineer instructions(A10)..				
9.2.a	For ceiling where indicated on plans	m2	260		
<b>9.3</b>	<b><u>Suspended Ceiling (Moisture &amp; fire rated Resistant Gypsum Boards ceilings)</u></b>  Supply and install Moisture Resistant & fire rated Resistant Gypsum Boards ceilings (12.5mm thick), with galvanized metal studs (70mm width @ 400mm CC) the price includes all the necessary accessories, preperation of ceiling putty works, emulsion painting, fixing with the ceilings with variable heights, complete as per drawings, specifications and as per engineer instructions(A10)..				
9.3.a	To drops at rooms and corridors perimeters with variable height from ceiling. <b>Note:</b> drops with width more than (800mm the distance from adjacent wall mainly in toilets), would be measured under item (9.1.a) above.	M.R	300		
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	<b><u>Painting</u></b>				
<b>9.4</b>	<b><u>Emulsion Paint</u></b>				
	Supply and paint top quality local manufactured washable, moisture resistant emulsion paint, of one prime coat, two putty coats for the entire painted areas and two finishing coats, including preparation works, all needed to the work, with the color as per engineering instruction. complete as per drawings, specifications and as per engineer instructions(A08)				
9.4.a	For concrete or block walls (interior walls)	m2	550		
<b>9.5</b>	<b><u>Oil Paint</u></b>				
	Supply and paint top quality local manufactured oil paint, of one prime coat,two putty coats for the entire painted areas undercoat layer and two finishing coats, including preparation works, putty coats all needed to the work, with the color as per engineering instruction complete as per drawings, specifications and as per engineer instructions(A11)				
9.5.a	for concrete or block works 120 cm height	m2	140		
<b>Total of (Division No. 9) To be carried to Summary</b>					



DIVISION NO. 10 - INSULATION,PROOFING AND EXPANSION JOINTS					
10.1	<b>High Build Rubber (Bitumin Emulsion) on wet</b> Supply and apply high build rubber (Bitumin Emulsion) applied on three coats using airless compressor, including (0.5mm sheet thick & overall thickness of 10mm) dimpled high dense polyethene sheets over the bitumin layer price to include surface preparation and cleaning, smoothing, dust evacuation mechanically, complete as per drawings, specifications and as per engineer instructions				
10.1.a	For WCs & bathrooms, & Kitchen including another coat after pipes' installation applied at the fixing points & where required , and 60 mm cement sand screed layer above,and water proofing - 3 coats of hot bitumen emulsion protective coating and to be perpendicular to the walls a distance of 15 cm.complete as per drawings, specifications and as per engineer instructions	m2	30		
10.1.b	For wall of flower box .	m2	12		
Total of (Division No. 10) To be carried to Summary					

DIVISION NO. 11 - ELECTRICAL WORKS					
11	<b>Preamble:</b> This BOQ shall be read in conjunction with parts of the electrical technical specifications general and particular and the electrical drawings. The unit Price for all items in all sections shall include for supplying, installation, and commissioning unless otherwise specially mentioned. The price is also including main cables ,submittal of working drawings, as built drawings and coordinating drawings by sheets and by computer diskettes. All civil & finishing works related to the concerned item shall be included in the unit price, unless otherwise indicated. The Contractor shall submit detailed shop drawings for the board to take approval from the Engineer before manufacturing. The contractor shall coordinate with the local power & telephone authorities and get their approval for electrical works. Electrical works shall conform to all applicable codes and standards.				
11.1	<b>Distribution boards</b>				
	Supply , install and commissioning electrical distribution board inclusive of all circuit breakers, metal 2mm thickness, oven painted . s as detailed on drawings & should has 25% space for future ,outdoor DBs must be IP66.				
11.1.a	NEW DB	No	1		
11.1.b	DB-VRV, the DB shall be double door IP65 and all incoming and outgoing cables must be bottom entry	No	1		
11.1.c	Modification for existing MDB including adding new MCCBs & busbars.	L.S	1		
11.1.d	Pillar for new DB (Provisional), the price include accomodating 150A MCCB within 40x40cm powder coated 2mm thickness enclosure,bus bar,indication lamps and connection to the existing MDB busbar	L.S	1		
1	<b><u>THE PRICES OF ELECTRICAL PANEL'S SHALL</u></b>				
2	<b><u>ALL CONNECTIOIN OF ALL ELECTRICAL PANEL'S SHALL BE FROM DOWN - FROM UP CLOSED</u></b>				
3	<b><u>ALL ELECTRICAL PANEL'S SHALL BUILD WITH IP65 STATUS , AND ALL DOOR SHALL BE WITH SUITABLE RUBBER,ADDING NEW MCCBS FOR EXISTING DBS</u></b>				
4	<b><u>ALL ELECTRICAL PANEL'S SHALL HOUSING IN WOODEN DOOR'S WITH LOCK'S</u></b>				
	<b><u>FULL COORDINATION WITH ELECTRICAL COMPANY AND THEIR ALL ELECTRICAL REQUIREMENT'S</u></b>				
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11.2	<b>Electrical outlets</b> Supply, install and connect the following <b>switched socket</b> outlets points including (3*2.5mm <sup>2</sup> ) cables, conduits, mirriron, fix in, sockets, draw boxes and all accessories up to DB as per drawings and specifications.				
11.2.a	3 pin Single-Phase 16 Amp switched sockets Wall or table mounted .	No	27		
11.2.b	as dito but water proof .	No	8		
11.2.c	Double 3 pin Single-Phase 16 Amp switched sockets Wall or table mounted .	No	45		
11.2.d	Hand drayer stainless steel , operating by photo cell , surface mounted, AC 220 V , 1500 W, 50 Hz, including (3*2.5mm <sup>2</sup> ) cables, conduits, boxes, and isolating switches.	No.	5		
11.2.e	Double pole isolating switch with indication lamp for water heater include conduits, cable 3*2.5mm <sup>2</sup> , water proof isolating switch near water heater and all accessories as per drawings.	No.	3		
11.2.f	power points for exhaust fan cable 3X1.5mm <sup>2</sup> as drawing. include isolator.	No.	4		
11.2.g	3 pin Single-Phase 16 A switched sockets with Double Pole isolating Wall or table mounted for indoor AC UNITS	No	18		
11.2.h	32A 4 pole isolator for outdoor VRF unit	No	2		
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<b>11.6</b>	<b>Data Computer &amp; Patch panels</b>				
	Supply, install and commissioning network system complete with all internal connection (patch cords) Cat6A cables, fans set , 2 surge protection power strip 6 outlets ,air patch panel, shelf's and all accessories needed for complete work, as specified and as detailed on drawings and the Engineer's instructions.				
11.6.a	Data socket RJ-45 include S/FTP CAT6A cables	No	39		
11.6.b	Rack cabinet 12U ,80cm depth, 80 cm width, Perforated front and back doors include air patch panels & patch core cables,stand alone UPS.	No	1		
11.6.c	Full population Cat6A patch panel 24 port for Data	No	2		
11.6.d	Full population Cat6A patch panel 24 port for Telephone	No	2		
11.6.e	Connection of new DC to the existing data rack cabinet located at the ground floor , the work shall include CAT7A, coordination with hospital IT specialist, and any other works required to complete the job	Job	1		
11.6.f	24 Port 10/100/1000 ports, Full PoE managed+ Ports with 370 Watt, 800MHz CPU, LAN Base , with AC Power Cord (Europe), C13, CEE 7, 1.5M , and with SNTC-8X5XNBD Catalyst 2960-X 24 G 128 MB flash, 256 MB DDR3 DIMM; packet buffer size: 3 MB dynamically allocated. 77.3mbps throughput capacity, 128 Gbps switching capacity. Fully managed switches deliver full Layer 2 capabilities with optional PoE+, 10GbE uplinks. Supports choice of management interface with Web GUI, command-line interface (CLI) and Simple Network Management Protocol (SNMP), using console or micro USB ports. Managed with Intelligent Management software to provide end-to-end network transparency with consistent network experience through comprehensive configuration, compliance and policy management. Traffic prioritization with port based and VLAN based. Provides four fiber connectivity such as Gigabit-SX, -LX, -LH, and -BX with four 1G SFP slots. As per Cisco Switch Catalyst 2960-X 24 GigE PoE 370W or equal.	No	2		
11.6.g	<b>(Provisional item )</b> : Smart-UPS, Line Interactive, 1000VA, Tower, 230V,Input voltage range for main operations151 - 302 Adjustable, 160 - 286V, Input frequency 50/60 Hz +/- 3 Hz Auto-sensing, Output Frequency (sync to mains) 50/60 Hz +/- 3 Hz Sync to mains,Transfer Time 6 ms typical : 10 ms maximum,SmartConnect Port+SmartSlot, AVR,LCD display,as per APC or equal	No	10		
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Sum from Previous Page					
11.8	FM 200 7KG system for NEW-DB including photo-smoke, smoke detectors(cross zoning) each cubicle , factory filled and pressurized with clean agent, automatic actuation unit, pressure gauge with switch, flexible hose and discharge nozzles, control release module, horn, abort, and release stations, ULFM approved, with direct connection to FACP and all accessories as per drawings, specifications, Supervisor's approval and related codes . as per FIKE,Firease 70-198 or equal	No	1		
11.9	<b>Cable Tray</b>				
	Supply, install and connect cable tray hot-dip galvanized steel include mounting bracket, tee, bend, strait connector barrier strip, sun shade cover and all accessories as per drawings and specifications.				
11.9.a	20 X 5 cm G.S Cable tray	Lm	91		
11.9.b	30 X 8 cm G.S. Cable tray with H.D cover	Lm	17		
11.10	<b>Earthing system</b>				
	earthing all metal parts included cable tray ,cable ladder ,false celing ...etc.	L.S	1		
11.11	<b>Public Address / voice alarm System</b>				
	Supply , Install , connect and testing digital public address / voice alarm system, dual channel , multizone amplifier , voice alarm controler with recordable messages,Music rack with Ampifier , DVD, AM/FM tuner, double cassette player,desktop microphone, all inside 19" metal rack. including conduits, wires boxes, wires and all other equipments according to drawings, specifications and engineer approval connected with Fire Alarm System				
11.11.a	(Provisional item ) : voice alarm controler 3-zones	No	1		
11.11.b	(Provisional item ) : 120 watt main amplifier	No	1		
11.11.c	(Provisional item ) : Hand Microphone	No	1		
11.11.d	(Provisional item ) : Supply , Install , connect and testing call station.6-BUTTONS	No	1		
11.11.e	PAVA system points,The price shall include conduits,audio cables,ceiling boxes,and all necessary material to complete the job	No	14		
11.11.f	(Provisional item ) : 6w watt ceiling mounted	No	14		
11.11.g	(Provisional item ) : PAVA connection with FACP for voice evacuation	No	1		
Total of (Division No. 11) To be carried to Summary					

DIVISION NO. 12 -MECHANICAL WORKS					
12	<p><b>Preamble:</b></p> <p>This BOQ shall be read in conjunction with parts of the mechanical technical specifications general and particular and the mechanical drawings except where otherwise indicated. The unit Price for all items in all sections shall include for supplying, installation, and commissioning unless otherwise specially mentioned. The price is also including submittal of working drawings, as built drawings and coordinating drawings by sheets and by computer diskettes. All civil &amp; finishing works related to the concerned item shall be included in the unit price, unless otherwise indicated.</p> <p>Sanitary Fixtures shall be measured in number, price to include cold and hot water pipes supply and fittings to collectors, also to include drain supply, fittings connection, to manholes or risers or floor drain. No extra Rate for any changes in location of the fixtures</p> <p>Internal sanitary sewers network shall be included in the rates of sanitary fixtures and appliances.</p> <p>Vents and vertical stacks shall measure in linear meter.</p> <p>Rates of all fittings , fixtures , appliances and pipe laying shall include:-</p> <p>Supply of material, workmanship, installation, testing and commissioning.</p> <p>Rates to include also all pieces and fittings, including by passes, float, cleaning outlets, automatic vents, vents and stack covers, valves and non return valves and the like needed to complete works as per specifications.</p> <p>Excavation and cutting for all pipe laying works, bedding back filling and all works connected with pipe laying</p> <p>the price of all systems includes to fill water ,solar, gas and to have electricity for the commissioning.</p> <p>The prices below include every and anything needed to check the existing networks (sewerage, water, firefighting and other networks), ensure their integrity and, if necessary, fixing them.</p> <p>In addition to every and anything needed to connect the proposed networks to the existing networks in terms of works, materials and checks.</p>				



	<p><b><u>Cont. Preamble:</u></b></p> <p>The price of all systems includes the following:</p> <p>Cutting works in the external walls for ventilation openings and various extensions. And sealing around these openings using mold and moisture resistant materials</p> <p>All ventilation fittings comply with international codes (smacna standards and ASHRAE standards)</p> <p>Achieving all the requirements of the Palestinian Civil Defense in terms of materials and installations for fire extinguishing systems</p> <p>Installing the air-conditioning system according to the manufacturer's instructions, including copper pipes and tubes, control networks, electrical extensions, drain lines, and others</p> <p>All needed construction and electrical works to complete the mechanical works</p> <p>All the necessary tools, equipment, and examination and measurement devices necessary to implement what is stated in the drawings and the quantities table and implement the instructions of the supervising engineer</p> <p>All equipment, materials, accessories, implementation mechanism and work plan must be approved by the supervising engineer</p> <p>All the necessary works and materials to cancel the old extensions shown in the as built drawings</p> <p>All the necessary works and materials needed for cutting and rehabilitate the old extensions (where needed) to connect the new networks on it</p>				
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Item #	Item Description	Unit	Qty	Price (\$)	Amount(\$)
<b>12.1</b>	<b><u>SANITARY WORKS</u></b>				
	<b><u>European Toilet</u></b>				
12.1.a	Supply and install White Vitreous China European type wall hung toilet complete with concealed flush tank and support with two push buttons, fittings, chrome plated angle stop valve, seat hardcover (of the same toilet manufacturer), insulated 16mm pex pipe to water manifold and all other fittings as per drawings and specifications.	No.	2		
12.1.b	Ditto, but Long Wall hung toilet for handicapped complete with concealed flush tank and support.	No.	2		
12.1.c	Heavy Duty chrome plated water hose bib with flusher.	No.	4		
<b>12.2</b>	<b><u>Wash Basin</u></b>				
12.2.a	Supply and install White Vitreous China Semi pedestal Wash Basin size 45x40cm, complete with all fittings, chrome plated angle valves, waste pipes to nearest floor trap, insulated 16mm pex pipe to water manifold, and all other fittings as per drawings and specifications.	No.	2		
12.2.b	Ditto, but with curved face 60X50cm for handicapped with fixed stainless steel supporting and accessories.	No.	2		
12.2.c	Chrome plated mixer for Washbasin	No.	2		
12.2.d	Ditto chrome plated mixer for handicapped Washbasin (with long lever)	No.	2		
<b>12.3</b>	<b><u>Kitchen Sink</u></b>				
12.3.a	Supply, install and commissioning of stainless steel Single bowl kitchen sink (size 60*40cm), complete with supports, stainless steel waste outlet, 1 1/2" P-trap chrome plated, fittings, chrome plated angle valves, waste pipes to nearest floor trap, insulated 16mm pex pipe to water manifold, and all other fittings as per drawings and specifications.	No.	1		
12.3.b	Chrome plated mixer for kitchen sinks	No.	1		
<b>12.4</b>	<b><u>Janitor Sink</u></b>				
12.4.a	Supply, install and commissioning of White Vitreous China Single bowl janitor sink (size 45x35cm) with stainless steel grating, complete with wall support, waste outlet, 2" P-trap chrome plated, fittings, waste pipes to nearest floor trap, insulated 16mm pex pipe to water manifold, and all other fittings as per drawings and specifications.	No.	1		
12.4.b	Wall Mounted Chrome plated mixer for Janitor sink	No.	1		
<b>12.5</b>	<b><u>Water Cooler First Fix only</u></b>				
12.5.a	Water cooler first fix including waste pipes to nearest floor trap, insulated 16mm pex pipe to water manifold, chrome plated angle valves and all other fittings as per drawings and specifications.	No.	1		
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	<b><u>DRAINAGE WORKS</u></b>			
<b>12.6</b>	<b><u>Floor Trap</u></b>			
12.6.a	Supply and install 4" PP Floor Trap complete with PVC-U 4" siphon and (15*15 ) stainless steel AISI304 cover one grated and one-closed complete with al needed fittings and accessories to comply with the drawings and specifications.	No	7	
12.6.b	Ditto but Floor Drain with 2" outlet.	No	2	
<b>12.7</b>	<b><u>Clean Out</u></b>			
12.7.a	Supply and install Floor clean outs for 4" pipes complete with (15*15 cm) stainless steel AISI304 closed cover complete with al needed fittings and accessories to comply with the drawings and specifications.	No	7	
12.7.b	Ditto but Clean outs for 6" pipes with cover 20x20cm	No	2	
<b>12.8</b>	<b><u>UPVC Drainage Pipes</u></b>			
	Supply, installation, testing and commissioning drain pipes (uPVC SN-8) for waste & ventilation pipes, with all required pipes fittings, roof vent caps and accessories including excavation, back filling, encasing with concrete for below ground pipes, and fixing points for suspended installations. And all needed works to install the needed connections as shown in drawings and in accordance to specifications.			
12.8.a	2" PP For Drain	MR	10	
12.8.b	4" uPVC SN-8 for below ground & Suspended installations	MR	80	
12.8.c	6" uPVC SN-8	MR	15	
12.8.d	8" uPVC SN-8	MR	15	
<b>12.9</b>	<b><u>External UPVC Drainage Pipes</u></b>			
	Supply, installation, testing and commissioning drain pipes (uPVC SN-8) for pipes between manholes with all required fittings and accessories, including, asphalt cutting, excavation, back filling with sand, encasing with concrete, needed asphalt repair, as shown in drawings and in accordance to specifications.			
12.9.a	6" uPVC SN-8	MR	10	
<b>12.10.</b>	<b><u>External Sewage manholes - New</u></b>			
12.10.a	Supply, installation, testing and commissioning of Precast concrete circular drainage manholes with Ø60cm internal diameter and a depth of up to 100 cm, with heavy duty 25ton cast iron cover (All components shall have a certificate of conformity from Palestinian specifications and standards). The price includes the necessary asphalt cutting works, excavation and backfilling, bedding , benching, internal plastering, 15cm cement base below the manhole base and all works needed to complete to work as shown on the drawings and to be according the supervision engineer.	No.	1	
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Sum from Previous Page					
<b>12.11</b>	<b>External Sewage manholes - Existing for Rehabilitation</b>				
12.11.a	Rehabilitation works of existing drainage manholes, the work shall include all the necessary excavation and backfilling, internal plastering and benching works, making opening for the new connections, connect the new and existing network. The Price shall also include the supply and install of new heavy duty Cast iron cover of capacity 25tons carrying, And all works needed to complete to work as shown on the drawings and to be according the supervision engineer.	No.	2		
<b>12.12</b>	<b>Internal Sewage manholes</b>				
12.12.a	Supply, installation, testing and commissioning of Precast concrete circular drainage manholes with Ø60cm internal diameter and a depth of up to 100 cm, with medium duty 60x60cm ductile iron cover reassessed for tiles finish, with vapor seal and lock with (All components shall have a certificate of conformity from Palestinian specifications and standards). The price includes excavation and backfilling, bedding , benching, internal plastering, 15cm cement base below the manhole base and all works needed to complete to work as shown on the drawings and to be according the supervision engineer.	No.	1		
<b>12.13</b>	<b>AC UPVC Drainage Pipes</b>				
	Supply, installation, testing and commissioning of PN 10 UPVC AC drain pipes to floor drains with all required fittings, suspended installations shall be complete with 12mm foamed rubber insulation and hangers as shown in drawings and in accordance to specifications.				
12.13.a	2" uPVC PN10	MR	130		
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	<b><u>DOMESTIC WATER WORKS</u></b>				
<b>12.14.</b>	<b><u>Galvanized steel Pipes</u></b>				
	Supply and install Galvanized steel pipes Astm A53 grade B, Sch 40 for Cold water pipes complete with all needed valves (Isolating valves & Globe Valves), fittings, civil works, hangers and roof supports. Steel pipes shall have polyethylene protection for pipes underground or inside walls according the Palestinian Standard PS 325-6, and all necessary works to complete works as per drawings and specifications.				
12.14.a	1/2" dia	MR	5		
12.14.b	Ditto, But 3/4" dia	MR	25		
12.14.c	Ditto, But 1" dia.	MR	30		
12.14.d	Ditto, But 1 1/4" dia.	MR	5		
12.14.e	Ditto, But 1 1/2" dia.	MR	5		
12.14.f	Ditto, But 2" dia.	MR	30		
<b>12.15</b>	<b><u>Galvanized steel Pipes With Thermal Insulation</u></b>				
	Supply and install Galvanized steel pipes Astm A53 grade B, Sch 40 for hot water pipes. The price includes 25mm for hot water pipes with plastic wrap, complete with all needed valves (Isolating valves & Globe Valves), fittings, civil works, hangers and roof supports. Steel pipes shall have polyethylene protection for pipes underground or inside walls according the Palestinian Standard PS 325-6, and all necessary works to complete works as per drawings and specifications.				
12.15.a	1/2" dia	MR	15		
12.15.b	Ditto, But 3/4" dia	MR	25		
12.15.c	Ditto, But 1" dia.	MR	5		
12.15.d	Ditto, But 1 1/4" dia.	MR	5		
12.15.e	Ditto, But 1 1/2" dia.	MR	30		
12.15.f	Ditto, But 2" dia.	MR	30		
<b>12.16</b>	<b><u>Electrical Water Heater</u></b>				
	Supply & Install of Vertical design electrical water heater cylinder with electrical heater 2.5 kw and thermostat. The heater shall be of working pressure not less than 6bar, and with internal enamel coating.				
	The price to include all accessories : isolating valves, non return valves, automatic air vents, safety valves, drain pipes to nearest floor drain, 20mm insulated fex pipes to manifold cabinets, electrical connections, and all needed works and accessories to complete the work as shown on the drawings and specifications.				
12.16.a	Electrical heater 60L capacity	No.	3		
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<b>12.17</b>	<b>Water Manifold and Cabinets</b>				
	Supply and install of copper domestic cold and hot water manifolds inside cabinet complete with all needed fittings (auto air vent, main valves, and branch valves), and white color powder coated galvanized steel cupboard (min thickness 1.5mm) and accessories and all necessary works to complete works as per drawings and specifications.				
12.17.a	WCL-01	No.	1		
12.17.b	WCL-02	No.	1		
12.17.c	WCL-03	No.	1		
<b>12.18</b>	<b>Pressure Reducing Valve Set (provisional item)</b>				
	Supply and install pressure reducing valve set consisting of a pressure reducing valves, strainer, pressure gauge, and two isolating valves. The Pressure regulating valves shall be with adjustable handle and pressure indication setting. Complete with all needed fittings and accessories and all necessary works to complete works as per drawings and specifications.				
12.18.a	Pressure Reducing Valve Set, size 1"	No.	1		
<b>To be carried to next page</b>					

Sum from Previous Page				
	<b>FIRE FIGHTING WORKS</b>			
<b>12.19</b>	<b><u>Galvanized steel Pipes SCH40 &amp; Fittings</u></b>			
	Supply and install seamless Galvanized steel pipes ASTM A53 grade B Sch 40 for fire fighting system pipework and main risers. Pipes shall have polyethylene protection for pipes underground or inside walls according to the Palestinian Standard PS 325-6. Pipe shall be with grooved connection for pipe sizes, and have oven red powder coating in accordance with the American Standard AWWA C210 / AWWA C213. Complete with all needed valves, fittings, civil works, hangers and roof supports, and all necessary works to complete works as per drawings and specifications.			
12.19.a	Pipe 2" dia.	MR	30	
12.19.b	Ditto, But 3" dia.	MR	6	
12.19.c	Ditto, But 4" dia.	MR	60	
<b>12.20.</b>	<b><u>Fire Hose reel cabinet:</u></b>			
	Supply and install (100*120*30) cm red thermal coating steel fire hose reel cabinet of minimum thickness 2mm galvanized steel, completed with UL 30m rubber hose 25mm diam. mounted on swinging reel, one angle globe valve 50mm (landing valve) 2*15m Ø50mm UL fire hose inside the cabinet, a jet nozzle with an incorporated cock, and 3 kg. of environmentally friendly dry powder fire extinguisher in accordance with the Civil Defense specification. Each cabinet should be supplied with operating instructions, and approved sticker ( FIRE CABINET ) from outside. As shown in drawings, specifications and approval of supervision engineer.	No.	3	
<b>12.21</b>	<b><u>CO2 Fire fighting extinguishers:</u></b>			
	Supply and install 2 kg Capacity Co2 gas manual fire extinguishers in accordance with the Civil Defense specification. The price includes all accessories and fittings needed for installation and fixing on wall.	No.	6	
<b>12.22</b>	<b><u>Dry Powder Mobile Fire fighting extinguishers:</u></b>			
	Supply, install, test and commission type (ABCE) dry powder mobile fire extinguishers on trolley, capacity 45Kg, complete with pressure gauge and hose.	No.	1	
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<b>12.23</b>	<b>Galvanized steel Pipes SCH10 &amp; Fittings</b>				
	Supply and install seamless Galvanized steel pipes ASTM A53 grade B Sch 10 for fire fighting sprinkler system pipework. Pipe shall be with grooved connection for pipe sizes, and have oven red powder coating in according the American Standard AWWA C210 / AWWA C213. complete with all needed valves, fittings, civil works, hangers and roof supports, and all necessary works to complete works as per drawings and specifications.				
12.23.a	Pipe 1" dia.	MR	20		
12.23.b	Ditto, But 1 1/4" dia.	MR	20		
12.23.c	Ditto, But 1 1/2" dia.	MR	15		
12.23.d	Ditto, But 2" dia.	MR	40		
12.23.e	Ditto, But 2 1/2" dia.	MR	10		
12.23.f	Ditto, But 3" dia.	MR	10		
<b>To be carried to next page</b>					



Sum from Previous Page				
	HVAC WORKS			
12.24	<b>VRF SYSTEM</b> Supply and install Outdoor VRF Units Variable refrigerant flow outdoor unit, DC brushless motor type and scroll compressor with All DC inverters drive , fan motor DC inverter drive , including lifting to roof with crane (if needed), Galvanized Steel base, vibration absorber and electric connection to panel, copper piping connection and all fittings as recommended by manufacturer, needed refrigerant charge with Combination ratio not more than 100%. Indoor Cassette units shall have fresh air intake and the price include needed flexible duct connections between ducts and the unit. And with the following Specification:			
	1. All compressor should be DC Inverter type; 2. All fan motor including indoor and outdoor should be DC Inverter brushless fan motor type; 3. Operation ambient range for cooling up to -5~50°C ; 4. Operation ambient range for heating up to -20~24°C ; 5. Voltage range from 320V~460V 6. Indoor wired controller shall be touch screen type with 8 step fan speed; 7. One system can connect to 80 IDUs; 8. Single module of outdoor up to 22HP, maximum modular capacity up to 88 HP; 9. One system can connect 4 modular ODUs; 10. Outdoor unit in the winter shall have intelligent anti-freezing function; 11. System shall have sub-cooling device to achieve best performance; 12. System shall have auto-commissioning function; 13. Indoor unit shall have auto-seeking address function;			
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	<p>14. Outdoor unit shall have emergency operation mode, for example, when one compressor/fan motor break down, another compressor/fan motor shall sustain system continuous operation;</p> <p>15. System shall with supplier provided long distance monitoring control software, and it shall be Modbus protocol;</p> <p>16. System maximum IPLV shall be 6.8;</p> <p>17. System total piping length shall be 1000 meter;</p> <p>18. System total communication length shall be 2000 meters;</p> <p>19. System vertical length shall be 90 meters no matter ODU on top or down;</p> <p>20. System shall provide colored screen centralized controller;</p> <p>21. System for installation shall not with oil trap and u-turn;</p> <p>22. System Outdoor unit shall be equipped with maintenance window for data checking;</p> <p>23. System shall be equipped with two stage oil return system;</p> <p>24. System shall have compulsory energy saving function, saving up to 85%</p> <p>25. System Outdoor unit shall have low noise operation mode, in the evening noise shall be max. 45DB</p> <p>26. System shall reserve the port for fire linkage control, in case of fire alarm, system shall automatically shut down.</p> <p>The System Capacity shall be as the following:</p>			
12.24.a	<p>Outdoor VRF Units:</p> <p>Cooling Capacity 77Kw</p> <p>Heating capacity 88 kw</p> <p>(Selection shall be based on the following :</p> <p>Indoor conditions 24C db, 50RH,</p> <p>Outdoor Summer conditions 39C db, 25C wb,</p> <p>Combination ratio 100%,</p> <p>Minimum HP:32 Horse power)</p>	set	1	
<b>12.25</b>	<b>VRF-Indoor units:</b>			
	Supply, install indoor VRF units, the units shall be low noise with filter.			
	<p>Price include :</p> <ul style="list-style-type: none"> <li>- Digital Wall wired thermostat for indoor units including on-off, real time clock, schedule timer, fan control, and temperature set and display.</li> <li>- Insulated refrigerant copper pipes (L type) and refnets between indoor and outdoor units.</li> <li>- All wiring between indoor and outdoor units and master remote control.</li> </ul> <p>And all necessary works and materials needed to complete the job according to the drawings specifications and approval of supervisor engineer's.</p>			
12.25.a	High Wall Decorative 2.7KW Nominal cooling capacity	No.	1	
12.25.b	Cassette 4 Way 3.7 KW Nominal cooling capacity	No.	4	
12.25.c	Cassette 4 Way 5.7 KW Nominal cooling capacity	No.	13	
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<b>12.26</b>	<b>VRV/F-Centralized Controller:</b>				
26.26.a	First fix for a centralized controller for the VRF system, the price shall include all needed control wiring, conduits and termination boxes.	LS	1		
26.26.b	<b>(Provisional item)</b> Supply, install centralized controller for the VRF system, of min capacity to control 32 indoor units. the price shall include all needed installation testing and commissioning .	No.	1		
<b>12.27</b>	<b>Duct</b>				
	Supply, install approved quality galvanized air duct of varies thickness as required by ASHRAE , the price including hanging, digging, wooden sleeves or frames around duct passing through walls and steel frames for fire rated walls, splitter dampers , All required volume & fire dampers, fire sealant, all according to drawings and engineers approval.	m2	150		
<b>12.28</b>	<b>Inline Extract Fans</b>				
	Supply and install silent (low Db) inline extract fans. The price includes Gravity shutter, flexible connections between ducts and fans, external aluminum louver of size as shown on the drawings, electrical and control devices or elements, electrical and control connections, wires from MDB needed to complete the job.				
12.28.a	EXF01 capacity of 200L/S @ ESP of 70Pa	No.	1		
12.28.b	EXF02 capacity of 140L/S @ ESP of 80Pa	No.	1		
<b>12.29</b>	<b>Acoustic Cabinet Fresh Air Fans</b>				
	Supply and install outdoor, waterproof acoustic cabinet fresh fan, direct drive with variable speed control, backward impeller. The price includes indoor galvanized steel wall support, shock absorbers, flexible duct connection, volume damper, insect screen filter, aluminum washable filter with frame, electrical and control devices or elements, electrical and control connections, wires from MDB needed to complete the job.				
12.29.a	FAF01 capacity of 580L/S @ ESP of 270Pa With Variable Speed Drive	No.	1		
<b>12.30.</b>	<b>Acoustic Cabinet Exhaust Air Fan</b>				
	Supply and install outdoor, waterproof acoustic cabinet fresh fan, direct drive with variable speed control, backward impeller. The price includes indoor galvanized steel wall support, shock absorbers, flexible duct connection, volume damper, insect screen filter, electrical and control devices or elements, electrical and control connections, wires from MDB needed to complete the job.				
12.30.a	EXF03 capacity of 520L/S @ ESP of 170Pa With Variable Speed Drive	No.	1		
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<b>12.31</b>	<b>Round Disk Exhaust Grill</b>			
12.31.a	Supply, install, and commission white anodized aluminum 6" round exhaust grills , complete with dampers, all with registers ceiling mounted. Price includes all fittings, plenum box and flexible duct 6" connected to main duct	No.	4	
<b>12.32</b>	<b>Rectangular Supply Diffuser</b>			
	Supply, install, and commission white anodized aluminum rectangular fresh air diffuser with register with galvanized steel adapter box and flexible duct connection and all needed accessories to complete the work as shown on the drawings.			
12.32.a	Diffuser with neck size 15x15cm and face size 60x60cm, and 6" flexible duct connection	No.	1	
<b>12.33</b>	<b>Rectangular Exhasut Grills</b>			
	Supply, install, and commission white anodized aluminum rectangular exhaust air grills with register and all needed accessories to complete the work as shown on the drawings.			
12.33.a	Exhasut Grill with neck size 9"x9"	No.	6	
12.33.b	Exhasut Grill with neck size 12"x12"	No.	2	
<b>12.34</b>	<b>Dismantling of Existing HVAC System</b>			
	Dismantle existing HVAC system components in area of refurbishment on site ( including DX air-conditioning units, FCUs, central heating radiators, central heating collectors, pipes) equipment dismantling shall be in a non destructive manner and to be handed over to the owner. The Price shall also include the following: - For fan coils/ central heating radiators; modifications to the existing supply / return pipe work, in a manner not affecting the operation of the central system. - Pump down for the refrigerant for Split DX units. - Dismantle outdoor split DX units. - Closing holes in external walls and make good. - Removal of unnecessary air ducts / conduits in the working zone. And all other needed works to enable the installation of the new system and shown on the drawings.	LS.	1	
<b>Total of (Division No. 12) To be carried to Summary</b>				

## APPROVED MANUFACTURER LIST

( This list is a guide line , Contractor can submit equivalent where it's mentioned only) .

ITEM	Approved
Electric Water Heater 6 bar pressure	Local made with Palestinian Standard Institute Certificate
Exhaust Fans	Sodeca S&P Rosenberg, or equivalent
Angle Valves For Sanitary fixtures	Nil or equivalent
Valves For Steel Pipes	Giacomini Tiemme, NTM Crane, or equivalent
Sanitary Fixtures (Model upon supervision acceptance)	Ideal standard Roca Creavit Vitra, or equivalent
Mixers (Model upon supervision acceptance)	Grohe, Hansa, or equivalent
Pressure Reducing Valves	Honywell, or equivalent
Stainless steel sink	Twyford (UK) Roca (Spain), or equivalent
Concealed Cistern with floor stand	Grohe, Schwab, or equivalent
Floor And Roof drain	Redi, Osten Dorf, Huloit, or equivalent
UPVC pipes	Royal Redi Huloit, or equivalent
UPVC Fittings PN10 (All fittings are 10 bar pressure)	Plassim or equivalent
PEX pipes for Hot and cold water	Giacomini, Tiami, or equivalent
Cold and Hot water Insulation	Vidoflex Armo flex, or equivalent.
Copper manifolds with local assembled branch valve	Giacomini Tiemme, or equivalent.
Galvanized steel pipes Sch.40	Certified Sch.40 ASTM 53, Grad B Seamless
Variable Flow Air conditioning (VRF) System	Daikin, Mitsubishi, Samsung, or equivalent. Must have local Authorized Agent with five years experience in Palestine.
Water Pumps	Aurora, Willow, Lowara, or equivalent. Must have local Authorized Agent with five years experience in Palestine.
Water Tanks	Local made with Palestinian Standard Institute Certificate
External Manhole and Manholes cover	Local made with Palestinian Standard Institute Certificate
Internal Manholes covers (with vapour seal)	Saint Gobain or equal
Hand Spray	Grohe, Hansa, or equivalent
Accessories Stainless Steel	Bobbrick Mediclinik, or equivalent
Diffusers & Grilles	Local made with Palestinian Standard Institute Certificate
Pressure Gauges, Thermometers	Gueger, Spirax Sarco, or equivalent
Hangers, Anchors & Supports	Hilti or equivalent
Fire Hose Cabinet	High Quality Local Made

Summary		
DIVISION NO.	DESCRIPTION	AMOUNT (USD)
DIVISION NO.1	EXCAVATION , DEMOLISHING WORKS	
DIVISION NO.2	SKELETON WORKS - CONCRETE WORKS	
DIVISION NO. 3	SKELETON WORKS -BLOCK WORKS	
DIVISION NO. 4	SKELETON WORKS - CONCRETE BLOCK WORKS	
DIVISION NO. 5	SKELETON WORKS - PLASTERING	
DIVISION NO. 6	INTERNAL FINISHES - TILING FLOORING & MARBLE WORKS	
DIVISION NO. 7	INTERNAL FINISHES - CARPENTRY & JOINERY WORKS	
DIVISION NO. 8	INTERNAL FINISHES - STEEL & ALUMINUM WORKS	
DIVISION NO. 9	INTERNAL FINISHES - PAINTING and FALSE CEILING WORKS	
DIVISION NO. 10	INSULATION & ROOFING	
DIVISION NO. 11	ELECTRICAL WORKS	
DIVISION NO. 12	PLUMBING , SANITARY & MECHANICAL WORKS	
<b>Total</b>		