

Civil/Building works at Isiolo 33-11kv substation

<b>PROPOSED CIVIL WORKS AT ISIOLO 33/11KV SUBSTATION</b>				
<b>Item</b>	<b>Description</b>	<b>Unit</b>	<b>Qty</b>	<b>Rate</b>
<b>ELEMENT No.1</b>				
<b>PRELIMINARIES AND ENABLING WORKS</b>				
A	Allow for all necessary statutory approvals for the works by relevant county authorities ;Replication of drawings to required formats by county government; Endorsement by relevant professional persons; and submit a set of approved drawings before commencement to client on completion,including site registration fees.	ITEM	1	
B	Allow for a qualified person conversant with Kenya Power safety regulations and can received safety electrical permits for the entire construct period.	ITEM	1	
C	Allow for prompt communication and updates facilitation to client supervision team.	ITEM	1	
D	Allow for security and insurance for the proposed works	ITEM	1	
E	Allow for temporary sign post for the proposed works.	ITEM	1	
F	Allow for temporary metered electricity supply/generator for the works (Lv supply within site)	ITEM	1	
G	Allow for clean water on site for the construction works.	ITEM	1	
H	Allow for temporary site office to accommodate atleast seven people/store for materials storage etc.	ITEM	1	
J	Allow for shutdowns executions delays and monthly site meetings.	ITEM	1	
K	Allow for suply for substation with water including all local authorities charges,submain pipes and all connections,testing and commissioning of all the plumbing works about 20m away.	ITEM	1	
L	Allow for registratioN of site/project and staff(foreman,Mason,Capenters,etc)with the National construction Authority (NCA).	ITEM	1	
M	Rehabilitate by making good all other disturbed areas in the substation,Painting of the existing pit latrine and guardhouse.	ITEM	1	
N	Allow for a permanent signboard for the works as per KPLC specifications after completion of the works.	ITEM	1	
<b>ELEMENT No.2</b>				
<b>TRANSFORMER PLINTH 1 No.</b>				
<b>I</b>	<b>Excavations.</b>			
A	Excavate for 1No. transformer plinth pit size (9400x6900)mm, depths n.e. 1.5m from original ground level.	CM	98	
B	Ditto exceeding 1.5m but n. e. 3m	CM	20	
C	Extra over excavation in rock.	CM	20	
D	Allow for keeping excavated pits water free by pumping, bailing or otherwise.	ITEM	1	
E	Allow for planking and strutting to uphold the foundations.	ITEM	1	
F	Return,fill and ram selected excavated materials around transformer plinth.	CM	43	
G	Removing excess excavated materials from Site and disposing off.	CM	55	
H	Compacting bases of the transformer plinth foundation base and blinding with concrete mix (1:4:8 - 50 mm thick)	SM	37	
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ISIOLO 33/11KV SUBSTATION

Memo 2  
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Item	Description	Unit	Qty	Rate
<b>2</b>	<b>High yielded steel reinforcement bars including cutting, bending, tying and fixing in place, spacer blocks and tying wires to BS 4449.</b>			
A	Reinforcement bars Y8, Y10 and Y12 to bases, upstand beams and top slabs for Tx. plinth all spaced @ 200 c/c.	KG	1800	
<b>3</b>	<b>Formwork</b>			
A	Steel/ wooden formwork to sides of plinth upstand beams and the plinths sides to produce a fairly smooth concrete surface finish (plastering concrete surfaces will not be allowed)	SM	650	
<b>4</b>	<b>Concrete</b>			
A	Class 25(20) concrete in the transformer foundation base 300mm thick.	CM	15	
B	Class 25(20) concrete in the plinth upstand beams.	CM	15	
C	Class 25(20) concrete in the plinths top slabs sizes (5000x2500)	CM	6	
<b>5</b>	<b>Hardcore fill</b>			
A	Well compacted hardcore fill in the plinth	CM	15	
B	50mm thick murrum blinding and DPM on the hardcore	SM	10	
<b>6</b>	<b>Finishes</b>			
A	Surfaces finish smooth trowelled in (1:3) cement/ Sand mortar including 50mm chamfer all round top edges of plinth.	SM	40	
<b>7</b>	<b>Transformer Ground Anchor</b>			
A	Excavate for 1No. Ground anchors size (1500x1500)mm depth n.e. 1.5m from stripped level and dispose off the spoil	CM	1	
<b>8</b>	<b>Vibrated reinforced concrete class 20/25 1:2:4 as described in;</b>			
A	Ground anchors	CM	5	
B	Allow for fixing ground anchors in place before concreting, client to provide the steel anchors.	ITEM	1	
C	Supply and fix fabricated heavy duty grating of deformed R16 @ 10mm c/c fastened on 50x50x4mm angle iron fastened to concrete with 10mm plate with full welds; painted with zinc red oxide primer base coat and final aluminium leafing paint to cover the transformer oil spillage sump.	ITEM	1	
<b>ELEMENT No. 3</b>				
<b>CABLE TRENCHES AND DUCTS</b>				
<b>1</b>				
A	Excavate for cable trench 1.2m wide from reduced level not exceeding 0.7 metres deep.	CM	66	
B	Load, cart away excavated materials and dispose at areas designated by local authority.	CM	52	
C	Backfill and ram selected excavated materials around trench walls.	CM	20	
D	50mm plain concrete(1:4:8) blinding on cable trench base	SM	55	
<b>2</b>	<b>Vibrated reinforced concrete class 20/25 1:2:4 as described in;</b>			
A	In 150mm thick trench base.	CM	10	
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Item	Description	Unit	Qty	Rate
B	In 150mm thick trench walls with fairly smooth face finish.	CM	15	
C	Provide and put in place (1000x300x75mm) 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 25x25x 3mm angle iron.	No.	220	
<b>3</b>	<b>High yielded steel reinforcement bars including cutting, tying, bending and fixing in place, spacer blocks and tying wires to BS 4449.</b>			
A	Y 8 in cable trench @ 200 c/c both ways	KG	1330	
<b>4</b>	<b>Form work to</b>			
A	To sides of trench walls.	SM	218	
<b>5</b>	<b>Cable Ducts</b>			
A	Provide and put in place 150mm diameter heavy duty pvc cable ducts at various points surrounded 150mm mass concrete (1:2:4)	LM	100	
B	Provide 150mm diameter PVC bends	No.	20	
C	50x50x4mm angle line embedded in concrete cable trench edges	LM	60	
<b>6</b>	<b>Cable trays</b>			
A	Provide in the cable trench a layer of a steel cable tray 600mm wide suspended 200mm above trench base by supports at 1200 c/c, fabricated out of (50x50x4mm thick) angle irons and (50x25x4mm thick) RHS spaced at 400mm c/c. Painted with 2 coats of red oxide primer and 2 coats of Zinc Alluminium paint (gloss)	LM	60	
<b>ELEMENT No.4</b>				
<b>CONTROL ROOM 10M X5M</b>				
<b>Substructure</b>				
<b>1</b>	<b>Excavations</b>			
A	Excavate oversite vegetable soil average depth 150mm and cart away.	SM	92	
B	Excavate for foundation strip 700mm wide commencing from stripped level depth not exceeding 1.5m.	CM	37	
C	Ditto but for widening for column bases size (1000x1000)mm	CM	3	
D	Ditto but for cable trenches (600x600)mm, approx. 15m long	CM	12	
E	Extra over for excavations in all classes of rock at any depth	CM	4	
F	Allow for all necessary planking and strutting to uphold foundations.	ITEM	1	
G	Allow for keeping excavation free from general water by pumping, bailing or otherwise.	ITEM	1	
<b>2</b>	<b>Blinding</b>			
<b>Mass Concrete Class P as described.</b>				
A	Plain concrete (1:4:8-20mm aggregates) in 50mm thick blinding to strip foundation, column bases and control room cable trench.	SM	44	
<b>3</b>	<b>Sawn formwork to: -</b>			
A	Sides of strip footing 100-150mm high	LM	74	
B	Sides of ground floor slab 100-150mm high	LM	30	
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Item	Description	Unit	Qty	Rate
C	Ditto but in cable trenches	SM	45	
D	Ditto but to column bases footings.	SM	4	
<b>4</b>	<b>Concrete.</b>			
	<b>Vibrated reinforced concrete class 25 (1:2:4/25) as described in</b>			
A	Strip foundation (700x250mm thick)	CM	7	
B	Cable trenches 150mm thick	CM	5	
C	Column bases (1000x1000x250mm thick)	CM	2	
D	Substructure columns stubs size (200x200)mm	CM	1	
E	Concrete door ramp	CM	5	
<b>5</b>	<b>Reinforcement</b>			
	<b>High yield mild steel reinforcement from 8mm to 12mm including cutting, bending, spacers, tying wire and fixing to BS 4449 in, strip foundation, column bases, footing and cable trenches.</b>			
A	Y 12 in columns @ 200 c/c	KG	239	
B	Y 10 in foundation strip @ 200 c/c	KG	169	
C	Y8 in rings and control room cable trench @ 200 c/c	KG	175	
<b>6</b>	<b>Substructure walling</b>			
	<b>Substructure natural stone walling in cement sand mortar (1:3) including reinforcing with 20 SWG Hoop iron at every alternate course</b>			
A	200mm thick wall.	SM	126	
<b>7</b>	<b>Hardcore Fill</b>			
A	Excavations in control room to reduce levels and cart away the spoil	CM	15	
B	Average 150mm thick layers of selected and well compacted imported murrum fill, compact using approx. 2 ton vibrating roller to receive hardcore filling.	CM	88	
C	Selected imported hardcore fill, compacted in layers of 150mm thick to make up levels to satisfaction of client	CM	30	
D	Return, fill and ram selected excavated materials around foundations and trenches.	CM	10	
E	Load cart away surplus excavated materials and dispose in areas designated by local authority.	CM	37	
F	50mm thick approved murrum blinding on hardcore fill.	SM	70	
<b>8</b>	<b>Insecticide.</b>			
A	Prepare and apply "Premise 200 SC " or equal and approved insecticide to surfaces of blinding as per manufacturer"s written instructions.	SM	50	
<b>9</b>	<b>Damp Proofing.</b>			
A	1000 gauge polythene DPM laid on top of blinding including 200mm side and end laps.	SM	70	
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Item	Description	Unit	Qty	Rate
10	<b>BRC Mesh A142</b>			
A	BRC mesh reference No. A142 weighing 2.22kg per square meter including 150mm minimum end and side laps,bends, tying wires and spacer blocks.	SM	70	
11	<b>Concrete</b>			
	<b>Vibrated reinforced concrete class 25 (1:2:4/25) as described in</b>			
A	150mm thick ground floor slab.	SM	50	
	<b>Superstructures</b>			
12	<b>Damp Proof Course.</b>			
A	200mm wide damp proof course (DPC) laid with 1:3 mix cement sand mortar.	LM	35	
13	<b>Walling</b>			
	<b>Walling in cement sand mortar (1:3) including and reinforced with 20 SWG hoop iron in every two alternate courses.</b>			
A	200mm thick medium dressed natural stone wall/approved concrete blocks/Machine cut stones as control room walling.	SM	160	
13	<b>Sawn formwork to;</b>			
A	Vertical sides of floor slab beams and roof slab	SM	42	
B	Ditto but soffit	SM	2	
C	Ditto but soffit of roof slab	SM	45	
D	Sides of columns	SM	15	
14	<b>Concrete</b>			
	<b>Vibrated reinforced concrete class</b>			
	<b>25 (1:2:4/25) as described in:</b>			
A	Columns size (200x200)mm	CM	2	
B	Ring beam	CM	5	
C	150mm thick roof slab	SM	50	
	<b>Reinforcement Bars</b>			
15	<b>Steel reinforcement bars including cutting, bending, spacer blocks, tying wires and fixing. High tensile bars to BS 4461: 8mm to 12mm bars to:</b>			
A	Y 8 in rings @ 200 c/c	KG	149	
B	Y 10 in slab	KG	550	
C	Y 12 in clumn and beams	KG	240	
16	<b>Roofing</b>			
	<b>Supply and fix 5No.fabricated steel trusses spanning 5000mm and hoisted to a height not exceeding 4.50m high including fixing to roof slab as described;</b>			
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Item	Description	Unit	Qty	Rate
B	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	
C	250x50mm thick precast concrete weathered and throated window sill reinforced, finished fair face on all exposed surfaces, bedded and jointed in cement sand mortar (1:4)	LM	7	
<b>20</b>	<b>Doors</b>			
A	Double leaf steel doors overall size (1650x3075mm) openable 1500x3000mm high in two panels 750mm wide consisting of 1.6mm thick plate welded into 50x25x3mm framework; 75x50x6mm main frame with wall anchors; client approved steel louvres size (400x300)mm fixed at top bottom of all shutters as per the clients requirement.	NO	2	
B	Ditto but single leaf steel internal door 1200mm wide	NO	1	
C	Prepare and apply 2 coats of red oxide primer and 3 coats of gloss paint on all steel doors internal and externally.	ITEM	1	
<b>21</b>	<b>Finishes</b>			
A	13mm thick cement sand plaster (1:4) to walling and soffits of floor slab mixed with lime smooth finish to receive paint	SM	180	
B	13mm cement sand mortar(1:4) on walling and the gable surfaces externally with steel foat finish.	SM	138	
C	Prepare and apply undercoat, 1 coat of vinyl matt and 3 coats of premium grade silk vinyl emulsion paint on all plastered surfaces internally and externally. (Colour scheme to be provided by client)	SM	320	
<b>22</b>	<b>Flooring</b>			
A	20mm thick cement sand (1:3) screed for floor to receive terazzo	SM	55	
B	30mm thick well polished terazzo floor finish	SM	55	
C	32 x 2mm thick Plastic dividing strips.	LM	108	
<b>23</b>	<b>Plinth Area.</b>			
A	12mm thick cement sand mortar(1:4) render to plinth.	SM	21	
B	Prepare and apply undercoat and three coats of bituminous gloss paint to plinth.	SM	21	
<b>24</b>	<b>Cable trench covers</b>			
A	Provide 50x50x3mm angle iron embeded on the edges of cable trench to receive chequer plate covers	LM	34	
	<b>Chequered plate</b>			
B	Provide 600x600x3mm thick chequer plate covers welded onto (1.5"x1.5"x3mm) SHS framework of same size to cable trench including provision of adequate handles to ease lifting to client approval, prime with undercoat and two coats of black paint (gloss)	NO	24	
<b>25</b>	<b>Door ramp</b>			
	<b>Vibrated reinforced concrete class 20/20 (1:2:4/20) in;</b>			
A	concrete ramps at the doors	SM	5	
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Item	Description	Unit	Qty	Rate
B	Mild steel bar to BS 4449; 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	5	
C	600x600x50mm thick precast paving blocks embeded on well compacted 50mm murrum, jointed with cement/sand mortar (1:4)	SM	46	
<b>ELEMENT No. 5</b>				
26	<b>ELECTRICAL INSTALLATION WORKS</b>			
A	Electrical builders work to power supply points for 1No-12way-3phase distribution board, 1No. single phase 4-way consumer unit, 4No. double socket outlets, 8No. lighting points and all the necessary fittings, earthing the control room including chasing and making good all works as described	ITEM	1	
27	<b>Substation Lighting</b>			
A	Supply 240 watts AC (LIGHT DEPENDENT TYPE) bulky head floodlights with energy saver 100 watts sodium metal halide lamps (for kplc to install on the bus bars)	NO	12	
B	Supply and fix emergency chargeable lights in the control room to client approval.	NO	2	
4	Allow for Electrical installation to be carried out by a nominated sub-contractor as per Electrical drawing-lump sum and to comprise of the following, (1) 1No.-12way 3-phase, 415v distribution board rated 100Amps, complete with 3-phase MCBS, 32Amps, 3-sets,20Amps, 3-sets, 16Amps, 2-sets, (2) 1No. single phase consumer unit rated 100A with four single phase MCBS rated 10A, 16A, 30A & 20A, (3) 4No. approved double socket outlets, (4) 4no. approved complete flourescent lighs 30watts, 1200mm long & 4No. security lights, (5) 3No. approved switches. (6) Approved standard wiring cables and any other necessary fittings.	ITEM	1	
<b>ELEMENT No. 6</b>				
A	<b>SMOKE DETECTORS INSTALLATIONS</b>			
1	Allow for Hardwired Smoke detectors installations; including a battery back up; to be carried out by a nominated sub-contractor	ITEM	1	
2	Allow for general attendance on specialist contractor	ITEM	1	
3	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	
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Item	Description	Unit	Qty	Rate
	<b>ELEMENT No. 7</b>			
	<b>FIRE EXTINGUISHERS</b>			
<i>1</i>	<i>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:</i>			
A	Charge and fixing bracket, Pictorial instructions, Colour code, Servicable on site, discharge horn and hose, Brass hot stamping, Operating valve, Local Fire Brigade approval	NO	4	
B	Ditto but powder fire extinguishers	No	2	
C	Ditto fire blanket 6' x 4' container	No	2	
	<b>ELEMENT No.8</b>			
<i>1</i>	<b><i>OIL INTERCEPTOR</i></b>			
A	Excavate starting from ground level a pit size (5mx3mx2m depth)	CM	32	
B	Return, fill and ram selected excavated materials around the interceptor walls	CM	22	
C	Removing excess excavated materials from Site and disposing off.	CM	10	
D	Compacting bases of pit and blinding with concrete mix (1:4:8 - 50 mm thick)	SM	7	
E	Concrete (1:2:4/25) reinforced with BRC A142 including 200mm laps, and all necessary tying wires and supports in slab 200mm thick.	SM	7	
F	Concrete block walling 225mm thick in cement/sand mortar (1:3) reinforced with 20SWG hoop iron in every two alternating courses.	SM	27	
G	25mm thick cement/sand water proof (1:4) rendering on wall surfaces and floor slab finished smooth and waterproofed.	SM	45	
<i>2</i>	<b><i>Sawn Formwork</i></b>			
A	Vertical sides of slabs and beams girth 150-300 high	LM	40	
B	Soffits of slab	SM	6	
<i>3</i>	<b><i>High yielded steel reinforcement bars including cutting, tying, bending and fixing in place, spacer blocks and tying wires to BS 4449.</i></b>			
<i>1</i>	In slab and ring beams Y8 and Y10 @ 200 c/c	KG	450	
<i>D</i>	<b><i>Vibrated reinforced concrete class 20/25 1:2:4 as described in;</i></b>			
A	Slab and beams	CM	6	
B	Provide and fix heavy duty galvanized (600x450x50mm) composite polymer resin manhole covers and frames	No.	4	
C	Soakpit 1.8m dia n.e 25ft deep to seepage level including filling with boulders and loose sand at top 1m layer with provision for inlet point for pvc pipes with cover slab 150mm with BRC layer overlying 3 masonry courses	ITEM	1	
D	Provide and lay 100mm medium gauge PVC pipes with 100mm concrete surrounded, connecting the plinth sumps to the oil interceptor.	LM	60	
	<b>Total this page and carried to summary page.</b>			





