

PROPOSED COMPLETION AND MODIFICATION OF MBOONI ISOLATION UNIT INTO MBOONI MOTHER AND CHILD HOSPITAL - MAKUENI COUNTY

ELECTRICAL INSTALLATION WORKS

BILL NO. 1: SUB-CONTRACT PRELIMINARIES

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
1	Discrepancies clause 1.02				
2	Conditions of sub-contract Agreement clause 1.03				
3	Payments clause 1.04				
4	Site location clause 1.06				
5	Scope of Contract Works clause 1.08				
6	Extent of the Contractors duties clause 1.09				
7	Firm price contract clause 1.12				
8	Variation clause 1.13				
9	Prime cost and provisional sum clause 3.14 (insert profit and attendance which is a percentage of expended PC or provisional sum.)				
10	Bond clause 1.15				
11	Government Legislation and Regulations clause 1.16				
12	Import Duty and Value Added Tax clause 1.17 (Note this clause applies for materials supplied only. VAT will also be paid by the contractor as allowed in the summary page)				
13	Insurance company Fees clause 1.18	1	Item		
14	Provision of services by the Main contractor clause 1.19				
15	Samples and Materials Generally clause 1.21				
16	Supplies clause 1.20				
17	Bills of Quantities clause 1.23				
18	Contractor's Office in Kenya clause 1.24				
19	Builders Works clause 1.25				
20	Setting to work and Regulating system clause 1.29				
21	Identification of plant components clause 1.30				
22	Working Drawings clause 1.32				
23	Record Drawings (As Installed) and Instructions clause 1.33				
24	Maintenance Manual clause 1.34				
25	Hand over clause 1.35				
26	Painting clause 1.36				
27	Testing and Inspection manufactured plant clause 1.38				
28	Testing and Inspection Installation clause 1.39				
29	Storage of Materials clause 1.41				
30	Initial Maintenance clause 1.42				
31	Local and other Authorities notices and fees clause 1.60	1	Item		
32	Temporary Works clause 1.63				
33	Patent Rights clause 1.64				
34	Mobilization and Demobilization Clause 1.65				
35	Amendment to Scope of Sub-contract Works clause 1.68				
36	Contractor obligation and Employers Obligation clause 1.69				
Total for Bill No. 1: Sub-Contract Preliminaries C/F to Summary Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	SCHEDULE NO. 1: GROUND FLOOR - LIGHTING & POWER DISTRIBUTION				
1.00	Supply, Deliver To Site, Install, Test and Commission as per BS 7671:2008 the following:-				
1.01	PRELIMINARIES				
1.02	Allow for wall hacking (chasing) and associated builders works.	1	Lot		
2.00	Allow for 10% extended preliminaries, Clause 1.66 of Section C, on item 1.01.	1	Item		
2.01	LIGHTING POINTS				
	Lighting points wired in 3x1.5mm ² SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:- 1.09				
	(a) 1 way switching	80	No.		
	(b) 2 way switching	50	No.		
	(c) Intermediate switching	50	No.		
	(d) Unswitched	6	No.		
3.00					
3.01	LIGHTING FITTINGS				
	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type A- 18W 600x600mm ceiling Panel light Installation	66	No.		
	(d) Type D	16	No.		
	(e) Type E	6	No.		
	(f) Type EXIT	4	No.		
	(p) Type O	57	No.		
	(q) Type P	17	No.		
	(r) Type Q	5	No.		
	(s) Type R	6	No.		
	(t) Type S	5	No.		
	(u) Type T	5	No.		
4.00	LIGHTING SWITCHES				
4.01	10A white lighting switch plates flush mounted on masonry wall as Clipsal, BG Nexus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	30	No.		
	(b) 2 gang 1 way	8	No.		
	(c) 3 gang 2 way	4	No.		
	(d) 1 gang 2 way	10	No.		
	(e) 2 gang 2 way	8	No.		
	(f) 1 gang intermediate	8	No.		
	Dusk-to-dawn, 5400W/6000VA Max (25A Max) Tungsten/Ballast respectively, 240V, Programmable Twist-Lock Photocell Light Sensor Switch, wall/pole surface mounted as Philips, MK, Schneider or an approved equivalent. (This shall be supplied c/w all necessary accessories and installed (wired) as per control pillar schematics)	1	No.		
4.02					
	Sub-Total C/F to next page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
POWER POINTS & ACCESSORIES					
5.00	13A ring mains socket outlet points wired in 3x2.5 mm ² SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories excluding				
5.01	(a) Single outlet	20	No.		
	(b) Twin outlet	50	No.		
5.02	13A switched socket flush mounted on masonry wall as Tronic, MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and approved equivalent for:-				
	(a) Single switched	20	No.		
	(b) Twin switched	40	No.		
	(c) Ditto but Waterproof (IPX4)	10	No.		
5.03	Nurse Call Intercom Point: 25mm Ø HG PVC conduits complete with all accessories but excluding socket outlet plates.	10	No.		
5.04	13A moulded case socket outlet plates with in-built 5V DC, 2.1A Max. Ports; flush mounted on masonry wall for item 5.03 above as Tronic, or equal and	0	No.		
5.05	Air Conditioner Power Point comprising 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch. Conduit Only	4	No.		
5.06	30A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.05 above as Tronic, MK, Crabtree or equal and approved	0	No.		
5.07	Air Circulating Fan Power Point comprising wiring drawn in 3x25mm ² SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	0	No.		
5.08	20A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.07 above as MK, Crabtree or equal and approved	0	No.		
5.09	Hand Dryer Power Point wired in 3x4.0mm ² PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but	6	No.		
5.10	13A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.09 above as Tronic, MK, Crabtree or approved	6	No.		
5.11	Hose Reel Pump Power Point wired in 3x2.5mm ² SC PVCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	1	No.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
5.12	20A DP control switch with neon light and cord outlet for item 5.11 above as Tronic, MK, Crabtree or approved equivalent.	2	No.		
5.13	Water Booster Pump (3- phase comprising 2.5mm ² 4-Core PVC/SWA/PVC Copper Cable in 25mm Ø concealed HG PVC conduits complete with all accessories but excluding the DOL isolator switch.	1	No.		
5.14	20A TP isolator switch with phase indicating lights and cord outlet for item 5.13 above as Tronic, MK, Crabtree or approved equivalent.	1	No.		
5.15	Toilet Extract Fan (1-wired in 3x2.5mm ² PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	6	No.		
5.16	16A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.15 above as Tronic, MK, Crabtree or approved	6	No.		
5.17	Instantaneous water heater power point comprising wiring in 3x4mm ² SC PVC I Copper Cables drawn in 25mm Ø HG PVC conduits complete with all necessary accessories but excluding the DP switch.	2	No.		
5.18	45A DP switch with neon pilot lamp (indicator) and fused connection unit with angled flexible cable outlet for item 5.17 above as Crabtree or equal and	2	No.		
5.19	8000W, 220-240V AC, 50/60Hz four temperature (4T) selector fully accessorized Instant Shower Unit as Enerbras Enershower or equal and approved	0	No.		
5.20	Undersink Water Heater Power Point comprising wiring in 3x2.5mm ² SC-PVCI-CU cables drawn in concealed 25mm Ø HG PVC conduits complete with all necessary accessories but excluding	0	No.		
5.21	20A DP Control Switch, marked 'As Per Application' with neon light and cord outlet for item 5.20 above as MK, Crabtree or approved equivalent.	0	No.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
6.00	TELEVISION POINTS & ACCESSORIES				
6.01	TV outlet 25mm Ø HG PVC conduits from housing unit and linked to the amplifier in roof space via Telephone/television draw-in boxes complete with all accessories Conduit only	8	No.		
6.02	Flat single TV/coax outlet plate with polished brassfinish for item 6.01 above as MK, Clipsal, Crabtree or equal and approved equivalent.	0	No.		
6.03	TV outlet point wired in 4K HDMI 2.1 (eARC) CableNetwork drawn in concealed 42mm Ø HG PVC conduitsfrom HDMI Splitter located in Control Room complete with all accessories but excluding the HDMI HDMI 2.1 (eARC) wale plate (Faceplate) with twin HDMI Ports and USB 3.0 (Flash) Port, flush mounted, complete with HDMI Female-Female (F-F)	0	No.		
6.04	Connectors/Couplers as Crabtree or equal and 300mmx250mmx150mm, 18SWG, powder coated, telephone draw box spray painted to Engineer's	0	No.		
6.05		1	No.		
7.00	DATA/TELEPHONE POINTS & ACCESSORIES				
7.01	Install as provision, Data/Telephone outlet points donein 25mm Ø HG PVC conduits concealed in buildingfabric/trunking complete with draw wire and all necessary accessories but excluding data/telephone outlet plate. Conduit Only	60	No.		
7.02	White moulded case dual data/telephone outlet plate as MK, Crabtree or equal and approved equivalent.	0	No.		
7.03	Install as provision, Indoor wireless access points done in 25mm Ø HG PVC conduit concealed inside slab for c/w draw wire. Conduit Only	5	No.		
8.00	INTERNAL POWER DISTRIBUTION				
8.01	Powder Coated purpose made front access lockable 12way Type B TPN Distribution Board (Recessed) with400A TP+N+E Bus Bars manufactured in 14 SWGspray painted galvanised mild steel sheet and spraypainted (finished) in cream powder coating (orappropriate colour) complete with 250A TPN+E integral	1	No.		
8.02	isolator, Spareways, Blanking Plates and lockable coveramong other accessories but excluding MCBs as perContract Drawings as Powermax, Power Technics,Schneider Electric, Hausmann or equal and Spare 250A main isolator, TPN+E for the 12 way DB.	1	No.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
8.03	MCB's rated at 500Vac for items 8.01 above as Schneider or approved equivalent as the following:- (i) 10A SP (ii) 20A SP (iii) 32A SP (iv) 45A SP (v) 63A SP (vi) 100A DP (vii) 150A TP (viii) SP Spareway (ix) Blanking Plates	8 6 6 4 6 1 1 5 5	No. No. No. No. No. No. No. No. No.		
8.04	RCBO rated at 30mAac, Type AC for item 8.01 above as Hager, Wylex, Crabtree, Schneider or equal and approved equivalent as the following:- (i) 250A TPN	1	No.		
8.05	8 way SP&N, flush mounted consumer unit complete with 80A integral isolator as HAGER or approved equivalent complete with all accessories but excluding MCBs.	2	No.		
8.06	MCB's for items 8.05 above as (a) 10A SP (b) 20A SP (c) 63A DP	5 5 6	No. No. No.		
8.07	Carry out comprehensive permanent traffolyte labeling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 8.01, 8.03, 8.05 & 8.06 above indicating the areas served, outgoing cable sizes etc.	1	Item		
9.00 SUBMAINS CABLING WORKS					
9.01	Sub-mains cable system comprising 70mm ² 4-Core XLPE/SWA/PVC Copper Cable in ground from the LV Distribution Board "DB0F" through the Cable Loop-In Box (CLB) in the Cash Office complete with all necessary accessories, but excluding cable glands and Cable glands and lugs for the above cables.	70	Lm		
9.02	16mm ² 4-Core XLPE/SWA/PVC Copper Cable from Switchboard to Water Booster Pump House complete with all necessary accessories, but excluding cable glands and lugs.	12	No.		
9.03	Cable glands complete with plastic sleeves for the above cable.	0	Lm.		
9.04	10mm ² 2-Core XLPE/SWA/PVC Copper Cable from Switchboard to Hose Reel Pump, VRF outdoor AC unit, Cold & Server Room Extract Fans and Machines, 1 No. Solar Element and 1No. Booster Pump at the ground Floor with all necessary accessories, but excluding cable glands and lugs	12	No.		
9.05		0	Lm.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
9.06	Cable glands complete with plastic sleeves for the above cable.	0	No.		
9.07	100mm dia. HG PVC duct in 200mm concrete surround buried 600mm underground for power supply cable way along road and parking crossings.	60	Lm.		
9.08	Establish 630 x 550 x 700mm deep standard power manholes, complete with internal plastering, and heavy duty EAFW steel cover.	3	No.		
9.09	70mm diameter HG PVC ducts encased in concrete surround buried in ground for incoming data/telephone supply cables.	60	Lm.		
9.10	100mm diameter HG PVC ducts encased in concrete surround buried in ground for incoming KPLC power supply cables.	80	Lm.		
9.11	450mm x 50mm deep Deep Perfotrated GI cable tray complete with all accessories As Manufactured by Power Technics or approved equivalent.	0	Lm.		
9.12	Standard Cable Loop-in box (CLB) made of Weatherproof Powder Coated galvanised steel sheets complete with 80A HRC fuses and fuse carrier with	0	No.		
9.13	Excavate trenches for ducts and armoured cables above, average depth 700mm, remove soft earth, lay ducts, cover with "DANGER-HATARI" tiles, back fill soft earth and compact to natural ground level.	60	Lm		
9.14	Lay HG PVC conduiting of size 32mm diameter HG PVC ducts from the nearest internet service entry point to the building for fiber optic cable.	60	Lm.		
9.15	Establish 450 x 450 x 700mm deep standard data/telephone manholes, complete with internal plastering, and heavy duty EAFW steel cover.	1	No.		
9.16	Lay HG PVC conduiting of size 3x50mm diameter HG PVC ducts from the power (generator) house to the building complex for power reticulation.	0	Lm		
10.00 SUB-CIRCUIT CABLES					
10.01	Sub-circuit cable system comprising 3 x 16mm ² (Red, Black, Green/Yellow) Single Core PVC Copper cables in concealed HG PVC conduits from MCCB termination of Distribution Board "DBOF" to the consumer units in ground floor space.	80	Lm		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from previous page				
11.00	PROTECTIVE MULTIPLE EARTHING & BONDING				
	Provide earthing and bonding to all metal work including water pipes, gas pipes, hand-rails, air-conditioning units, window frames, cladding, metal roof etc. and the main earth for the building, throughout the entire electrical infrastructure including subboard and sub-circuit equipment/devices, to the satisfaction of the Electrical Engineer and in accordance with KP&L Co. (KPLC) requirements, IEE regulations, the GoK Electrical Installations regulatory				
11.01	(a) 25mm x 3mm pure copper tape as FURSE	2	Lm		
	(b) 15mm Ø driving stud as FURSE cat. No. ST100.	1	No.		
	(c) 1800mm x 15mm pure copper electrode (earth rod) as FURSE cat. No. RB 105.	1	No.		
	(d) Tape to earth rod clamp as Furse.	1	No.		
	(e) Pre-cast concrete inspection pit as FURSE cat. No. PT005 or a well-made 320mm x 320mm x 210mm depth pit.	1	No.		
11.02	Earthing of the subboard in accordance with KP&L company requirements, IEE regulations, the government Electrical Installations regulations and other statutory requirements comprising but not limited to the following:-				
	(a) Establish 450x450x700mm deep earthing chamber, complete with internal plastering, and heavy duty eafw Steel cover clearly marked "Earth"	1	No.		
	(b) 25mm X 3mm pure copper tape as Furse.	3	Lm.		
	(c) Pure copper earth rod (1500mm x 16mm).	1	No.		
	(d) Driving head for earth rod.	1	No.		
	(e) Tape to earth rod clamp as Furse.	1	No.		
	(f) 16mm ² single core green PVC insulated copper lead.	30	Lm.		
11.03	50mmx50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved	50	No.		
11.04	Ditto but circular cable junction box.	100	No.		
11.05	Lay HG PVC conduiting of size 3x32mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for telecommunication services.	50	Lm.		
11.06	Lay HG PVC conduiting of size 3x50mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for internal power reticulation.	50	Lm.		
11.07	Lay HG PVC conduiting of size 1x100mm Ø HG PVC ducts inter-connecting electrical service ducts.	80	Lm.		
12.15	Lay HG PVC conduiting of size 1x200mm Ø HG PVC ducts inter-connecting electrical service ducts.	0	Lm.		
12.16	Supply and Install an 18SWG steel sheets spray painted to approval adaptable box 250mmx250mm to Engineer's approval.	1	No.		
13.00	BONDING & GROUNDING				
13.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 12.00 above to Electrical Engineer's approval.	1	Item		
	Total for Schedule No. 1: Ground Floor - Lighting & Power Dist. C/F to Price Collection Page				

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
SCHEDULE NO. 2: FIRST FLOOR - LIGHTING & POWER DISTRIBUTION					
1.00	Supply, Deliver To Site, Install, Test and Commission as per BS 7671:2008 the following:- PRELIMINARIES				
1.01	Allow for wall hacking (chasing) and associated builders works.	1	Lot		
1.02	Allow for 10% extended preliminaries, Clause 1.66 of Section C, on item 1.01.	1	Item		
2.00	LIGHTING POINTS				
2.01	Lighting points wired in 3x1.5mm ² SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	(a) 1 way switching	105	No.		
	(b) 2 way switching	40	No.		
	(c) Intermediate switching	15	No.		
	(d) Unswitched	6	No.		
3.00	LIGHTING FITTINGS				
3.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type A- 18W 600x600mm ceiling Panel light Installation	66	No.		
	(b) Type D	6	No.		
	(c) Type EXIT	6	No.		
	(d) Type N	4	No.		
	(e) Type O	37	No.		
	(f) Type P	26	No.		
4.00	LIGHTING SWITCHES				
4.01	10A white lighting switch plates flush mounted on masonry wall as Clipsal, BG Nexus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	18	No.		
	(b) 2 gang 1 way	6	No.		
	(c) 3 gang 1 way	6	No.		
	(d) 1 gang 2 way	8	No.		
Sub-Total C/F to Next Page					
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	(e) 2 gang 2 way	6	No.		
	(f) 1 gang intermediate	6	No.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
5.00	POWER POINTS & ACCESSORIES				
5.01	13A ring mains socket outlet points wired in 3x2.5mm ² SC PVC insulated Cu cables drawn in 25mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories socket outlet plates for:- (a) Single outlet (b) Twin outlet	16 40	No. No.		
5.02	13A switched Ivory moulded case socket outlet plates with in-built 5V DC, 2.1A Max. Type A Standard USB3.0 and Type C Fast-Charging Ports; flush mounted on masonry wall as Tronic, MK, Clipsal, BG, Crabtree, Schneider, Elite Elegance or equal and (a) Single switched (b) Twin switched (c) Ditto but Waterproof (IPX4)	16 30 10	No. No. No.		
5.03	Nurse Call Intercom Power Point 25mm Ø HG PVC conduits complete with all accessories but excluding socket outlet plates. Conduit Only	40	No.		
5.04	Air Conditioner Power Point comprising wiring drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP	6	No.		
5.05	30A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.05 above as MK, Crabtree or equal and approved	0	No.		
5.06	Air Circulating Fan Power Point comprising wiring drawn in 3x2.5mm ² SC-PVCI-CU cables in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	0	No.		
5.07	20A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.07 above as MK, Crabtree or equal and approved equivalent.	0	No.		
5.08	Hand Dryer Power Point wired in 3x4.0mm ² PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding	8	No.		
5.09	13A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.09 above as MK, Crabtree or approved equivalent.	8	No.		
5.10	Hose Reel Pump Power Point wired in 3x2.5mm ² SC PVCI copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but	0	No.		
5.11	20A DP control switch with neon light and cord outlet for item 5.11 above as MK, Crabtree or approved	0	No.		
5.12	Water Booster Pump (3-phase comprising 2.5mm ² 4-Core PVC/SWA/PVC Copper Cable in 25mm Ø concealed HG PVC conduits complete with all accessories but excluding the DOL isolator switch.	0	No.		
5.13	20A TP isolator switch with phase indicating lights and cord outlet for item 5.13 above as MK, Crabtree or approved equivalent.	0	No.		
5.14	Toilet Extract Fan (1-wired in 3x2.5mm ² PVC SC copper cables drawn in concealed 25mm Ø HG PVC conduits complete with all accessories but excluding the DP switch.	7	No.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
5.15	16A DP Control Switch marked 'As Per Application' with neon light and cord outlet for item 5.15 above as MK, Crabtree or approved equivalent.	7	No.		
5.16	Instantaneous water heater power point comprising wiring in 3x4.0mm ² SC PVC Copper Cables drawn in 25mm Ø HG PVC conduits complete with all necessary accessories but excluding the DP switch.	4	No.		
5.17	45A DP switch with neon pilot lamp (indicator) and fused connection unit with angled flexible cable outlet for item 5.17 above as Crabtree or equal and approved equivalent.	4	No.		
6.00 TELEVISION POINTS & ACCESSORIES					
6.01	TV outlet point wired 20mm Ø HG PVC conduits from housing unit and linked to the amplifier in roof space via Telephone/television draw-in boxes complete with all accessories but excluding the TV outlet plate.	6	No.		
6.02	300mmx250mmx150mm, 18SWG, powder coated, telephone draw box spray painted to Engineer's	1	No.		
7.00 DATA/TELEPHONE POINTS & ACCESSORIES					
7.01	Install as provision, Data/Telephone outlet points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking complete with draw wire and all necessary accessories but excluding data/telephone outlet plate.	20	No.		
8 INTERNAL POWER DISTRIBUTION					
Powder Coated purpose made front access lockable 12 way Type B TPN Distribution Board (Recessed) with 250A TP+N+E Bus Bars manufactured in 14 SWG spray painted galvanised mild steel sheet and spray painted (finished) in cream powder coating (or appropriate colour) complete with 150A TPN+E integral isolator, Spareways, Blanking Plates and lockable cover among other accessories but excluding MCBs as per Contract Drawings as Powermax, Power Technics, Schneider Electric, Hausmann or equal and Spare 150A main isolator, TPN+E for the 12 way DB.					
8.01	MCBs rated at 500Vac for items 8.01 above as Schneider or approved equivalent as the following:-	1	No.		
	(i) 10A SP	8	No.		
	(ii) 20A SP	6	No.		
	(iii) 32A SP	6	No.		
	(iv) 45A SP	4	No.		
	(v) 63A SP	6	No.		
	(vi) 100A DP	1	No.		
	(vii) 150A TP	1	No.		
	(viii) SP Spareway	5	No.		
	(ix) Blanking Plates	5	No.		
8.04	RCBO rated at 30mAac, Type AC for item 8.01 above as Hager, Wylex, Crabtree, Schneider or equal and approved equivalent as the following:-	1	No.		
	(i) 150A TPN	1	No.		
8.05	8 way SP&N, flush mounted consumer unit complete with 80A integral isolator as HAGER or approved equivalent complete with all accessories but excluding MCBs.	2	No.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
Sub-Total B/F from previous page					
8.06	MCB's for item 8.05 above as follows: (a) 10A SP (b) 20A SP (c) 63A DP	9 6 9	No. No. No.		
8.07	Carry out comprehensive permanent traffolyte labeling for all the sub-circuits, bus bars, circuit breakers etc. in items No. 8.01, 8.03, 8.05 & 8.06 above indicating the areas served, outgoing cable sizes etc.	1	Item		
9.00	SUBCIRCUIT CABLING WORKS				
9.01	Sub-circuit cable system comprising 50mm ² 4-Core XLPE/SWA/PVC Copper Cable Drawn in 60mm diameter PVC Conduit looped from Ground Floor Distribution Board "DB0F" to First Floor Distribution Board "DB1F" complete with all necessary accessories, but excluding cable glands and lugs.	10	Lm		
9.02	Cable glands and lugs for the above cables.	12	No.		
10.00	SUB-CIRCUIT CABLES				
10.01	Sub-circuit cable system comprising 3 x 16mm ² (Red, Black, Green/Yellow) Single Core PVC Copper cables in concealed HG PVC conduits from MCCB termination of Distribution Board "DB1F" to the consumer units in 50mmx50mm IP65/IP67 cable junction box complete with rubber glands made in Polycarbonate Plastic enclosures as ABB, Clipsal or equal and approved	60	Lm		
11.10	Ditto but circular cable junction box.	100	No.		
11.11	Lay HG PVC conduiting of size 3x32mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for telecommunication services.	200	No.		
11.12	Lay HG PVC conduiting of size 3x50mm Ø HG PVC ducts from the electrical service duct to the metal trunkings for internal power reticulation.	50	Lm.		
11.13		50	Lm.		
12.00	BONDING & GROUNDING				
12.01	Carry out electrical bonding to the earth throughout the entire length of the trunking in item 11.00 above to Electrical Engineer's approval.	2	No.		
Total for Schedule No. 2: First Floor - Lighting & Power Dist. C/F to Price Collection Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
SCHEDULE NO. 3: SECOND (ROOF) FLOOR - LIGHTING & POWER DISTRIBUTION					
	<i>Supply, Deliver To Site, Install, Test and Commission as per BS 7671:2008 the following:-</i>				
1.00	PRELIMINARIES				
1.01	Allow for wall hacking (chasing) and associated builders works.	1	Lot		
1.02	Allow for 10% extended preliminaries, Clause 1.66 of Section C, on item 1.01.	1	Item		
2.00	LIGHTING POINTS				
2.01	Lighting points wired in 3x1.5mm ² SC PVC insulated Copper Cables drawn in concealed 20mm diameter HG PVC conduits complete with all necessary accessories excluding switch plates and fittings for:-				
	(a) 1 way switching	2	No.		
	(b) 2 way switching	6	No.		
3.00	LIGHTING FITTINGS				
3.01	Lighting fittings c/w all accessories including lamps of appropriate wattage and colour rendering as follows:-				
	(a) Type Q	2	No.		
	(b) Type R	4	No.		
	(c) Type S	2	No.		
4.00	LIGHTING SWITCHES				
4.01	10A white lighting switch plates flush mounted on masonry wall as Clipsal, BG Nexus or equal and approved equivalent for:-				
	(a) 1 gang 1 way	2	No.		
	(b) 2 gang 1 way	2	No.		
	(c) 3 gang 1 way	1	No.		
	(d) 1 gang 2 way	2	No.		
4.02	Dusk-to-dawn, 5400W/6000VA Max (25A Max) Tungsten/Ballast respectively, 240V, Programmable Twist-Lock Photocell Light Sensor Switch, wall/pole surface mounted as Philips, MK, Schneider or an approved equivalent. (This shall be supplied c/w all necessary accessories and installed (wired) as per control pillar schematics)	1	No.		
5.00	POWER POINTS & ACCESSORIES				
5.01	13A ring mains socket outlet points wired in 3x2.5mm ² SC PVC insulated Cu cables drawn in 25 mm Ø HG PVC conduits concealed in building fabric and complete with all the necessary accessories	2	No.		
	(a) Twin outlet				
5.02	13A switched socket outlet plates ; flush mounted on masonry wall as Tronic, MK, Clipsal, BG, Crabtree, and approved equivalent for:-	0	No.		
	(a) Twin switched - Waterproof (IPX4)	2	No.		
Sub-Total C/F to next page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from previous page				
1	CCTV POINTS				
1.01	Install as provision, CCTV Surveillance System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking	15	No.		
2	ACCESS CONTROL POINTS				
2.01	Install as provision, Access Control System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking	10	No.		
3	FIRE ALARM POINTS				
3.01	Install as provision, for fire alarm System points done in 25mm Ø HG PVC conduits concealed in building fabric/trunking	145	No.		
Total for Schedule No. 3: Second (Roof) Floor - Lighting & Power Dist. C/F to Pr. Col. Page					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
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PRICE COLLECTION PAGE - BILL 2: LIGHTING & POWER DISTRIBUTION

Item	Description
1.00	Total for Schedule No. 1: Ground Floor - Lighting & Power Distr. Brought Forward
2.00	Total for Schedule No. 2: First Floor - Lighting & Power Distr. Brought Forward
3.00	Total for Schedule No. 3: Second Floor - Lighting & Power Distr. Brought Forward
Total for Bill No. 2: Lighting & Power Distribution	
C/F to Summary Page	

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Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
A.1	LIGHTNING PROT', EARTHING & BOND' SYSTEM <i>Supply, Install, Test and Commission Lightning Protection, Earthing and Bonding System Comprising the following:-</i>				
1	AIR TERMINATION				
1.01	Supply and lay along the roof ridge 25mm X 3mm thick bare pure copper tape as Furse or approved equivalent. Slate Holdfast to fix the above tape at 1000mm intervals at the roof ridge for air termination system complete with tape jointing clamps and all the necessary accessories all as Furse or approved equivalent.	20	Lm		-
1.02	Air Termination Spike (lightning arrester) comprising 2000mm by 15mm diameter copper rod as Furse P.No. RA240 complete with; Copper Multiple Point and Copper Ridge Saddle as Furse or approved equivalent.	10	No.		-
1.03	DC Tape Clips for Fixing the Down Conductors to the wall as Furse or approved equivalent.	1	No.		-
2	DOWNWARD CONDUCTOR				
2.01	Downward Conductor comprising 25mm X 3mm thick bare pure copper tape as Furse or approved equivalent.	18	Lm		-
2.02	Copper Square Tape Clamp for making crossing tape joints as Furse or approved equivalent.	10	No.		-
2.03	Copper Oblong Test/Junction Clamp complete with phosphor bronze nuts, washers and screws mounted 1800mm above finished ground level as Furse or approved equivalent.	10	No.		-
2.04	32 mm diameter galvanised steel conduit recessed in wall between test clamp and ground and through the ring beam for sleeving at roof level for securing the down conductors.	0	No.		-
2.05	Copper Saddles fixed at 1000mm intervals at the surface on wall for the down conductor system complete with all the necessary accessories all as FURSE or approved equivalent.	20	Lm		-
2.06	Test clamp as FURSE or approved equivalent.	10	No.		-
2.07	Earth Inspection Concrete Chamber 300mm x 300mm x 300mm with an air tight inspection cover to satisfaction and approval of Project Electrical Engineer.	1	No.		-
3	EARTHING				
3.01	Earthing with 16mm nominal diameter by 1500mm long threaded copper bond earth rods, complete with driving head and clamp.	1	No.		-
3.02		2	No.		-
	E/44				
Sub-Total C/F to Next Page					-

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	Sub-Total B/F from Previous Page				-
3.03	Driving Stud for the Item above as Furse ST 300 or approved equivalent.	2	No.		-
3.04	Earth Electrode Rod-to-Downward Conductor Copper Tape Clamps as Furse CR 105 or approved equivalent.	2	No.		-
3.05	1500mm x 1500mm copper earth mat/grid (pure copper electrode) made from 25mm x 3mm thick bare copper tape (as Furse P. No. TC030 or approved equivalent). Copper tape to be spaced at 200mm interval, gas welded joints to Engineer's approval and 6m long 25mm x 3mm insulated copper tape clamped to the down conductors. Include burrying the assembled grid to a minimum depth of 750mm below ground finish level (at permanent moisture level) and improving the earth to Engineer's approval. The measured earth resistance to be less than one (1) ohm.	1	No.		-
4	BONDING (GROUNDING)				
4.01	Carry out electrical bonding and clamping to all metal work including water pipes, gas pipes, hand-rails, air-conditioning units, window frames, cladding, metal roof etc. and the main earth for the building throughout the entire electrical infrastructure to the satisfaction of the Electrical Engineer.	1	Item		-
Total for Bill No. 6: Lightning Protection, Earthing & Bonding Syst. C/F to Summary Page					-

ELECTRICAL INSTALLATION WORKS

Item	Description	Amount (Kshs)
1	Bill No. 1: Sub-Contract Preliminaries Brought Forward	
2	Bill No. 2: Lighting & Power Distribution Brought Forward	
3	Bill No. 4: Lightning Protection, Earthing & Bonding System Brought Forward	
4	Allow Ksh. 500,00 for Design and Supervision for specialized to be spent at the instruction of the Project manager with the approval of the accounting officer	500,000.00
5	Allow for preparation of 4No. Sets of "As Installed" Drawings	
6	Provisional Sum for Contingency	500,000.00
7	Total For Electrical Installation Works Carried Forward to Form of Tender	

Grand Total Cost Estimates: Say Kshs. 1.09

Total Estimated Amount in Words: - Kenya Shillings

.....

..... Bidder's Name & Official Stamp

P.O. Box.....

Signature Date.....

PIN No. VAT Certificate No.

Witness..... Address.....

Signature of Witness..... Date.....



REPUBLIC OF KENYA

MINISTRY OF LANDS, PUBLIC WORKS, HOUSING & URBAN DEVELOPMENT

*State Department for Public Works
Directorate of Electrical Engineering*

SCHEDULE OF LIGHTING FIXTURES – MBOONI SUB-COUNTY HOSPITAL

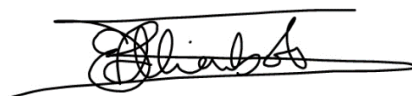
1. **Type A** 60W, 600mm Square, Recessed LED Panel Light, 5400lm, 6500K (Daylight). As **Philips, EOS or equal and approved equivalent**.
2. **Type B** 60W, 600mm Square, Surface LED Panel Light, 5400lm, 6500K (Daylight). As **Philips, EOS or equal and approved equivalent**.
3. **Type C** 4x40W, 600mm Square Modular Prismatic LED Luminaire, Ceiling Flush (Surface) Mounted, designed for use in lay-in ceiling grids c/w CAT 2 Louvre retention system, electronic ballast and plug and socket installation method. As **Thorn, Philips or an approved equivalent**.
4. **Type D** 600mm (2ft.), 1x10W LED Tube/Mirror Strip Modular Luminaire with Prismatic Diffuser, white finish and on/off pull switch. Dual voltage 240/110V c/w 100mA Shaver Unit/Socket Outlet and Hair Dryer. As **Micromark, Tronic or equal and approved equivalent**.
5. **Type E** 28W, Slim Recessed LED Downlight, 2000lm, 6500K (Daylight). As **Philips Coreline slim downlight or equal and approved equivalent**.
6. **Type EXIT** Self-contained double sided EXIT sign with 8W LED lamp for non-maintained emergency lighting for 3 hour duration. As **Sapphire or equal and approved equivalent**.
7. **Type F** 15W, 840lm, 200mm Diameter, LED Low-Glare Dimmable Downlight, 3000-6500K (Tri-Colour), 35000 Hrs (LED), IP54, satin finish, aluminium reflector and silver effect and suitable for recessed installation in standard ceiling. As **Maximus or equal and approved equivalent**.
8. **Type G** 26W TC-D Ceiling Recessed LED downlight incorporating a thermally optimised, deep drawn aluminium body with IP54 as standard. Fixed or dimmable

output or with emergency function. Correlated colour temperature is 6500K (Daylight) with CRI >80 and UGR <22. Overall height <100mm and cut out of 150mm or 200mm Lifetime is 50,000 hours (L80) at Ta 25°C. As **Thorn Chalice LED 190 ECO or equal and approved equivalent.**

9. **Type H** 13W LED downlight incorporating thermally optimised, deep drawn, 230Lm/W, 6500K (Daylight), aluminium body with IP44 standard. As **Thorn Cetus LED, Philips or equal and approved equivalent.**
10. **Type I** universal robust and elegant wall mounted luminaires for wall or façade decorative downlighting. Available in 2 sizes, narrow or medium beam, one or two windows, with 2x3W LEDs, 3000K (Warm White), grey aluminium body sealed to IP65, gear integrated. Size 1: Ø90mm; Size 2: Ø140mm. As **Thorn Cesar Wall or equal and approved equivalent.**
11. **Type J** Aluminium bodied, semi-conical wall light for surface mounting with opal polycarbonate diffuser employing 28W LED. As **Thorn Avenue Wall 300 II or equal and approved equivalent.**
12. **Type K** 1x70W HSE Lamp, 5800lm with CRI >20, Aluminium Bulkhead with moulded glass cover for tungsten lamps, IP65 protection. As **Eaton AG Bulkhead, Thorn DB Bulkhead, Thorn Eyekon (40W LED Bulkhead) or equal and approved equivalent.**
13. **Type L** IP66 LED Weatherproof 600mm Luminaire, 2x18W, 117Lm/W, 6500K (Daylight) LED, 50000 Hrs Lamp Life, Polycarbonate Housing and Optical Cover. As **Thorn Aquaforce Pro, Philips or equal and approved equivalent.**
14. **Type M** 1200mm, 2x36W standard waterproof IP65 fluorescent fitting with injection moulded polycarbonate body and polycarbonate diffuser for T8 lamp with switchstart gear. As **Thorn Aquaproof or an approved equivalent.**
15. **Type N** 1200mm, 1x36W, 4450lm LED bare batten fitting of slim cross section with clip-on cover plate and adjustable end cap system with a detachable LED engine. Switchable or DALI ballast, integral emergency and sensor versions available. As **Thorn PopPack LED or equal and approved equivalent.**
16. **Type O** 28W, 6500K, 3000lm circular (round) recessed modular LED panel luminaire. As **Uranus LED Round Panel, Philips SmartBright LED Oyster or equal and approved equivalent.**
17. **Type P** 28W, 6500K, 3000lm, IP65 (Waterproof), 2D standard circular surface modular LED panel luminaire with polycarbonate body and white trim, polycarbonate

- opal diffuser and integral control gear, compact tube lamp. As **Thorn Superclub or equal and approved equivalent**.
18. **Type Q** 27W, IP65, 2500lm, LED floodlight. As **Philips or equal and approved equivalent**.
19. **Type R** 100Watts IP66 High Power, Heavy-duty, Outdoor LED Flood Lights with in-built surge protection, 100Lm/W, 6500K (Daylight) and over 50000 Hrs Lamp Life complete with all necessary accessories. As **Ensava, Thorn LEO, Thorn LED Fit, Philips or equal and approved equivalent**.
20. **Type S** 300Watts IP66 High Power, Heavy-duty, High Quality Outdoor Solar LED High Quality Outdoor Security Solar LED Street Lights with In-built Photocell light sensor switch, 6500K (Daylight) and over 50000 Hrs Lamp Life complete with all necessary accessories. As **Vellmax, Osram, Ensava or equal and approved equivalent**.
21. **Type T** Twin spike-mounted IP66 Outdoor LED Luminaire, 40W, 6500K (Daylight). As **Ensava, Osram, Philips or equal and approved equivalent**.
22. **Type U** Twin Aviation Obstruction (Aircraft Warning/Beacon) LED Lights, 6.5W-20W, IP66, Dual-light (Flashing Red – twilight and night-time operations & Flashing White – daytime operations) c/w obstruction light controller and all necessary accessories. As **Dialight Vigilant LED LI, Dialight SafeSite, Avlite, S4GA or equal and approved equivalent**. (*This shall be solar or grid powered at the discretion of the Electrical Engineer*).
23. **Type X-RAY** Double-Panel (Two-Film), Medical LED-Lit X-Ray Film Viewer (Negatoscope), 65W, 5700-6500K, Variable Brightness (975-16250lm), wall-surface mounted and over 100,000 Hrs LED Lamp Service Life complete with all protective switchgear and necessary accessories. As **Medsurge DARAY Double X-ray Illuminator, Medixview N-Series Double View Box or equal and approved equivalent**.

Designed/Selected by:



Victor Odhiambo (SSE – Elect.)
Project Electrical Engineer (SDPW)