PROPOSED CIVIL WORKS FOR 100MVAR REACTOR AT SUSWA 400KV KETRACO SUBSTATION					
Item	Description	Unit	Quantity	Rate (Ksh)	Amount (Kshs)
	ELEMENT No.1: PRELIMINARIES AND ENABLING WORKS				
A	Allow for Temporary hoarding approximately 2.5m high for the proposed site including gates, security sentries and the like and cart away on completion of the project	ITEM	1.00		
B	Allow for material storage, working sheds, workmen shelter against adverse weather, changing rooms & Temporary wash facilities	ITEM	1.00		
C	Allow for a temporary site office (approx 100sqm)with provision for site office meeting room complete with portable seats,table ,white board,washroom for Project team,including all works and fittings	ITEM	1.00		
D	Allow for a qualified safety Officer with OSHA and conversant with Electrical Power safety rules for the entire contract period	ITEM	1.00		
E	Allow for security and insurance for the proposed works, materials and personel for the entire contract period	ITEM	1.00		
F	Allow for clean water suitable for drinking for the works	ITEM	1.00		
G	Allow for temporary sign post for the proposed works	ITEM	1.00		
H	Allow for temporary power supply including adequate stand-by generator for lighting the works and equipment testing	ITEM	1.00		
I	Allow for all the necessary statutory approvals for the works by relevant county departments, replication of drawings to required formats, Endorsement by relevant proffesional persons; and submit a set of approved drawings before commencement to the client, including site and project registration with NCA.	ITEM	1.00		
K	Allow for entire site Topograhical Survey for establishing working levels, substation, road & drainage levels and setting out	ITEM	1.00		
L	Allow for GeoTechnical Services-Provisional sum-ksh.350,000	ITEM	1.00		
M	Allow attendance for Kenya power personnel to Check earthing prior to blinding & backfilling all the excavated bases & earth grids including tests for resistivity to accepatable levels as per KPLC standards	ITEM	1.00		
N	Allow for AS ABUILT DRAWINGS including stamped hard copies and Soft copies and submit the same to the Client after project commisioning	ITEM	1.00		
O	Allow for NEMA/EIA/ including EMCA (Cap. 387) enforcement implementation	ITEM	1.00		
P	Allow for materials samples testing from time to time including mill Certificates for all reinforcements and soil grading, CBR/PI, field density, compaction tests etc. Copies to be attached at every stage of inspection for paymement and as may be requested by the Client	ITEM	1.00		
Q	Allow for visitors book and site diary. The same should be well maintained and safely kept with names of all persons who vist the site for the purpose of the project. Site activites and occurances shall be recorded in the site diary on a daily basis. Both records shall be handed over to the client after completion of the project.	ITEM	1.00		
R	Allow for mobilization & demobilization of machinery, plant & other equipment including workforce	ITEM	1.00		
	TOTAL TO PAGE 2 - CARRIED TO SUMMARY PAGE				

Item	Description	Unit	Quantity	Rate (Ksh)	Amount (Kshs)
	100MVAR REACTOR SITE				
	ELEMENT No 2: SWITCHYARD 32MX32M (All provisional)				
A	Clear site of all bushes, shrubs, grass and the like to accommodate the substation	SM	1,050.00		
B	Bulk excavation 0-2.5m commencing from natural ground level	CM	2,560.00		
C	Load and Cart-Away surplus excavated materials from site to County Government Approved damping site	CM	2,560.00		
E	Fill in with approved imported marrum and compact to 95% MDD (AASHTO T99) in layers not exceeeding 150mm in the entire proposed substation area	CM	2,045.00		
F	Allow for oversite grading to make up levels averagely 500mm using approved murram compacted in layers not exceeding 150mm thick	SM	515.00		
G	Allow for all necessary plunking and strutting	ITEM	1.00		
H	Allow for disposal of general water by pumping, bailing or otherwise	ITEM	1.00		
IJ	Allow for oversite leveling to a suitable slope for switchyard drainage to receive 1000gauge polythene (m.s)	SM	530.00		
I	Apply suitable weed killer, herbicide to surfaces of murram as per the Manufacture's written instructions with a guarantee of more than 5 years	SM	530.00		
K	1000 gauge polythene or other equal and approved membrane laid on compacted and treated marrum with welted laps of 200mm wide.	SM	530.00		
L	Supply and spread uniformly 150mm thick, 1" - 2.5", singly graded and approved ballast in the switchyard	SM	530.00		
	Substation and reactor Plinth Earthing:				
M	Excavate earth grids 300mm wide x 600mm deep average and cart-away including red-soil backfilling before and after laying the earthing materials within entire subststion yard ,including design of earthing system,seek kplc approval, supply and install all earthing materials.& all necessary testing to required resistivity	LOT	1.00		
	Chain-Link Fence (Switchyard & Security Foot path)				
N	2.4m high x10A gauge chainlink fence, complete with 4mm diameter 5 strands of galvanized plain wire pass through 3.0m high 150x150 precast reinforced concrete posts with cranked top placed at 2.5m centers, 12 gauge barbed wire on 450mm cranks, including all excavations, 1:3:6 mass concrete surround at 600mm deep.	LM	220.00		
O	Allow for 150x250mm high 1:3:6 mass concrete between concrete posts along the full perimeter to secure the chainlink to the ground including all excavations and formwork	CM	10.00		
P	Provide all materials, prepare and construct minimum 200mm thick grouted stone pitching, maximum 600mm wide in 1:3 cement sand motar laid on 100mm well compacted murram bed to the full perimeter of the chainlink fence externally	SM	72.00		
	Invert Block Drains (IBD);				
Q	Provide, lay and joint 600mmx450mmx225mm (300mm diameter half-round) Invert Block Drain(IBD), including 600mmx225mmx80mm PCC side slabs(m.s) with two (2) courses laid on both sloping sides on a 100mm thick well compacted murram fill	LM	120.00		
	Gates;				
R	Double Leaf heavy gauge Weld Mesh Metal Gate, 5m widex 2.4m high able to open 180 degress,complete with 1no. Wicket/pedestal gate including stop and drop bolts,tamper-proof hinges and metal spikes welded on top. Framing. Rates to include columns for hanging, all excavations reinforcement including gate alignment	No.	1.00		
S	Ditto but 1.0m wide x 1.96m high security gate with no wicket/pedeastal door	No.	2.00		
	ELEMENT No. 3: CONTROL CABLE DUCTS AND MANHOLES				
A	Supply and lay 200mm diameter Class 41 UPVC pipes not exceeeding 160m long as ducts. with and including 200mm thick concrete class 20 surround, 100mm bed, murrum compaction underlying pipe bases all all excavations, and backfill to Engineer's approval.	CM	160.00		
B	Allow for road and 33kv power cable crossing in 200mm diameter heavy duty steel pipes as ducts including, excavtions, bedding, haunching, concrete suround and all necessary formwork and supports. Length not exceeding 15m	ITEM	1.00		
C	Allow for road and 33kv power cable crossing in 200mm diameter heavy duty steel pipes as ducts including, excavtions, bedding, haunching, concrete suround and all necessary formwork and supports. Length not exceeding 15m	ITEM	1.00		
D	Allow for 1 Nos. Shmidt hammer including Testing & Calibration as necessary. Provide documents to supprt calibration for client use within project period. Provisional Sum Ksh, 250,000	ITEM	1.00		
	TOTAL TO PAGE 2 - CARRIED TO SUMMARY PAGE				

Item	Description	Unit	Quantity	Rate (Ksh)	Amount (Kshs)
	Manholes (1.0mx1.0m internal dimensions)				
E	Construct manholes in 200mm thick block wall depth 1.0m deep complete with 100mm thick R.C cover in D8 rebars spaced at 100mm centers with lifting lugs. Rates to include excavations, internal plaster and rendering to externally. Allow for 2nos.x200mm holes on walls for cable ducts to be sealed not to allow water entry after cable laying	No.	13.00		
	ELEMENT No. 4: 1X100 MVAR REACTOR PLINTH (5.4m x 2.4m) & OIL-SUMP WORKS				
A	Excavate compacted murram to a depth not exceeding 2.0m and cart away	CM	75.00		
C	Allow for bottom leveling and stabilization with parked boulders averagely 300mm thick	CM	15.00		
D	Allow for 'Plum' stabilization concrete -30mm aggregates-100mm -1.3.6	CM	5.00		
	Reinforced Concrete				
E	BASE concrete Class 30 to footings 300mm deep	CM	20.00		
F	Concrete Class 30 to upstand beam & walls	CM	25.00		
G	Concrete Class 30 to Top Cover Slab	CM	8.00		
	Steel Reinforcement				
H	Steel -Ribbed 8-20mm dia. to base and beam and wall	Kg	6,300.00		
I	Allow for INSERT plates 12mm thick 200mmx200mm Including anchors and fixing to receive angle line framing and gratings (m.s)	PC	30.00		
J	Allow for Hardcore filling to Tx. voids including blinding to receive Top cover slab	CM	22.00		
	Formwork				
K	Fair face Formwork to vertical sides of all bases (225-300mm)	LM	29.00		
L	Fair face Formwork to vertical walls	SM	149.00		
M	Fair face Formwork to Vertical sides of Top cover(225-300mm)	LM	18.00		
N	Allow Concrete class 25 to perimeter sump wall 150mm thick	CM	10.00		
O	Allow for sinking an oil sump 400x400x600mm deep within the oil containment chamber of the reactor plinth including provision of 150mm diameter UPVC pipe as exit duct to connect to external interceptor	ITEM	1.00		
P	Allow for angle irons 50x50x6mm as framings on sump wall properly secured to sump wall using fish-tailed brackets grouted in concrete and to insert plates on reactor vertical walls using angle brackets or any approved method.All steel galvanizd to NOT less than 95 Microns	LM	45.00		
Q	Rendering to Plinth top surface and any surfaces exposed to weather elements finished smooth trowelled including 50mm chamfer all round reactor top plinth edges	SM	85.00		
R	Allow for galvanized 400mm wide x50mm deep x 1.5mm thick galvanized perforated steel cable trays(sample subject to kplc approval) for control cables leading from reactor plinth across the oil sump to underground cable ducts including fixing on the sump walls and notching the sump walls as directed by KPLC and related builders works. Lenth not exeeceding 6.0m	ITEM	1.00		
	Reactor Gratings				
S	Allow for HEAVYduty galvanized gratings in 1.0m pieces,Total length not exceeding 30m made of 40x5mm interlocking mild steel flats spaced at 30mm center to center to form one full piece along the sump perimeter including fixing to the the 50x50x6mm angle framings(m.s) ,all steel works galvanized to NOT less than 95 microns and allow for notching as directed by client and making good the fabricated and galvanized gratings including spray painting in-situ the affected areas after fixing to receive 400mm wide cable tray (m.s) at various places as directed by kplc. (sample to be approved by the Engineer)	LOT	1.00		
	100MVAR Reactor Oil Sump Chamber				
T	Construct OIL sump chamber2m 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 and connect to soakpit(M.S)	ITEM	1.00		
	Soak-Pit:				
U	Soakpit 1.8m diaimeter not exceeeding 25ft deep to seepage level includding filling with boulders and loose sand at top 1m layer with provision for inlet point for pvc pipes with cover slab 150mm thick with BRC layer overlying 3 masonary blok,(200mm thick) courses	ITEM	1.00		
V	Allow for kplc PM, PE R.E/Project Supervisor on communication, project updates facilitation including data processing and print provisional 1,600,000 within the entire project period and necessary mark-ups	ITEM	1.00		
	ELEMENT 5: INTERNAL ACCESS ROAD (Concrete Paving Blocks)				
A	Mass excavation in compacted murram to reduce levels averagely 500mm deep and cartaway	CM	190.00		
	TOTAL TO PAGE 3 - CARRIED TO SUMMARY PAGE				

Item	Description	Unit	Quantity	Rate (Ksh)	Amount (Kshs)
B	Ram and compact sub-grade ready to receive sub-base	SM	250.00		
	Filling				
C	550mm Thick hand-packed hardcore, filling leveled, well rammed and consolidated in 150mm thick layers	CM	140.00		
F	50mm Thick quarry dust blinding	SM	250.00		
G	250 x 125mm High pre-cast concrete kerb bedded and jointed in cement and sand (1:4) mortar including 325x100mm thick mass concrete class 20/20 in foundation and haunching at the back, including all necessary formwork and excavations.	LM	60.00		
H	Extra-over ditto but curved on plan to various radii	LM	30.00		
I	250 x 125mm High pre-cast concrete channels	LM	60.00		
	Extra-over ditto for curved on plan to various radii	LM	39.00		
J	Heavy duty industrial concrete paving blocks size (210x105x80mm) minimum strength 49N/mm square laid in herringbone pattern to slope on quarry dust (m.s) and compacted to Engineer's approval	SM	250.00		
K	Extra over for junction between straight and curved kerbs.	NO	8.00		
L	Prepare surfaces and apply three coats of approved road marking paint: to Kerb stones and parking 75-150mm girth.	LM	90.00		
	ELEMENT No. 5: EXTERNAL ACCESS ROAD IN MURRAM (1.4KM)				
	SITE CLEARANCE & TOP SOIL STRIPPING				
A	Clear site on road reserve including removal of trees, hedges, bushes and other vegetation or deterious organic material, grub up roots mechanically and back fill to 100% MDD (AASHTO T99) with approved material in accordance to specifications	SM	5,600.00		
B	Top stripping- Remove top soil to maximum depth of 300mm as directed by the Engineer stockpile good material for later top soiling of side slopes and landscaping of quarries and borrow pits	CM	2,100.00		
C	Light grading for formation preparations and shaping of subgrade, improvements and its compaction to approval	CM	6.790.00		
	GRAVEL/ MURRAM PAVEMENT				
D	supply ,spread water and compact gravel material to 95% maximum dry density (MDD) using an approved roller . The CBR of gravel should be atlest 30 and complying with all specifications including formation of correct camber to a consolidated thickness of at least 200mm	CM	1,350.00		
	ROAD SHOULDERS				
E	supply and lay 150mm thick layer of murram each of 1m wide on either sides of the road pavement for road shoulders of compacted gravel to Engineers approval	CM	290.00		
	SIDE DRAINAGE				
F	Excavate to approved invert levels for 600mm diameter pipe culverts and laying of a granular bedding	CM	15.00		
G	Supply, lay 600mm diameter pipe culverts at various places as directed	LM	14.00		
H	Provide and lay concrete class 20, 1:2:4 surround / haunching, inlet headwalls, outlet headwalls / aprons where required	CM	12.00		

	PROPOSED CIVIL WORKS FOR 100MVAR REACTOR AT SUSWA 400KV KETRACO SUBSTATION	
	SUMMARY PAGE	
	BROUGHT FORWARD FROM PAGE 1	
	BROUGHT FORWARD FROM PAGE 2	
	BROUGHT FORWARD FROM PAGE 3	
	BROUGHT FORWARD FROM PAGE 4	
	SUB - TOTALS VAT EXCL.	
	ADD 0.03% LEVY, VAT EXCL.	
	TOTAL 16% VAT INCLUSIVE	
	ADD 16% VAT	
	TOTAL CARRIED TO FORM OF TENDER	
	Company Stamp	
	Signed: ……	
	Name: ……	
	Address: ……	
	Contract Period: **16** Weeks. AGREE:……..NOT AGREE:……	

