

CIVIL WORKS AT KIPEVU HILL TOP SUBSTATION					
ITEM NO.	ITEM DESCRIPTION/DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
I	Preliminaries				
A	Allow for a temporary site office adequate to accommodate 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, any other County Government requirements and submit as built drawings to client on completion	ITEM	1		
D	Allow for temporary sign post for the proposed works and permanent sign post as described.	ITEM	1		
E	Recover existing fence and hand over to client and secure at KPLC designated location/area.	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, submain pipes and all connections, testing and commissioning of all the plumbing works.	ITEM	1		
H	Allow for supply of power connection for use for the works.	ITEM	1		
I	Allow for a qualified person/conservant with Kenya Power safety regulations for the entire contract period	ITEM	1		
J	Allow for prompt communication and updates facilitation to client supervision team	ITEM	1		
K	Secure from any damage or mishandling the existing energized (live) 33000KV and 11000kV and control cables during the entire construction period	ITEM	1		
L	Rehabish existing cable trenches by repairing all worn out areas, raising the trench walls to match the new, replace all broken/damaged cable covers.	ITEM	1		
M	Refurbish existing storm water drainage, clear all the deposits and cart away.	ITEM	1		
N	Refurbish the existing 50metres boundary wall by repairing the cracks and remove the existing razor wire.	ITEM	1		
O	Repair damage/worn of concrete pavements, stone pitching, transformer sump wallings.	ITEM	1		
P	Allow for temporary pit latrine for use by contractor's staff on site and make good after completion of the works. (location to be identified by client)	ITEM	1		
Q	Allow for hacking and raising levels of the existing foundation plinths with mass concrete (1:2:4) mix and plastering to match the newly constructed ones.	ITEM	1		
R	Allow for hacking/plastering and making good all exposed and disturbed areas after completion of switch yard excavations, and generally making good all areas disturbed after works completion.	ITEM	1		
Total this page and Carried to Summary Page					

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
1	Switch yard				
A	Clear all over grown grass and the burn the arising.	ITEM	1		
B	Excavate oversite vegetable soil average depth 200mm and cart way to Municipal Council designated damping site	SM	3115		
C	Average 250mm thick selected well compacted imported and approved murrum fill, compacted in layers of 150mm thick using a plate compactor to receive ballast to gradual slope terminating at storm drain	SM	3115		
D	Prepare and apply Gradiator 4TC or equal and approved insecticide to surfaces of blinding as per Manufacturer's written instructions	SM	3115		
E	Apply suitable and approved weed killer, herbicide to surfaces of blinding as per the Manufacturer's written instructions and guarantee and provide a copy to client.	SM	3115		
F	1000 gauge polythene or other equal and approved membrane laid on compacted and treated surface with welded laps of 200mm wide.	SM	3115		
G	Supply and spread uniformly 150mm thick 1" ballast in switchyard	SM	3115		
H	Provide 150x250mm high precast concrete or insitu channel along the edges of invert drain block to secure from falling ballast.	LM	180		
2	SWITCH YARD PLINTHES				
	Switchgear Foundation plinthes for the conversion of wooden structures to steel per the General arrangement drawing (GA) and all to structural engineers details.-Total 26NO.plinths				
I	Excavate foundation pits commencing from reduced level but NOT exceeding 1.5 m deep	CM	60		
J	Ditto but NOT exceeding 3.0metres	CM	13		
K	Backfill and ram selected excavated material around foundations	CM	40		
L	Cart away surplus excavated materials from Site to municipal council designated damping site.	CM	33		
M	Disposal of water and Strutting	ITEM	1		
N	Blinding mix (1:4:8 - 50 mm)	SM	40		
O	Class 25(20) in stub column and bases with face finishes	CM	31		
P	steel 8 to 12mm to bases and column	KG	1667		
Q	Shuttering to columns stubs	SM	330		
R	Edges; 75 to 250 mm to plinths	LM	86		
S	grouting bolts /inserts and the like by holding in position when pouring concrete NOT exceeding 600mm long-bolts supplied by client	NO	124		
T	13mm thick plaster (1:3mix) to top surface of foundations with Smooth finish trowelled	SM	15		
U	Attendance for KPLC staff to do earthing before all blinding including security for all copper strip edges	ITEM	1		
	Total this page and Carried to Summary Page				

ITEM NO.	ITEM DESCRIPTION	DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
A	Supply and install 32mm heavy duty PVC flexible conduit fastened on switchgear plinth reinforcement to lengths NOT exceeding 5.0metres in every plinth and to flush with finished plinth level for earthing conductor.		ITEM	1		
	<u>CABLE TRENCH</u>					
	<i>Trench (600x600mm deep) length approx. 75metres at various locations</i>					
B	Excavate for trench from reduced level NOT exceeding 1.5 metres deep and cart away		CM	60		
C	Ditto but 300mm wide and 300mm deep for PVC cable ducts		CM	15		
D	Load, cart away from site excavated materials and dispose at areas designated by local authority.		CM	31		
E	Fill in and ram selected excavated materials around trench walls		CM	44		
	<i>Trench bed</i>					
F	50mm plain concrete(1:4:8) blinding on cable trench		SM	75		
	<u>Vibrated reinforced concrete class 20/20 1:2:4 as described in:</u>					
G	150mm thick trench base and walls with fair face finish		CM	24		
H	150mm thick plain concrete haunching on laid 100mm diameter PVC cable ducts		CM	7		
I	Supply and lay 150mm diameter heavy gauge PVC ducts		LM	36		
	<i>SMooth formwork to</i>					
J	Sides of trench wall		SM	203		
	<u>Steel reinforcement bars including tying bending spacer blocks tying wires and fixing high tensile bars to BS 4461</u>					
K	Y 8mm at 150 centres in cable trench		KG	791		
	<i>Precast concrete trench covers</i>					
L	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 25x25x 3mm angle iron.		NO	280		
	<i>Cable trays</i>					
M	Supply and fix heavy duty galvanised steel perforated cable trays,600mm wide, firmly fixed from below and raised 200mm above trench bed.		LM	75		
	<i>Trench (900x900mm deep) length approx.120metres at various locations</i>					
N	Excavate for trench from reduced level not exceeding 1.5 metres deep and cart away		CM	130		
O	Ditto but 300mm wide and 300mm deep for PVC cable ducts		CM	3		
	Total this page and Carried to Summary Page					

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
A	Load, cart away from site excavated materials and dispose at areas designated by local authority.	CM	120		
B	Fill in and ram selected excavated materials around trench walls	CM	13		
	<i>Trench bed</i>				
C	50mm plain concrete(1:4:8) blinding on cable trench	SM	144		
	<u>Vibrated reinforced concrete class 20/20 1:2:4 as described in;</u>				
D	150mm thick trench base	CM	22		
E	150mm thick trench walls with fair face finish	CM	32		
	<i>Smooth formwork to</i>				
F	Sides of trench wall	SM	468		
	<u>Steel reinforcement bars including tying bending spacer blocks tying wires and fixing high tensile bars to BS 4461</u>				
G	Y 8mm at 150 centres in cable trench	KG	2640		
	<i>Precast concrete trench covers</i>				
H	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 25x25x 3mm angle iron.	NO	430		
	<i>Cable trays</i>				
I	Supply and fix heavy duty galvanized steel perforated cable trays,900mm wide, firmly fixed from below and raised 200mm above trench bed.	LM	120		
J	Supply 16x240 watt AC (LIGHT DEPENDENT TYPE) bucky head floodlight with energy saver 100 watts sodium metal halide lamps to be hoisted on 4NO. 6.0metres 125mm diameter or square galvanized mast including all connections and approved wires.	ITEM	1		
K	Ditto but at the gate pillars	NO	2		
	<u>Parking Area</u>				
L	Excavate oversite vegetable soil average depth 200mm and cart away to County designated dumping site	SM	223		
M	Excavate commencing from reduced level and NOT exceeding 300mm and cart away the spoil	SM	67		
N	Backfill average 300mm thick with selected well compacted hardcorefill, compacted in layers of 150mm thick using 10 tonne vibrating roller to receive paving blocks overlying overlying 150mm graded marrum	CM	75		
O	50mm thick approved and well compacted quarry dust blinding on hardcore surfaces	SM	223		
P	Heavy duty industrial concrete paving blocks size (210x105x80mm) minimum strength 49N/mm square laid to slope on quarry dust and compacted	SM	223		
Q	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	71		
R	Ditto curved to plan.	LM	7		
S	Extra over for junction between straight and curved kerbs.	NO	15		
T	Extra over for painting all with roadmarking paint to eng approval	LM	71		

ITEM NO.	ITEM DESCRIPTIONDESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
	Total this page and Carried to Summary Page				
	<u>STORM WATER DRAINAGE</u>				
A	Excavate on site drain trench NOT exceeding 1.5m deep including plucking and strutting, disposal of soil to receive drainage channels and forming sloping sides in well compacted murrum bed.	CM	120		
B	Lay (300x450mm) precast concrete invert block drains to a suitable fall with grooved edge and tongued joints filled with cement/sand mortar (1:3) and laid on 50mm thick plain concrete bed	LM	115		
C	Supply and lay on sides of sloped trench (75x230mm wide) precast concrete side slabs jointed in 1:3 cement sand mortar	SM	230		
D	Vibrated mass concrete class 20/25 (1:2:4) in culvert surrounding thickness 200mm including head and wing wall	CM	3		
	<u>PERIMETER WALLING -250LM</u>				
	<u>(Substructures)</u>				
E	Excavate for foundation trench 600mm wide commencing at reduced level and NOT exceeding 1.5m deep.	CM	225		
F	Extra excavations for widening column bases size (1.0x1.0)m	CM	150		
G	Ditto exceeding 1.5m but n.e 3.0m	CM	30		
H	Extra over for excavation in all classes of rock at any depth.	CM	25		
I	Load, cart away from site surplus excavated materials and dispose at areas designated by local authority.	CM	153		
J	Fill in and ram selected imported materials around foundation and columns.	CM	277		
K	Provide all the necessary planking and strutting to uphold sides of trenches.	ITEM	1		
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 walling and column bases	SM	190		
	<u>Vibrated reinforced concrete class 20/25 1:2:4/25 as described in;</u>				
N	Foundation strip size (200x600)mm	CM	18		
O	Column bases (1000x1000x300)mm	CM	30		
P	Columns (200x300)mm	CM	9		
	<u>Sawn/Steel form work to</u>				
Q	Vertical sides of column footing	SM	150		
R	Vertical sides of column bases	SM	120		
S	Vertical sides of ground beam	SM	100		
T	Vertical sides of strip foundation	SM	150		
	<u>Steel reinforcement bars including tying bending spacer blocks tying wires and fixing high tensile bars to BS 4461</u>				
U	Y 8 - column starters	KG	379		
V	Y 10 -strip foundation	KG	1079		
W	Y 12 - column footing/starters	KG	2184		
X	Y8 & Y12 in ground beam	KG	1294		
	Total this page and Carried to Summary Page				

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
A	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.				
B	225mm thick natural stone wall	SM	450		
C	25mm thick cement/sand (1:4) rendering on plinth area finished smooth to receive bituminous paint-400mm high	SM	100		
D	Allow for and create 2NO. each 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.	200		
	Superstructure-Walling				
E	200mm thick machine-cut or fair faced dressed natural or approved coarse stone walling in cement/sand (1:4) mortar including 20G hoop-iron in every alternate courses.	SM	600		
F	Internally plastered in 1:3mix cement/sand mortar	SM	600		
G	350mm wide pre-cast concrete coping twice weathered and twice throated fixed to wall.	LM	230		
H	(800x550)mm square concrete coping weathered and throated on all sides fixed to double columns.	NO.	10		
I	(550x450)mm square concrete coping weathered on all columns.	NO.	90		
J	extra over for key pointing externally	SM	600		
	Expansion Joint				
K	40mm thick construction joint in flex cell or equal and approved expansion joint and (25x25)mm expedite sealer	SM	14		
	Razor Wire				
	<i>Supply and fix Razor Wire at the top of boundary wall conforming to the following specifications.</i>				
L	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 on the wall at 1m centers.	LM	300		
M	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. bushes 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	2		
N	Ditto but pedestrian gate	NO	1		
O	2.4m high x12.5A gauge chainlink fence, complete with 4mm diameter 5 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	60		
Total this page and Carried to Summary Page 41					

ITEM NO.	ITEM DESCRIPTIONDESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
	PIT LATRINE				
	Excavation				
A	Oversite excavation to reduce levels commencing from existing ground level;150mm deep	SM	5		
B	Excavate from reduced level strip foundation and NOT exceeding 1.5m deep.	CM	4		
C	Excavate from reduced level strip foundation and NOT exceeding 3.0m deep.	CM	3		
D	Excavate from reduced level strip foundation and NOT exceeding 4.5m deep.	CM	3		
E	Excavate from reduced level strip foundation and NOT exceeding 6.50m deep.	CM	3		
F	Extra over excavation in rock	CM	2		
G	Remove surplus soil from site to a place approved by local authority	CM	12		
	Mass concrete mix (1:4:8) in				
H	50mm thick blinding in strip foundations	SM	5		
	Vibrated reinforced insitu concrete class 20/20; with minimum cube crushing strength of 20N/mm at 28 days; in				
I	150mm thick ground floor slab	SM	5		
J	Strip foundations	CM	1		
	Supply and fix steel bar in structural concrete work including cutting, bending, hoisting, tying wire, spacer blocks and supporting all in position:				
K	10mm bars	kg	77		
	Mesh fabric reinforcement				
K	Mesh reinforcement NO. A142 size 200 x 200mm weighing 2.22 kg per square meter; in floor slab; including all necessary supports	SM	5		
	Sawn formwork to:				
M	Edges: slabs 75 - 150mm girth	m	9		
N	Vertical sides; strip footing; 200mm high	m	9		
	Walls				
O	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		
	Anti-termite treatment				
P	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		
	DPM				
Q	Guage 1000 polythene damp proof membrane	SM	5		
	25mm thick cement/sand (1:4) rendering; on concrete or stonework; wood float finished to				
R	Plinths ; externally	SM	5		
	Total this page and Carried to Summary Page				

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
	<u>Prepare surfaces and apply undercoat and two finishing coats black bitumastic or other equal approved water resistant paint on rendered surfaces to:</u>				
A	Plinths: externally	SM	5		
	<u>Sawn formwork to</u>				
B	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>				
C	8mm bars	kg	24		
D	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>				
E	Ring beams <u>External Walls</u>	CM	1		
	<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>				
F	200mm thick walls	SM	21		
G	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>				
H	200mm wide	SM	2		
	<u>SUNDRIES</u>				
I	Make holes on 100mm thick concrete slab for 150mm diameter PVC pipe	NO	1		
			0		
J	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>				
K	150 x 50 x 2mm Z purlins bedded in masonry wall with cement sand mortar	m	15		
L	Drill holes in steel members for 12mm bolts in Z purlins	NO	23		
M	12mm bolts	NO	23		
	Total this page and Carried to Summary Page				