

KISIAN 33/11KV SUBSTATION

BILL OF QUANTITIES FOR PROPOSED BUILDING & CIVIL WORKS AT KISIAN 33/11 KV SUBSTATION				
ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	<u>Preliminaries</u>			
A	Allow for a temporary site office adequate to accomodate six persons,notice board, shelves and , store for materials and tools storage.	ITEM	1	
B	Allow for clean water for the works	ITEM	1	
C	Allow for all the necessary statutory approvals for the works, drawings, by relevant County Government authorizaties, replication of drawings to required formats, endorsement by relevat professional persons and submit drawings to client before work commencement.	ITEM	1	
D	Allow for temporary sign post for the proposed works and permanent sign post as described.	ITEM	1	
E	Recover existing chainlink fence on concrete posts.	ITEM	1	
F	Allow for security and insurance for the proposed works	ITEM	1	
G	Allow for supply for substation with water including all local authorities' charges, sub main pipes and all connections, testing and commissioning of all the plumbing works.	ITEM	1	
H	Allow for a qualified personel conservant with Kenya Power safety regulations for the entire construct period	ITEM	1	
I	Allow for National Construction Authority (NCA) Project registration fee for onward submission on behalf of the clients. This is 0.5% of the value of contract.	ITEM	1	
J	Demolish and cart away debris of the existing guard house and pit latrine after completion of the new ones.	ITEM	1	
K	Backfill and compact to client satisfactory the existing pit latrine.	ITEM	1	
	<u>CIVIL WORKS</u>			
1	<u>Switch yard</u>			
L	Excavate oversite vegetable soil average depth 200mm and cart way to Kisumu County Government designated damping site	SM	2250	
M	Average 300mm thick selected well compacted imported and approved murram fill, compacted in layers of 150mm thick using a plate compactor to receive ballast to gradual slope terminating at srrorm drain	SM	2250	
N	Prepare and apply Gradiator 4TC or equal and approved insecticide to surfaces of blinding as per Manufacturer's written instructions	SM	2250	
O	Apply suitable and approved weed killer, herbicide to surfaces of blinding as per the Manufacture's written instructions and guarrantee and provide a copy to client.	SM	2250	
P	1000 gauge polythene or other equal and approved mebrane laid on compacted and treated surface with weltd laps of 200mm wide.	SM	2250	
Q	Supply and spread uniformly 150mm thick 1 inch '(25-40mm) ballast in switchyard. (machine crushed)	SM	2000	
R	Provide 150x250mm high precast concrete or insitu channel along the edges of invert drain block to secure from falling ballast.	LM	90	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
2	<i>ACCESS ROAD AND PARKING AREA</i>			
A	Excavate for 5.0 metres wide access road depth not exceeding av.450mm and cart away the spoil	CM	146	
B	Backfill average 300mm thick with selected well compacted hardcore fill, compacted in layers of 150mm thick using 10 tonne vibrating roller to receive paving blocks	CM	160	
C	50mm thick approved and well compacted quarry dust blinding on hardcore surfaces	SM	300	
D	Heavy duty industrial concrete paving blocks size (210x105x80mm) minimum strength 49N/mm square laid to slope on quarry dust and compacted	SM	300	
E	125 x 250 mm Splayed kerb to BS 340 including 125 x 100 mm channel on and including concrete Class 'E' foundation and 100 mm haunching to back of a kerb including all necessary excavation, formwork and disposal.	LM	148	
F	Ditto curved to plan.	LM	8	
G	Extra over for junction between straight and curved kerbs.	NO	5	
	<u>GRAVELLING (Access road)-entry</u>			
H	Excavate commencing from stripped level depth not exceeding 900mm deep for piped culvert and cart way the spoil	CM	12	
I	50mm thick plain concrete blinding to make up levels for the precast culvet	SM	12	
J	Supply and install 600mm internal diameter concrete pipe culvert and headwall as per drwg.	LM	12	
K	Vibrated mass concrete class 20/25 (1:2:4) in culvert surrounding thickness 200mm including head and wing wall	CM	9	
L	Excavate commencing from ground level 8.0metres wide access road and not exceeding 1.5m deep and cart way the spoil	CM	60	
M	Hand pack and compact hardcore 300mm layer to external road section to main road	CM	90	
N	Approved murrum fill 300mm well compacted with vibratory rollers in 150mm thick layers to above road to engineers approval	SM	150	
O	50mm surfacing of entry road with APPROVED gravell	SM	150	
	<u>ROAD MARKING</u>			
	Prepare surfaces and apply three coats of approved road marking paint: to			
P	Kerb stones and parking 75 to 150mm girth with Kenya Power branded colours.	SM	48	
Q	<u>Cable ducts</u>			
R	Supply and install 150mm diameter heavy gauge PVC pipes as ducts for cables crossing the access road and control room cable trench entrance location.	LM	48	
S	Vibrated mass concrete class 20/25 (1:2:4) in pvc cable ducts surrounding.	CM	2	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
2	<u>SWITCH YARD PLINTHES</u>			
	Switchgear Foundation plinth for the conversion of wooden structures steel, as per the General arrangement drawing (GA) and all to structural engineers details.			
A	Excavate foundation pits commencing from reduced level but not exceeding 1.5 m deep	CM	130	
B	Ditto but not exceeding 3.0metres	CM	50	
C	Backfill and ram selected excavated material around foundations	CM	80	
D	Cart away surplus excavated materials from Site to municipal council designated dumping site.	CM	25	
E	Disposal of water and Strutting	ITEM	1	
F	Blinding mix (1:4:8 - 50 mm)	SM	126	
G	Class 25(20) in foundations	CM	35	
H	Class 25(20) in stub column bases with face finishes	CM	69	
I	steel 8 to 12mm to bases and column	KG	5150	
J	Shuttering to columns stubs	SM	425	
K	Edges; 75 to 250 mm to plinths	LM	450	
L	grouting bolts /inserts and the like by holding in position when pouring concrete not exceeding 600mm long-bolts supplied by client	NO	400	
M	13mm thick plaster (1:3mix) to top surface of foundations with smooth finish trowelled	SM	80	
N	Attendance for KPLC staff to do earthing before all blinding including security for all copper strip edges	ITEM	1	
2	<u>CABLE TRENCH (600x600mm deep) length approx.150metres at various locations</u>			
O	Excavate for trench from reduced level not exceeding 1.5 metres deep and cart away	CM	125	
	Ditto but 300mm wide and 300mm deep for PVC cable ducts	CM	5	
P	Load, cart away from site excavated materials and dispose at areas designated by local authority.	CM	100	
Q	Fill in and ram selected excavated materials around trench walls	CM	70	
	<u>Trench bed</u>			
R	50mm plain concrete(1:4:8) blinding on cable trench	SM	120	
S	<u>Vibrated reinforced concrete class 20/20 1:2:4 as described in:</u>			
T	150mm thick trench base	CM	22	
U	150mm thick trench walls with fair face finish	CM	29	
V	150mm thick plain concrete haunching on laid 100mm diameter PVC cable ducts	CM	2	
W	Supply and lay 100mm diameter medium gauge PVC ducts	LM	50	
X	Ditto but bends	NO	30	
	<u>Smooth formwork to</u>			
Y	Sides of trench wall	SM	435	
	<u>Steel reinforcement bars including tying bending</u>			
	<u>spacer blocks tying wires and fixing high tensile</u>			
	<u>bars to BS 4461</u>			
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
A	Y 8mm at 150 centres in cable trench	KG	533	
	<i>covers to trench covers</i>			
B	Provide and put in place (900x300x75mm) thick precast concrete trench covers reinforced with Y8 bars spaced at 100mm both ways with fair face finish on both side; with all edges protected with 50x50x3mm angle iron.	NO	520	
	<i>Cable trays</i>			
C	Supply and fix steel fabricated cable trays 50x50x4mm thick angle iron and weld together 200mm long vertical angle stand spaced at 400mm C/C to horizontal ; 50x50x4mm thick galvanized angle iron cut to 600mm long pcs and place on top of angle iron spaced at 400 C/C to form cable try.	LM	150	
	<u>CABLE TRENCH (900x900mm deep) length approx.150metres at various locations</u>			
D	Excavate for trench from reduced level not exceeding 1.5 metres deep and cart away	CM	189	
E	Load, cart away from site excavated materials and dispose at areas designated by local authority.	CM	189	
	<i>Trench bed</i>			
F	50mm plain concrete(1:4:8) blinding on cable trench	SM	180	
	<u>Vibrated reinforced concrete class 20/20 1:2:4 as described in;</u>			
G	150mm thick trench base	CM	27	
H	150mm thick trench walls with fair face finish	CM	41	
	<i>Smooth formwork to</i>			
I	Sides of trench wall	SM	600	
	<u>Steel reinforcement bars including tying bending spacer blocks tying wires and fixing high tensile bars to BS 4461</u>			
	Y 8mm at 150 centres in cable trench	KG	1023	
	<i>covers to trench covers</i>			
J	Provide and put in place 1200x300x75mm) thick precast concrete trench covers reinforced with Y8 bars spaced at 100mm both ways with fair face finish on both side; with all edges protected with 50x50x3mm angle iron.	NO	520	
	<i>Cable trays</i>			
K	Supply and fix steel fabricated cable trays 50x50x4mm thick angle iron and weld together 200mm long vertical angle stand spaced at 400mm C/C to horizontal ; 50x50x4mm thick galvanized angle iron cut to 900mm long pcs and place on top of angle iron spaced at 400 C/C to form cable try.	LM	150	
4	<u>2NO.TRANSFORMER PLINTH</u>			
L	Excavate pit foundations not exceeding 1.5 metres deep from reduced levels	CM	106	
M	Return fill and ram suitable excavated material to the sides of the plinths	CM	30	
N	Cart away from site surplus excavated materials	CM	76	
O	Plain concrete 50mm thick blinding 1:4:8 to footing	SM	102	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>Vibrated Reinforced Concrete Class 25/20 mm Aggregate in:-</u>			
A	Base	CM	21	
B	PEDESTALS	CM	16	
C	COVER SLAB-300mm thick	CM	18	
	<u>High Tensile Steel Reinforcement Bars; Cold Worked to BS 4461 (Provisional)</u>			
D	8 mm diameter	KG	624	
E	12 mm diameter	KG	2100	
	<u>Fairface Formwork to:-</u>			
F	Sides of base 225-300mm wide	LM	36	
G	Ditto slab	LM	32	
H	Vertical sides of footing	SM	48	
	<u>Hardcore filling</u>			
I	Approved hardcore filling compacted to Engineer's approval	CM	25	
J	Blind surface of hardcore with lean concrete	SM	23	
K	1000 gauge polythene sheet laid over hardcore	SM	23	
	<u>SUMP RCC WALLING</u>			
	<u>Mass insitu concrete (1:4:8) in:-</u>			
L	Strip footing	SM	28	
	<u>Vibrated Reinforced Concrete Class 25/20 mm Aggregate in:-</u>			
M	Base	CM	9	
N	Walling finished fair face	CM	10	
	<u>Formwork</u>			
O	Vertical sides of base	SM	50	
U	Vertical sides of walling	LM	56	
	<u>High Tensile Steel Reinforcement Bars; Cold Worked to BS 4461 (Provisional)</u>			
P	8 mm diameter	KG	506	
Q	10 mm diameter	KG	798	
R	Supply and fix fabricated 2NO. heavy duty grating with deformed R16 bar at 20mm centres, welded on 50x50x4mm angle lines and another 50x50x4mm angle lines anchored to concrete with 10mm inserts; well primed base coat and two coats zinc- chromate paint to cover the transformer oil spillage sump.	ITEM	1	
S	OIL sump chamber 2m x 5m x 2m deep; perimeter 200mm thick block walling; internal plaster complete with niru finish; with ring beam at every 2m interval 250x200mm with 4 nos.12mm bars and 8mm shear links at 200mm spacing; cover slab with manhole opening 150mm reinforced with 8mm steel bothways at 150mm spacing; heavy duty steel cover; including pvc pipe 4"connecting with the main transformer pit not exceeding 6m away.-in two compartments	ITEM	1	
T	Provide galvanized 125 x 75mm U Channels welded to triangular shape (1.5x1.2x1.9metres); placed in reinforced concrete size, 1.0x1.0metres), with approx. of the tip exposed above the concrete, including 50mm diameter hole drilled on exposed section.	NO	2	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>BUILDING WORKS</u>			
	<u>CONTROL ROOM 10M X5M</u>			
A	Excavate strip foundation commencing from stripped level but not exceeding 1.5m deep.	CM	30	
B	Ditto but cable trenches,column bases	CM	18	
C	Ditto but to reduce level for floor slab.	CM	13	
D	Extra over excavation for excavation in rock for all classes at any	CM	2	
E	Allow for all necessary planking and strutting.	ITEM	1	
F	Allow for keeping excavation free from general water.	ITEM	1	
	Sawn formwork to: -			
G	sides of strip foundation	LM	68	
H	Ditto but cable trench	SM	36	
I	Ditto but column bases and footing	SM	9	
	Concrete.			
	Mass Concrete Class P as described.			
J	Plain concrete (1:4:8-20mm aggregates) in 50mm thick blinding for strip foundation	SM	20	
K	Ditto to column bases	SM	6	
L	Ditto to cable trenches	SM	15	
	Vibrated reinforced concrete class 20/20 (1:2:4/25) as described in			
M	Strip foundation	CM	4	
N	Cable trenches	CM	6	
O	Column bases	CM	2	
P	Columns footings/stubs	CM	1	
Q	concrete door ramp	CM	1	
	High yield mild steel reinforcement from 8mm to 12mm including cutting, bending, spacers, tying wire and fixing to BS 4449 in, strip foundation, column base, footing and cable trenches.			
R	Y 12	KG	239	
S	Y 10	KG	169	
T	Y8	KG	175	
	Substructure natural stone walling in cement sand mortar (1:4) including and reinforced with 20 SWG Hoop iron in every alternative course			
U	200mm thick wall.	SM	53	
	FILLING			
V	Return, fill and ram approved imported and selected material around foundations.	CM	38	
W	Load cart away surplus excavated materials and dispose in areas designated by council	CM	15	
X	Selected hardcore filling, compacted in layers of 150mm thick to make up levels to satisfaction of client	CM	20	L
Y	50mm thick approved murram blinding on hardcore fill.	SM	50	
	Insecticide.			
Z	Prepare and apply "Premise 200 SC " or equal and approved insecticide to surfaces of blinding as per manufacturer"s written	SM	50	
	Damp Proofing.			
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
A	1000 gauge polythene DPM laid on top of blinding including 200mm side and end lap	SM	50	
	Mild steel bar to BS 4449;			
B	Double BRC mesh reference No. A142 weighing 2.22kg per square meter including 150mm minimum end and side lap,bends, tying wires and spacer blocks.	SM	50	
C	Vibrated reinforced concrete class 20/20 (1:2:4/25) as described in			
D	150mm thick ground floor slab.	SM	42	
	Sawn formwork to;			
E	Sides of ground floor slab 100-150mm high	LM	30	
	Superstructures			
	Damp Proof Course.			
F	200mm wide damp proof course (DPC) laid with 1:3mix cement sand mortar.	LM	26	
	Walling			
	walling in cement sand mortar (1:3) including and reinforced with 20 SWG hoop iron in every two alternating course.			
G	200mm thick smooth dressed natural stone wall/approved concrete blocks/Machine cut including making horizontal keys on external wall surface.	SM	140	
	Sawn formwork to;			
H	Vertical sides of ring beam	SM	35	
I	Ditto but soffit	SM	8	
J	Ditto but soffit of roof slab	SM	50	
K	Sides of roof slab 100-150mm high	LM	30	
	Vibrated reinforced concrete class			
	20/20 (1:2:4/25) as described in:			
L	Columns	CM	2	
M	Ring beam	CM	5	
N	150mm thick roof slab	SM	50	
	Steel reinforcement bars including cutting, bending, spacer blocks, tying wires and fixing. High tensile bars to BS 4461: 8mm to 12mm bars to:			
O	Y 8	KG	146	
P	Y 10	KG	507	
Q	Y 12	KG	240	
	Supply and fix fabricated steel 5 No.Trusses spanning 5000mm and hoisted height not exceeding 4.00m high above finished floor as described;			
R	Trusses consisting of 50x50x4mm tie beam,rafters 50x50x3mm, struts and ties 50x50x3mm;all with 5 cleats 100x50x4mm for purlin anchor,to heights not exceeding 4m spanning 5m with weight not exceeding 200kg	NO	5	
S	zed purlines ZS6 100mm deep	LM	88	
T	Prepare and apply 2 coats of metal primer on toof metal structure.	SM	38	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
A	Supply and fix BP760 box profile factory pre-painted gauge 28 roofing sheets to an approved colour laid with 94mm side laps and 150mm end laps fixed to steel 'Z' purlin (m/s) including 'J' bolts washers, nuts and rubber caps at 600mm centers	SM	78	
B	Ditto but 28Gx480mm with stiffeners ridge caps	LM	11	
	Rainwater Goods			
A	14 Gauge mild steel sheet welded and bolted to gutter stool	LM	22	
B	Fabricate SHS 50x50x4mm thick steel fascia cladding framework structure, 50x50x4mm angle iron struts, including fixing into the wall with adequate wall passes as described to client satisfaction.	LM	124	
C	Supply and fix BP760 box profile factory pre-painted gauge 28 cladding sheets to an approved colour laid with 94mm side laps fixed to steel 50x50x4mm fascia cladding frame including 'J' bolts washers, nuts and rubber caps.including underside of cladding	SM	60	
D	Purpose made 14 gauge box gutter 900mm girth, srewed/welded to gutter stool on 50x25x3mm thick M.S fixed to rafters at 600mm centres; internally painted with two coats of black bituminous paint, externally with one coats of red oxide primer and two coats of finishing silver alluminium paint	LM	27	
E	Extra over for stopped ends.	NO	4	
F	Ditto for 150mm diameter holes in gutter.	NO	2	
G	Extra over down pipe for swan neck to the water tank	Item	1	
	Painting generally.			
H	Prepare and apply 2 coats of red oxide primer and apply 2 coats of silver alluminium finish on rainwater goods	SM	48	
	Windows			
I	Composite purpose made mild steel casement window, frame size, 25mm 'Z' bar ,25mm mullion with 63x3mm flat flat bar welded on the back and 25mm 'T' bar for window pane panels of maximum 275x225mm complete with 5mm glass with putty all to client approval.	NO	4	
J	Prepare and apply 2 coats of red oxide primer and apply 2 coats of matt finish paint on windows frame of 63mm girth	SM	7	
K	250 x 50mm thick precast concrete weathered and throated window sill, reinforced, finished fair face on all exposed surfaces, bedded and jointed in cement sand motar (1:4)	LM	7	
	Doors			
L	Double leaf steel doors 1500x3000mm high in two panels 750mm wide consisting of 1.6mm thick plate welded into50x25x3mm frames;75x50x6mm main frame with wall anchors;louvre lades into 500mm and bottom 1m depth all 1.6mm thick;-main entrance as per the drawing provided.	NO	2	
M	Ditto but single leaf steel internal door1500mm wide	NO	1	
N	Prepare and apply 2 coats of red oxide primer and apply 2 coats of gloss paint on steel doors internall and externally.	SM	20	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	Finishes			
	Internal Finishes (Walling)			
A	13mm thick cement sand plaster (1:4) to walling mixed with lime smooth finish to receive paint	SM	140	
B	13mm cement sand mortar(1:4) on the gable surface externally.	SM	8	
C	Prepare and apply three coats of 1st silk vily matt on wall plastered surfaces	SM	142	
	Flooring			
D	20mm thick cement sand (1:3) screed for floor to receive terazzo	SM	42	
E	30mm thick well polished terrazzo floor finish	SM	42	
F	32 x 2mm thick Plastic dividing strips.	LM	108	
	Plinth Area.			
G	12mm thick cement sand mortar(1:4) render to plinth.	SM	14	
H	Prepare and apply three coats of bituminous paint to plinth.	SM	14	
I	Provide 50x50x3mm angle iron embedded on the edges of cable trench with 10mm long insertion to receive chequer plate covers	LM	27	
J	Provide 600x650x6mm thick chequer plate covers to cable trench including provision of adequate handles to ease lifting to client approval.	NO	28	
	WATER SUPPLY			
K	Connect piped water using 1"G.I.class B pipe to the substation by liaising with the relevant water body; including excavation of water pipe water trench, backfilling, all connections and accessories.	ITEM	1	
L	Supply and install 6000 litres an approved plastic water tank, approved 3/4" watertap and concrete platform including all necessary required fittings and connections	ITEM	1	
	External Works			
	Vibrated reinforced concrete class 20/20 (1:2:4/20) in;			
M	concrete ramps at the doors	SM	6	
	Mild steel bar to BS 4449;			
N	Double BRC mesh reference No. A142 weighing 2.22kg per square metre including 150mm minimum end and side lap,bends, tying wires and spacer blocks	SM	6	
O	600x600x50mm thick precast paving blocks embeded on well compacted 50mm murrum, jointed with cement/sand mortar (1:4)	SM	51	
	ELECTRICAL INSTALLATIONS WORKS			
P	Allow for electrical installations to be carried out by a nominated sub-contractor as per electrical drawing-lumpsum and to comprise the following,1No. 12 way 3-phase 415V distribution board rated 100Amps complete with 3 phase MCBS, 32Amps -2set and six 1Phase way MCBS 16Amps.	ITEM	1	
Q	Ditto 1No. Consumer unit rated 60Amps , 6 ways each MCBS rated 16Amps.	ITEM	1	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	SUBSTATION LIGHTING			
A	Supply 240 watt AC (LIGHT DEPENDENT TYPE) bucky head floodlight with energy saver 100 watts sodium metal halide lamps to be hoisted on mast supplied by kplc including all connections	NO	6	
B	Ditto but at the gate pillars	NO	2	
C	supply and fix emergency chargeable lights in the control room to client approval.	NO	2	
	<u>SMOKE DETECTORS</u>			
D	Allow for Hardwired Smoke detectors installations; including a battery back up; to be carried out by a nominated sub-contractor	Item	1	
E	Allow for general attendance on specialist contractor	Item	1	
F	Builder's work in connection with Smoke detector installations; cut away for and attend in all trades on the sub-contractor installing the following points in a mainly concealed system; including chases, holes and recess notching in timber etc; and making good all finishes for cut in boxes, electrical wiring, mounting brackets, smoke detector feeds, fire alarm points etc	Item	1	
	<u>FIRE EXTINGUISHERS</u>			
	<u>Supply and fix controlled discharge 9 litre water carbon dioxide gas fire extinguisher manufactured to BS EN 3-9:2006, Bs 7863:2009, BS 5306-4:2001 and the cylinder manufactured to BS 5045 complete with the following:</u>			
G	Charge and fixing bracket	NO	2	
	Pictorial instructions			
	Colour code			
	Servicable on site			
	discharge horn and hose			
	Brass hot stamping			
	Operating valve			
	Local Fire Brigade approval			
H	Ditto but powder fire extinguishers	No	2	
I	Ditto fire blanket 6' x 4' container	No	1	
J	Supply and fix 300x300mm extractor fan in the battery room			
	<u>STORM WATER DRAINAGE</u>			
K	Rehabilitate approximately 50 metres to the existing storm water drain to client satisfactory, making improvement in areas as directed by the engineer.	ITEM	1	
	<u>Natural Stone masonry Retaining Wall</u>			
L	Excavate trench for retaining wall commencing from reduced level and not exceeding 1.5metres deep and cart away	CM	45	
M	Ditto but for pile	CM	35	
N	50mm thick plain concrete blinding	SM	53	
O	Vibrated reinforced concrete class 20/20 (1:2:4/25 retaining wall strip foundation	CM	5	
P	Ditto but concrete pile bases	CM	6	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	Steel reinforcement bars including cutting, bending, spacer blocks, tying wires and fixing. High tensile bars to BS 4461: to strip foundation & pile bases, concrete footing and top ground beam.			
A	Y 8	KG	182	
B	Y 10	KG	240	
C	Y 12	KG	703	
	Sawn formwork to;			
D	sides of retaining wall strip foundation and stone plie bases	SM	66	
	walling in cement sand mortar (1:3) including and reinforced with 20 SWG hoop iron in every two alternating course.			
E	200mm thick natural stone wall	SM	110	
F	Ditto but pile pillars	SM	67	
	<u>PERIMETER WALLING</u>			
	<u>(Substructures)</u>			
G	Excavate for foundation trench 1.0 m wide commencing	CM	108	
	at reduced level and not exceeding 1.5m deep for wall and retaining wall			
H	ditto to column bases	CM	32	
I	Ditto exceeding 1.5m but n.e 3.0m	CM	6	
J	Load, cart away from site surplus excavated materials and dispose at areas designated by local authority.	CM	103	
K	Fill in and ram selected imported materials around foundation and columns.	CM	49	
L	Allow for keeping all excavations water free by pumping, bailing or otherwise.	ITEM	1	
M	50mm thick (1:4:8) mass concrete blinding to retaining wall foundation base.	SM	65	
	<u>Vibrated reinforced concrete class</u>			
	<u>20/25 1:2:4/25 as described in;</u>			
N	Column bases (1000x1000)mm	CM	6	
O	retaining wall base 1000x250mm	CM	22	
P	retaining wall stub to 1m above ground	CM	27	
	<u>Sawn/Steel form work to</u>			
Q	Vertical retaining walls	SM	446	
	<u>Steel reinforcement bars including tying bending spacer blocks tying wires and fixing high tensile bars to BS 4461</u>			
R	Y12 in retaining wall base	KG	1065	
S	Y12 in column bases	KG	898	
T	Y10 in retaining wall upstand	KG	2048	
U	Y8 binders	KG	474	
V	25mm thick cement/sand (1:4) rendering on walls surfaces	SM	156	
W	Allow for and create 100mm diameter weep holes at ground level ev	No.	34	
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ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>Superstructure-Walling</u>			
A	200mm thick machine-cut or fair faced dressed natural stone walling in cement/sand (1:4) mortar including 20G hoop-iron in every alternate courses. Internally plastered and external horizontal joints keyed in cement/sand mortar(1.3)	SM	568	
B	Excavate for foundation trench 600mm wide commencing from at reduced level and not exceeding 1.5m deep.	CM	203	
C	Extra excavations for widening column bases size (1.0x1.0)m	CM	41	
D	Ditto exceeding 1.5m but n.e 3.0m	CM	7	
E	Extra over for excavation in all classes of rock at any depth	CM	5	
F	Load, cart away from site surplus excavated materials and dispose at areas designated by local authority.	CM	91	
G	Fill in and ram selected imported materials around foundation and columns.	CM	164	
H	Provide all the necessary planking and strutting to uphold sides of trenches.	ITEM	1	
I	Allow for keeping all excavations water free by pumping, bailing or otherwise.	ITEM	1	
J	50mm thick (1:4:8) mass concrete blinding to walling and column bases	SM	90	
	<u>Vibrated reinforced concrete class 20/25 1:2:4/25 with fair face finish as described in:</u>			
K	Foundation strip size (200x600)mm	CM	22	
L	Column bases (1000x1000x300)mm	CM	16	
M	Columns (200x300)mm	CM	15	
N	Ground beam	CM	14	
	<u>Sawn/Steel form work to</u>			
O	Vertical sides of columns	SM	315	
P	Vertical sides of cloumn bases	SM	18	
Q	Vertical sides of ground beam	SM	126	
R	Vertical sides of strip foundation	SM	105	
	<u>Steel reinforcement bars including tying bending spacer blocks tying wires and fixing high tensile bars to BS 4461</u>			
S	Y 8 - column stirrups	KG	544	
T	Y12 - Columns	KG	1464	
U	Y 10 -strip foundation	KG	854	
V	Y 16 -gate columns	KG	256	
W	Y8 &Y12 in ground beam	KG	1153	
	225mm thick natural stone substructure walling in cement sand mortar (1:3) including and reinforced with 20 SWG hoop iron in every two alternating course.			
X	225mm thick natural stone wall	SM	270	
Y	25mm thick cement/sand (1:4) rendering on plinth area finished smooth to receive bituminous paint-400mm high.	SM	60	
Z	Allow for and create 2No. 100mm diameter weep holes at ground level every 3.0m centers on masonry/concrete wall and prevent ingress using wire mesh grouted in cement sand mortar.	No.	101	
	Total this page and Carried to Summary Page			

KISIAN 33/11KV SUBSTATION

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>Superstructure-Walling</u>			
A	200mm thick machine-cut or fair faced dressed natural or approved concrete blocks stone walling in cement/sand (1:4) mortar including 20G hoop-iron in every alternate courses.	SM	512	
B	Internally plaster in 1:3mix cement/sand mortar	SM	512	
C	350mm wide pre-cast concrete coping twice weathered and twice throated fixed to wall.	LM	182	
D	(800x550)mm square concrete coping weathered and throated on all sides fixed to double columns.	No.	5	
E	(550x450)mm square concrete coping weathered on all columns	No.	71	
F	extra over for key pointing externally	SM	512	
	<u>Expansion Joint</u>			
G	40mm thick construction joint in flex cell or equal and approved expansion joint and (25x25)mm expedite sealer	SM	11	
	<u>Razor Wire</u>			
	<i>Supply and fix Razor Wire at the top of boundary wall conforming to the following specifications.</i>			
H	Coil size-450mm diameter, Blade profile-ripper razor wire, Stretch factor-maximum of 10m per coil and secured to wall with galvanised steel 25x25x4mm square tube bar 600mm long anchored	LM	210	
I	Supply and fix heavy duty galvanised steel perforated cable trays,900mm wide, firmly fixed from below and raised 200mm above trench bed.	LM	150	
J	Fabricate and fix standard primary substation gate with 16 gauge black sheet panels welded on 50x50x4mm square tubes and 75x75x4mm frame with 50mm diameter 6No. bushess as per the drawing SK. No.07044/B including excavation for the gate columns, concrete works,erection and 3 coats of 1st grade gloss paint	NO	1	
K	Ditto but pedestrian gates	NO	1	
L	2.4m high x12.5A gauge chainlink fence, complete with 4mm diameter5 strands of galvanized plain wire pass through 3.0m high 50x50X3mm cranked SHS posts placed at 3.0m centers, 12 gauge barbed wire on 450mm cranks, including, excavation and erection works, 1:3:6 mix mass concrete surround at 600mm deep.	LM	30	
	<u>PIT LATRINE</u>			
	<u>Excavation</u>			
M	Oversite excavation to reduce levels commencing from existing ground level;150mm deep	SM	5	
N	Excavate from reduced level strip foundation and NOt exceeding 1.5m deep.	CM	4	
O	Excavate from reduced level strip foundation and NOt exceeding 3.0m deep.	CM	3	
P	Excavate from reduced level strip foundation and NOt exceeding 4.5m deep.	CM	3	
Q	Excavate from reduced level strip foundation and NOt exceeding 6.00m deep.	CM	3	
R	Extra over excavation in rock	CM	2	
	Total this page and Carried to Summary Page			

KISIAN 33/11KV SUBSTATION

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
A	Remove surplus soil from site to a place approved by local authority	CM	12	
	<u>Mass concrete mix (1:4:8) in</u>			
B	50mm thick blinding in strip foundations	SM	5	
	<u>Vibrated reinforced insitu concrete class 20/20; with minimum cube crushing strength of 20N/mm at 28 days; in</u>			
C	150mm thick ground floor slab	SM	5	
D	Strip foundations	CM	1	
	<u>Supply and fix steel bar in structural concrete work including cutting, bending, hoisting, tying wire, spacer blocks and supporting all in position:</u>			
E	10mm bars	kg	77	
	<u>Mesh fabric reinforcement</u>			
F	Mesh reinforcement NO. A142 size 200 x 200mm weighing 2.22 kg per square meter; in floor slab; including all necessary supports	SM	5	
	<u>Sawn formwork to:</u>			
G	Edges: slabs 75 - 150mm girth	m	9	
H	Vertical sides; strip footing; 200mm high	m	9	
	<u>Walls</u>			
I	200mm thick natural stone foundation walls; machine dressed square; bedded and jointed in cement and sand (1:4) mortar; reinforced with 20SWG Hoop Iron in every alternate course	SM	14	
	<u>Anti-termite treatment</u>			
J	Approved anti-termite chemical treatment; applied by approved professional pest control specialist; applied strictly in accordance with the manufacturers' instructions; ten(10) year guarantee	SM	3	
	<u>DPM</u>			
K	Guage 1000 polythene damp proof membrane	SM	5	
	<u>25mm thick cement/sand (1:4) rendering; on concrete or stonework; wood float finished to</u>			
L	Plinths ; externally	SM	5	
	<u>Prepare surfaces and apply undercoat and two finishing coats black bitumastic or other equal approved water resistant paint on rendered surfaces to:</u>			
M	Plinths: externally	SM	5	
	<u>Sawn formwork to</u>			
N	Sides and soffits beams	SM	6	
	<u>Supply and fix square twisted steel bars in structural concrete work including cutting, bending, hoisting, tie wire, spacer blocks and supporting all in position</u>			
O	8mm bars	kg	24	
P	12mm bars	kg	47	
	<u>Vibrated reinforced insitu concrete class 20/20; with minimum cube crushing strength of 20N/mm at 28 days; in</u>			
Q	Ring beams	CM	1	
	<u>External Walls</u>			
	Total this page and Carried to Summary Page			

KISIAN 33/11KV SUBSTATION

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>Machine dressed natural stone walling bedded in cement/sand mortar(1:4) with minimum stone crushing strength of 7N/mm2; reinforced with 20SWG Hoop Iron in every alternate course</u>			
A	200mm thick walls	SM	21	
B	Extra over external walling for horizontal key pointing	SM	21	
	<u>BitumiNOus felt or other equal approved damp proof course; in cement/sand (1:3) mortar</u>			
C	200mm wide	SM	2	
	<u>SUNDRIES</u>			
D	Make holes on 100mm thick concrete slab for 150mm diameter PVC pipe	NO	1	
E	Provide and fix 100mm thick PVC vent with cap average length 3m	m	3	
	<u>ROOF</u>			
	<u>The following in 4 NO. purlins; steel structural roof; spanning 3.2m; hoisted to a height of approximately 2.4m from ground level</u>			
F	150 x 50 x 2mm Z purlins bedded in masonry wall with cement sand mortar	m	15	
G	Drill holes in steel members for 12mm bolts in Z purlins	NO	23	
H	12mm bolts	NO	23	
I	Supply and fix 26g mild steel trough roofing sheets type LT5; factory prepainted to approved standard colour; laid with 150mm end lap and 94mm side laps; fixed to metal purlins including hook bolts, washers and nuts at 1000mm centres	SM	12	
	<u>Wrot Cypress; Prime grade</u>			
J	200 x 25mm fascia board; chamfered one edge	m	15	
	<u>Prepare surfaces; apply three coats first grade gloss paint to approval; on timber surfaces to</u>			
K	200mm girth; on fascia board	SM	3	
	<u>OPENINGS</u>			
	<u>Concrete Louvres</u>			
L	150 x150 x 150mm concrete louvre blocks fixed with cement sand mortar (1:3)	SM	2	
	<u>Window Cill</u>			
M	Supply and fix 200mm clay window cills; bedded and jointed in cement/sand (1:3) mortar; pointed in matching coloured cement to windows	m	6	
	<u>DOORS</u>			
N	Mild steel light door size 965 x 2100 mm complete with all iron mongery as per drawing SK. NO. 06249	NO	2	
	<u>Iron mongery</u>			
	<u>Supply and fix "Assa Abloy" or equal approved iron mongery; matching screws; locks to include a set of 3 keys; available from their authorised local dealers to approval</u>			
O	100mm mild steel butt hinges	NO	2	
P	3 lever steel casement rebated door lock with handles	NO	2	
	Total this page and Carried to Summary Page			

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>Prepare surfaces,three coats gloss oil paint to metal surfaces</u>			
A	Doors internally and externally	SM	4	
	<u>FINISHES</u>			
	<u>FLOOR FINISHES</u>			
	<u>Screed; cement/sand (1:3) on concrete</u>			
B	30mm thick to receive floor tiles	SM	5	
	<u>Supply and fix approved ceramic floor tiles on screed; joints pointed in matching cement grout to approval</u>			
C	300 x300 x 10mm thick approved ceramic tiles	SM	5	
	<u>WALLING</u>			
	<u>Backing: 10mm cement/sand (1:4); on masonry or concrete ; wood float finished to</u>			
D	Walls to receive ceramic tiles	SM	23	
	<u>Supply and fix coloured glazed ceramic wall tiles; on backing; joints pointed in matching cement grout</u>			
E	300 x 300 x 10mm thick tiles	SM	23	
F	300 x 50 x10mm thick border tile	m	14	
G	Supply and fix matching pvc tile strip to tile edges	m	56	
	<u>Plaster; 13mm cement/lime putty/sand; wood float; on masonry and concrete to</u>			
H	Walls and concrete surfaces; externally	SM	21	
	<u>Prepare surfaces; apply three coats First grade vinyl emulsion paint or other equal approved; on wood float plaster to:</u>			
I	Walls and concrete surfaces	SM	21	
J	<u>GUARD HOUSE</u>			
	<u>SUBSTRUCTURES</u>			
	<u>Excavation</u>			
K	Site excavate to reduce levels commencing from existing ground level;150mm deep and NOt exceeding 1.5m deep;	SM	7	
L	Excavate for strip foundation trench, commencing reduced level ; NOt exceeding 1.5m deep	CM	6	
M	Remove surplus soil from site to a place approved by local authority	CM	7	
	<u>Mass concrete mix (1:4:8) in</u>			
N	50mm thick blinding under strip foundations	SM	5	
	<u>Vibrated reinforced insitu concrete class 20/20; with minimum cube crushing strength of 20N/mm2 at 28 days; in</u>			
O	150mm thick ground floor slab	CM	1	
P	Strip foundations	CM	1	
	<u>Supply and fix steel bar in structural concrete work including cutting, bending, hoisting, tying wire, spacer blocks and supporting all in position:</u>			
Q	8mm bars	kg	17	
R	12mm bars	kg	29	
	<u>Mesh fabric reinforcement</u>			
	Total this page and Carried to Summary Page			

KISIAN 33/11KV SUBSTATION

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
A	Mesh reinforcement NO. A142 size 200 x 200mm weighing 2.22 kg per square meter; in floor slab; including all necessary supports	SM	5	
	<u>Sawn formwork to:</u>			
B	Edges: slabs 75 - 150mm girth	m	9	
C	Vertical sides; strip footing; 200mm high	SM	5	
	<u>Walls</u>			
D	200mm thick natural stone foundation walls; machine dressed square; bedded and jointed in cement and sand (1:4) mortar; reinforced with 20SWG Hoop Iron in every alternate course	SM	8	
	<u>Hardcore</u>			
E	300mm thick hardcore of approved inert material; well compacted in 150mm thick (maximum) layers	CM	2	
	<u>Blinding</u>			
F	50mm thick approved quality murrum blinding to surfaces of hardcore	SM	5	
	<u>Anti-termite treatment</u>			
G	Approved anti-termite chemical treatment; applied by approved professional pest control specialist; applied strictly in accordance with the manufacturers' instructions; ten(10) year guarantee	SM	5	
	<u>DPM</u>			
H	Guage 1000 polythene damp proof membrane	SM	5	
	<u>25mm thick cement/sand (1:4) rendering; on concrete or stonework; wood float finished to</u>			
I	Plinths ; externally	SM	5	
	<u>Prepare surfaces and apply undercoat and two finishing coats black bitumastic or other equal approved water resistant paint on rendered surfaces to:</u>			
J	Plinths: externally	SM	5	
	<u>R.C SUPERSTRUCTURE</u>			
	<u>Sawn formwork to</u>			
K	Sides and soffits beams	SM	5	
Q	Bench slab	SM	1	
	<u>Supply and fix square twisted steel bars in structural concrete work including cutting, bending, hoisting, tie wire, spacer blocks and supporting all in position</u>			
L	8mm bars	kg	18	
M	12mm bars	kg	38	
	<u>Vibrated reinforced insitu concrete class 20/20; with minimum cube crushing strength of 20N/mm2 at 28 days; in</u>			
N	Ring beam	CM	1	
O	Bench slab	CM	1	
	<u>WALLS</u>			
	<u>External Walls</u>			
	<u>Machine dressed natural stone walling bedded in cement/sand mortar(1:4) with minimum stone crushing strength of 7N/mm2; reinforced with 20SWG Hoop Iron in every alternate course</u>			
P	200mm thick walls	SM	21	
Q	Extra over external walling for horizontal pointing	SM	21	
	Total this page and Carried to Summary Page			

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>BitumiNOus felt or other equal approved damp proof course; in cement/sand (1:3) mortar</u>			
A	200mm wide	SM	2	
	ROOF			
	<u>The following in 4 NO. purlins; steel structural roof; spanning 3.2m; hoisted to a height of approximately 2.4m from ground level</u>			
B	150 x 50 x 2mm Z purlins bedded in masonry wall with cement sand mortar	m	15	
C	Drill holes in steel members for 12mm bolts in Z purlins	NO	23	
D	12mm bolts	NO	23	
E	Supply and fix 24g mild steel trough roofing sheets type LT5; factory prepainted to approved standard colour; laid with 150mm end lap and 94mm side laps; fixed to metal purlins including hook bolts, washers and nuts at 1000mm centres	SM	12	
	<u>Wrot Cypress; Prime grade</u>			
F	200 x 25mm fascia board; chamfered one edge	m	15	
	<u>Prepare surfaces; apply three coats first grade oss paint to approval; on timber surfaces to</u>			
G	200mm girth; on fascia board	SM	3	
	<u>OPENINGS</u>			
	<u>Windows</u>			
	<u>Mild steel casement windows ; fixed panes; custom made; sections to drawings and with approved ironmongery; sections divided with 25 x25 x 3mm thick RHS welded onto main frame 40 x 25 x 3mm RHS;</u>			
H	Ditto but 900 x 1200mm high	NO	5	
	<u>Window Cill</u>			
I	Supply and fix clay window cills; bedded and jointed in cement/sand (1:3) mortar; pointed in matching coloured cement to windows	m	6	
	<u>DOORS</u>			
J	Mild steel door size 965 x 2100 mm complete with all iron mongery as per drawing SK. NO. 06249	NO	1	
	<u>Iron mongery</u>			
	<u>Supply and fix "Assa Abloy" or equal approved iron mongery; matching screws; locks to include a set of 3 keys; available from their authorised local dealers to approval</u>			
K	100mm mild steel butt hinges	NO	3	
L	3 lever steel casement rebated door lock with handles	NO	1	
	<u>Prepare surfaces, three coats gloss oil paint to metal surfaces</u>			
M	Doors internally	SM	2	
N	Doors externally	SM	2	
	<u>FINISHES</u>			
	<u>FLOOR FINISHES</u>			
	<u>Screed; cement/sand (1:3) on concrete</u>			
O	30mm thick to receive floor tiles	SM	5	
	Total this page and Carried to Summary Page			

KISIAN 33/11KV SUBSTATION

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	<u>Supply and fix coloured ceramic floor tiles on screed; joints pointed in matching cement grout to approval</u>			
A	300 x300 x 10mm thick tiles	SM	5	
	Total this page and Carried to Summary Page			
	<u>WALLING</u>			
	<u>Backing: 10mm cement/sand (1:4); on masonry or concrete ; wood float finished to</u>			
B	Walls to receive ceramic tiles	SM	18	
	<u>Supply and fix coloured glazed ceramic wall tiles; on backing; joints pointed in matching cement grout</u>			
C	300 x 300 x 10mm thick tiles	SM	18	
D	300 x 50 x10mm thick border tile	m	9	
E	Supply and fix matching pvc tile strip to tile edges	m	36	
	<u>Plaster; 13mm cement/lime putty/sand; wood float; on masonry and concrete to</u>			
F	Walls and concrete surfaces; externally	SM	6	
	<u>Prepare surfaces; apply three coats First grade vinyl emulsion paint or other equal approved; on wood float plaster to:</u>			
G	Walls and concrete surfaces	SM	6	
	Total this page and Carried to Summary Page			

KISIAN 33/11KV SUBSTATION

ITEM NO.	DESCRIPTION	UNIT	QTY	AMOUNT
	SUMMARY PAGE			
	TOTAL FROM PAGE 1			
	TOTAL FROM PAGE 2			
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	TOTAL FROM PAGE 18			
	TOTAL FROM PAGE 19			
	SUBTOTAL			
	ALLOW 16% VAT			
	TOTAL CARRIED TO FORM OF TENDER			
	Amount in words:.....			
			
	Company Stamp			
	Signed:			
	Name:			
	Address:			
	Contract Period: 35 Weeks			