

## SUMMARY OF QUANTITIES

GRAND SUMMARY OF BILL OF QUANTITIES		
BILL ITEM	DESCRIPTION	AMOUNT (KShs)
1	Preliminaries and General Items	
4	Site Clearance and Top soil stripping	
5	Earthworks	
7	Excavation and Filling for Structures	
8	Culvert and Drainage Works	
9	Passage of Traffic	
12	Natural Material Base and Subbase	
14	Cement and Lime Treated Material	
15	Bituminous Surface Treatment and Surface Dressing	
16	Bituminous Mixes	
17	Concrete Works	
20	Road Furniture	
21	Miscellaneous Bridge/Drift Works	
22	Schedule of Dayworks	
25	HIV/AIDS, Gender & Social Issues, Local Participation	
26	Land Acquisition, Axle Load Control, and Relocation of Services	
<b>A.</b>	<b>Sub-Total (1)</b>	-
B.	Add 15% Variation of Price On Sub-Total 1	-
C.	Add 10% Contingency on Sub-Total 1	-
<b>D.</b>	<b>Sub-Total 2 = A + B + C</b>	-
E.	Add .03% of sub total ( 2 ) For PPCBL	-
F.	Add 16% VAT on Sub-Total 2	-
<b>TOTAL (D+E+F)</b>		-

## BILL OF QUANTITIES

Bill No. 1: PRELIMINARIES AND GENERAL ITEMS					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
1.01 (i)	Provide or rent accomodation for Engineer's senior and junior staff (i)Type I	month	24.00	65,000.00	1,560,000.00
1.01 (ii)	Provide or rent accomodation for Engineer's senior and junior staff (ii)Type II	month	72.00	55,000.00	3,960,000.00
1.01 (iii)	Provide or rent accomodation for Engineer's senior and junior staff (iii)Type III	month	96.00	40,000.00	3,840,000.00
1.01 (iv)	Provide or rent accomodation for Engineer's senior and junior staff (iv)Type IV	month	120.00	30,000.00	3,600,000.00
1.01 (v)	Provide or rent accomodation for Engineer's senior and junior staff (v)Type V	month	120.00	21,000.00	2,520,000.00
					15,480,000.00
1.02	E.O item 1.01 for contractor's overhead and profit	%	15,480,000.00		
1.03	Provide or rent and maintain Engineer's Representative's office as shown on the drawings or as instructed by the Engineer for use during the duration of the Contract.	LS	1.00		
1.04	Provide or rent and maintain Engineer's Site Laboratory for the duration of the Contract.	LS	1.00		
1.05	Provide and maintain Laboratory equipment, reagents and other items as priced in Appendix 'A' to the Bill of Quantities for use by the Engineer's representative for the duration of the contract.	LS	1.00		
1.06 (A)	Provide and maintain furniture , tools and other items for the Engineers Representative office for the duration of the Contract as priced in Appendix 'B'.	LS	1.00		
1.06 (B)	Provide and maintain survey equipment as priced in Appendix C for the duration of the contract.	LS	1.00		
1.07	Provide with drivers, fuel and maintain one (1) new 4WD fully loaded Station Wagon of minimum diesel engine capacity 2800cc approved by the Engineer for his exclusive use, inclusive of the first 5000km per vehicle month.	Veh-Month	24.00		
1.08	E.O item 1.07 for total aggregated mileage in excess of 5000 km per vehicle month.	Km	60,000.00		
1.09	Provide with drivers, fuel and maintain one (1) new 4WD fully loaded double cabin pick-up of minimum diesel engine capacity 2800cc approved by the Engineer for his exclusive use, inclusive of the first 5000km per vehicle month.	Veh-Month	24.00		
1.10	E.O item 1.09 for total aggregated mileage in excess of 5000 km per vehicle month.	Km	60,000.00		
1.11	Ditto item 1.09, but one (1) new 4WD standard double cabin pick-up of minimum diesel engine capacity 2500cc approved by the Engineer for his exclusive use, inclusive of the first 5000km per vehicle month.	Veh-Month	24.00		
1.12	E.O item 1.11 for total aggregated mileage in excess of 5000 km per vehicle per month.	Km	60,000.00		

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1.13	Ditto item 1.09, but two (2) new 4WD Single cabin pick-ups with fibre glass body of minimum diesel engine capacity 2500cc approved by the Engineer for his exclusive use, inclusive of the first 5000km per vehicle month. engine capacity approved by	Veh-Month	48.00		
1.14	E.O item 1.13 for total aggregated mileage in excess of 5000 km per vehicle per month.	Km	90,000.00		
1.15	Allow a Prime Cost Sum of Kshs.4,500,000 for the RE's miscellaneous account to be spent in whole or part as directed by the RE against receipts	PC Sum	1.00	4,500,000.00	4,500,000.00
1.16	E.O. item 1.15 for Contractor's overheads and profits.	%	4,500,000.00		
1.17	Allow a Prime Cost Sum of Kshs. 9,000,000.00 for attendance upon the Resident Engineer' staff.	PC Sum	1.00	9,000,000.00	9,000,000.00
1.18	E.O. item 1.17 for Contractor's overheads and profits.	%	9,000,000.00		
1.19	Provide, erect and maintain publicity signs as directed by the Engineer.	No.	2.00		
1.20	Allow for PC Sum of Kshs. 2,000,000.00 for training of Engineer's staff	LS	1.00	2,000,000.00	2,000,000.00
1.21	E.O. item 1.20 for Contractor's overheads and profits.	%	2,000,000.00		
1.22	Allow for Prime Cost Sum of Kshs. 2,500,000.00 for Geotechnical Investigations	PC Sum	1.00	2,500,000.00	2,500,000.00
1.23	E.O. item 1.20 for Contractor's overheads and profits.	%	2,500,000.00		
<b>Total Bill 1 Taken to Summary Page</b>					

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Bill No. 4: SITE CLEARANCE AND TOP SOIL STRIPPING					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
4.01	Clear site on road reserve including removal of trees, hedges, bushes, other vegetation and deleterious organic material, grub up roots and back fill to 100% MDD (AASHTO T99) with approved material in accordance with the specification.	Ha	12.00		
4.02	Remove top soil not exceeding 200mm depth and spread or stockpile for reuse as directed by the engineer.	m <sup>3</sup>	28,000.00		
4.03	Allow a Provisional Sum of Kshs.600,000 for removal of any structures and obstructions as directed by the engineer. Payment to be on Dayworks basis.	Prov. Sum	1.00	600,000.00	600,000.00
4.04	E.O. item 4.03 for Contractor's overheads and profits.	%	600,000.00		
Total Bill 4 Taken to Summary Page					
Bill No. 5: EARTHWORKS					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No separate payment shall be made for the overhaul material. The cost of such shall be included in the rates and/or prices</b>				
5.01	Fill in soft material including benching to shoulders and embankments and compaction to 95% MDD (AASHTO T99) in layers not exceeding 150mm in accordance with the Specification or as instructed by the Engineer	m <sup>3</sup>	44,000.00		
5.02	Extra over item 5.01 for compaction of top 300mm Subgrade to 100% MDD (AASHTO T99)	m <sup>3</sup>	36,800.00		
5.03	Ditto item 5.01 but in hard material	m <sup>3</sup>	11,000.00		
5.04	Cut to spoil in soft material	m <sup>3</sup>	23,600.00		
5.05	Ditto item 5.04 but in hard material	m <sup>3</sup>	5,000.00		
5.07	Compaction of the top 150mm below formation level in cutting to 100% MDD (AASHTO T99)	m <sup>3</sup>	7,400.00		
5.08	Compaction of 150mm original ground below fills to 95% MDD (AASHTO T99)	m <sup>3</sup>	19,300.00		
5.09	Topsoiling prior to grassing in accordance with the specifications	m <sup>2</sup>	35,600.00		
5.10	Grassing over sideslopes in cuts and fills as directed by the engineer	m <sup>2</sup>	35,600.00		
5.11	Provide and place rockfill to swampy areas as directed by the engineer	m <sup>3</sup>	100.00		
5.12	Provide Filter fabric to swamp under, over and around rock fill	m <sup>2</sup>	200.00		
Total Bill 5 Taken to Summary Page					-

## BILL OF QUANTITIES

Bill No. 7: EXCAVATION AND FILLING FOR STRUCTURES					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No separate payment shall be made for gravel for blinding or hauling to spoil unsuitable excavation materials and the cost of such shall be included in the rates and prices</b>				
7.01	Excavate for structures in soft material	m <sup>3</sup>	76,200.00		
7.02	Ditto item 7.01 but in hard material	m <sup>3</sup>	780.00		
7.03	Provide,place and compact rockfill below and around structures.	m <sup>3</sup>	1,500.00		
7.04	Provide and place 150mm thick stone pitching as directed by the Engineer including cement grouting	m <sup>2</sup>	7,080.00		
7.05	Excavate for gabions in soft material.	m <sup>3</sup>	5,280.00		
7.06	Provide and place gabion boxes and mattresses where directed by the Engineer.	No.	4,620.00		
7.07	Provide and place rock fill to gabion boxes	m <sup>3</sup>	1,620.00		
7.08	Place filter fabric under and/or behind gabion boxes and structures	m <sup>2</sup>	5,220.00		
7.09	Provide and backfill approved granular material around new structures, compact to 100% MDD (AASHTO T99) in layers not exceeding 150mm.	m <sup>2</sup>	960.00		

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7.10	Allow for the provision and removal of cofferdams or other measures for the exclusion of water from site and for protection of works against floods.	LS	1.00	158,355.00	158,355.00
7.11	Allow for protection of structures pursuant to Section 708 of the specifications	m <sup>3</sup>	1.00		
7.12	Allow for river training in soft material	m <sup>3</sup>	420.00		
7.13	Allow for river diversion during construction of Bridge	m <sup>3</sup>	0.00		-
7.14	Provide a lumpsum for widening upstream of the bridge	LS	0.00	250,000.00	-
7.17	Provide and place rip-rap as directed by Engineer	m <sup>3</sup>	0.00	2,000.00	-
7.14	Provide coffer dams as directed by the Engineer.	LS	1.00	1,000,000.00	1,000,000.00
<b>Total Bill 7 Taken to Summary Page</b>					<b>1,158,355.00</b>

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Bill No. 8: CULVERT AND DRAINAGE WORKS					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No separate payments shall be made for gravel for blinding or hauling to spoil unsuitable excavation material and the cost of such be included in rates and prices</b>				
8.01	Excavate for inlet,outfall,mitre and catch water drains in soft material	m <sup>3</sup>	1,680.00		
8.02	Ditto item 8.01 but in hard material	m <sup>3</sup>	414.00		
8.03	Excavation in soft material for pipe culverts, headwalls, wing walls, apron, toe walls and drop inlets and compaction of excavated ground as specified or as directed by the Engineer.	m <sup>3</sup>	2,400.00		
8.04	Ditto item 8.03 but in hard material	m <sup>3</sup>	588.00		
8.05	Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads	m	480.00		
8.06	As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts	m	600.00		
8.07	As for item 8.05 but 1200mm dia concrete pipes (precast to BS 5911 parts 1 & 3)for cross culverts	m	180.00		
8.08	As for item 8.05 but 450mm dia concrete pipes (precast to BS 5911 parts 1 & 3)for access culverts and sleeves	m	180.00		
8.09	Provide, place and compact class 15/20 concrete to beds, surround and haunches	m <sup>3</sup>	1,140.00		
8.10	Provide place and compact class 25/20 concrete for headwalls, wingwalls, aprons and toewalls to pipe culverts including all formwork and the provision and placing of reinforcement as shown in the drawings	m <sup>3</sup>	714.00		
8.11	Provide and place invert block drains with two course side slabs	m	1,800.00		
8.12	Construct in concrete class 15/20 side drains scour checks as instructed	m <sup>3</sup>	6.00		
8.13	Provide and place precast concrete slabs 600mm x 600mm x 100mm and place over open lined drains in trade centres and markets (reinforced with A142 wire mesh reinforcement )	No.	1,500.00		
8.15	Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer	m	96.00		
8.16	Provide and place A142 wire mesh reinforcement	m <sup>2</sup>	1,980.00		
8.17	Provide, lay and joint ducts and sleeves including 150mm concrete (C15/20) (insert size in mm) heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves	m	90.00		
8.21	Provide,place and compact rockfill below culverts as per Clause 507 and 804 of the Specifications, drawings and as directed by the Engineer	m <sup>3</sup>	240.00		
<b>Total Bill 8 Taken to Summary Page</b>					-

## BILL OF QUANTITIES

### Bill No. 9: PASSAGE OF TRAFFIC

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No separate payment shall be made for the overhaul material. The cost of such shall be included in the rates and/or prices</b>				
9.01	Construct and maintain diversions in maximum lengths of 5km sections as directed by the Engineer, including 150mm gravel wearing course & all signage, lighting and barriers as directed by the Engineer	km	14		
9.02	Provide, spread, water and compact gravel as directed by the Engineer for maintenance ahead of works.	m <sup>3</sup>	12,312		
9.03	Allow for the passage of traffic through and around the works	LS	1	900,000.00	900,000.00
9.04	Maintenance of existing road including grading, shaping, watering and compaction as directed by the Engineer	km	14		
9.06	Reinstate deviations to original state	km	14		
<b>Total Bill 9 Taken to Summary Page</b>					<b>900,000.00</b>



## BILL OF QUANTITIES

Bill No. 12: NATURAL MATERIAL BASE AND SUBBASE					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No separate payment shall be made for the overhaul material. The cost of such shall be included in the rates and/or prices</b>				
12.01	Provide gravel subbase material, haul spread, compact to 95% MDD (AASHTO T180) and shape to level and tolerance	m <sup>3</sup>	16,320.00		
12.02	Provide gravel base material, haul spread, compact to 95% MDD (AASHTO T180) and shape to level and tolerance	m <sup>3</sup>	15,060.00		
Total Bill 12 Taken to Summary Page					-
Bill No. 14: CEMENT AND LIME TREATED MATERIAL					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No separate payment shall be made for the overhaul material. The cost of such shall be included in the rates and/or prices</b>				
14.03	Provide and spread Cement as an improvement agent for sub-base layer	Tonne	780.00		
14.04	Provide and spread cement as an improvement agent for base layers	Tonne	1,026.00		
14.05	Mix and process natural material with improvement agent for pavement layers as instructed by the Engineer or as specified	m <sup>3</sup>	31,314.00		
14.06	Protection and curing of cement / lime treated base and sub-base layers	m <sup>2</sup>	103,980.00		
Total Bill 14 Taken to Summary Page					-

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Bill No. 15: BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No separate payment shall be made for the overhaul of bitumen/chippings as these shall be deemed to have been included in the rates</b>				
15.01	Prepare surface of carriageway and shoulders, provide, heat and spray MC 30 cutback bitumen prime coat	Litres	132,000.00		
15.02	Prepare surface of carriageway and shoulders, provide, heat and spray 80/100 bitumen seal coat as first seal	Litres	110,000.00		
15.05	Provide, spread and roll 10/14mm precoated chippings	m <sup>3</sup>	1,600.00		
15.08	Provide & spray K1-60 as tack coat on carriageway, shoulders and on rumble strips	Litres	88,000.00		
Total Bill 15 Taken to Summary Page					-
Bill No. 16: BITUMINOUS MIXES					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>NOTE: No haulage will be paid for aggregates, bitumen or the premix. The cost for haulage shall be included in the rates. Rates to be inclusive of fines</b>				
16.01	Provide, place and compact Asphalt Concrete Type II to a 35mm thickness on carriageway and bus bays as directed by the Engineer.	m <sup>3</sup>	3,420.00		
16.07	Provide and erect Asphalt Concrete Type II bumps and rumble strips as directed by the Engineer.	m <sup>3</sup>	28.00		
Total Bill 16 Taken to Summary Page					-

## BILL OF QUANTITIES

Bill No. 17: CONCRETE WORKS					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
	<b>Note: No haulage will be paid for aggregates, bitumen or the premix. The cost for haulage shall be included in the rates. Rates to be inclusive of fines</b>				
17.01	Provide, place and compact Class 15(20) concrete blinding as instructed by the Engineer	m <sup>3</sup>	960.00		
17.02	Provide, place and compact concrete class 25(20) to aprons, wingwalls, abutments, piers, walls and box culverts as shown in drawings.	m <sup>3</sup>	870.00		
17.03	Provide, place and compact concrete class 30(20) to aprons, wingwalls, abutments and piers, walls, beams and slabs for the Box culverts and bridges as shown in drawings.	m <sup>3</sup>	420.00		
17.04	Provide, place and compact concrete class 30(20) to deck and approach slabs as shown in drawings.	m3	690.00		
17.05	High yield reinforcement steel bars to specifications equal to or less than 16mm diameter bar size	TONNE	100.00		
17.06	High yield bond strength reinforcement steel to specifications greater than 16mm diameter bar size	m <sup>2</sup>	180.00		
17.27	Provide & fix in place vertical formwork to achieve Class U F2 finish	m <sup>2</sup>	0.00		
17.28	As item 17.09 but horizontal	m <sup>2</sup>	0.00		
17.16	Provide & fix in place vertical formwork to achieve Class U F3 finish	m <sup>2</sup>	3,260.00		
17.17	Provide formwork to achieve class F3 finish	m <sup>2</sup>	3,200.00		
<b>Total Bill 17 Taken to Summary Page</b>					<b>-</b>

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### Bill No. 20: ROAD FURNITURE

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
20.01	Provide Road Reserve Boundary posts	No.	56.00		
20.02	Excavate for, provide & place 250x125mm precast concrete raised or ramped kerbs haunched in 100mm thick class 15/20 concrete base bedding and mortar joined in support to carriageway, busbays and junctions as directed by the Engineer				
	(a) Straight	m	300		
	(b) Kerbs radius 12m - 6m	m	150		
	(c) Ditto but radius 5m - 1m	m	300		
20.04	Provide and erect permanent road signs as instructed by the Engineer in accordance with Special Specifications Clause 2004 as follows:				
	a) Warning signs	No.	12		
	b) Priority, prohibitory and mandatory signs	No.	12		
	c) Standard informatory signs	No.	6		
	d) Non standard informatory signs area				
	i) Less than 1.0 m <sup>2</sup>	No.	12		
	ii) More than 1.0 m <sup>2</sup> but less than 5 m <sup>2</sup>	No.	6		

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20.05	Provide, deliver, paint and mark the road as specified or as directed by the Engineer, with white reflectorized thermoplastic paint from an approved supplier.	m <sup>2</sup>	3,120		
20.06	As item 20.05 but for yellow reflectorized thermoplastic paint	m <sup>2</sup>	1,560		
20.07	Provide and erect concrete posts for guardrails complete with spacers (size and interval) as per specifications or as directed by the Engineer	No.	198		
20.08	Provide and erect flex-beam guardrails complete with connections as shown on the drawings or as directed by the Engineer	m	150		
20.09	Provide and erect edge marker posts as directed by the Engineer	No.	84		
20.10	Provide and erect Kilometer marker posts as directed by the Engineer	No.	18		
20.14	Provide and install cat-eyes as directed by the Engineer	No.	276		
20.21	Provide approved reflectorised white paint and mark 0.2 m wide for bus bays as directed by the Engineer.	m <sup>2</sup>	24		
					-
<b>Total Bill 20 Taken to Summary Page</b>					-

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Bill No. 21: MISCELLANEOUS BRIDGE/DRIFT WORKS					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
21.01	Provide 100 mm diameter drain pipes and insert heavy duty PVC 100mm diameter as instructed by the Engineer	No	810		
21.02	Provide diameter weepholes and insert heavy duty PVC 100mm diameter on abutments or as instructed by the Engineer	No	468		
21.03	Provide and fix hand rails 75 mm diameter on crash barriers, with hold down brackets at not more than 2.5 meter intervals	m	432		
21.04	Provide and apply bitumen emulsion or cutback bitumen or bitumen/rubber latex emulsion to all structural concrete in contact with fill material or cut soil.	m <sup>2</sup>	645		
21.05	Provide and place into position handrails to kerbs of bridge deck & ramps as shown on the drawing and as directed by the Engineer.	m	381		
21.06	Provide and place a 0.5-1.0m wide granular material of size 14/20 mm to structural concrete in contact with fill material.	m <sup>3</sup>	135		

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21.07	Provide and place as directed by the Engineer PVC pipes of diametre 75 mm and length 300 mm to form storm drain pipes of the bridge deck	No	300		
21.08	Provide and fix bearings as directed by the Engineer.	No	42		
21.09	Provide and place into position elastomeric laminated rubber fixed bearing codes 3710443, size as shown in drawings or as shall instructed by the Engineer	No	47		
21.11	Provide and place into position galvanised flexi-beam guardrails including end pieces,nuts and bolts along the approaches to the bridges as per drawings and as instructed by the Engineer	m	261		
21.12	Provide and install movement joint and sealant for bridges and drift	m	405		
<b>Total Bill 21 Taken to Summary Page</b>					-
<b>Bill No. 22: SCHEDULE OF DAY WORKS</b>					
	<b>The rates inserted herein are to include all operational and Maintenace costs, fuel, oil, grease, drivers/operators wages,supervision, overheads and profit.Only time actually employed upon the work will be paid for and the rates should include for idle time, travelling time and overtime,In accordance with clause 2202 (a) of the specifications.Note: All items of plant must be priced.</b>				
22.01	Crawler dozers with hydraulic attachmentsto include ripper				
	a) Up to 135 kw rated flywheel power	hrs	20.00		
	b) Over 136 kw rated flywheel power	hrs	20.00		
22.02	Motor Grader				
	a) Up to 110kw rated flywheel power	hrs	50.00		
	b) Over 100kw rated flywheel power	hrs	20.00		
22.03	Vibratory Roller				
	a) 6.5 - 8.81 tonne un-ballasted weight	hr	20.00		
	b) Over 8.91 tonne un-ballasted weight	hr	20.00		

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22.04	Hand propelled vibrating roller 650 - 1300kg	hrs	40.00		
22.05	Cat 950G wheel loader or equivalent	hrs	40.00		
22.06	10 Tonne tipper lorry	hrs	40.00		
22.07	Small dumpers, 750-1000kg rated payload	hrs	40.00		
22.08	Dual purpose hydraulic excavator with backhoe/loader and a rated bucket capacity of upto 1m3.	hrs	40.00		
22.09	Articulated wheel loader with 1.5-2.0m3 SAE rated bucket capacity	hrs	40.00		
22.10	50mm delivery water pump and motor	hrs	40.00		
22.11	Self propelled water tanker 4,500ls min. capacity with pick-up pump	hrs	40.00		
22.12	Concrete Mixer of 100 - 150litres	hrs	40.00		
22.13	Concrete poker vibrator	hrs	40.00		



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	<b>LABOUR</b>				
	<b>The rates inserted herein are to include all costs of labour such as insurance, accomodation, travelling time, over-time, use and maintenance of small tools of trade, supervision, overheads and Profit. Only the actual time engaged upon the work will be paid for.</b>				
22.14	Unskilled Labour	hrs	500.00		
22.15	Artisans	hrs	500.00		
22.16	Office attendants and chainmen	hrs	500.00		
22.17	Watchmen (all round surveillance)	hrs	500.00		
	<b>MATERIALS</b>				
	<b>All materials are to comply with the Specification. The rates inserted herein are to include for delivery to the site, storage, handling, overheads and profit</b>				
22.18	Ordinary Portland Cement 42.5 N	Ton	10.00		

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22.19	Hydrated Lime	Ton	10.00		
22.2	Mild Steel( any diametre)	Ton	10.00		
22.21	High Yield Steel ( any diametre)	Ton	10.00		
22.22	Fine Aggregate for Concrete	m <sup>3</sup>	100.00		
22.23	Coarse Aggregate for Concrete	m <sup>3</sup>	100.00		
22.24	Wrot Shuttering Timber	m <sup>2</sup>	100.00		
22.25	Rough shuttering timber.	m <sup>2</sup>	100.00		
22.26	Bitumen Emulsion KI-60.	Litre	200.00		
22.27	Straight run bitumen Grade 80/100.	Litre	200.00		
22.28	Kerosene	Litre	200.00		
22.29	14/20 mm nominal size surface chips.	m <sup>3</sup>	10.00		
22.30	6/10mm nominal size surface chips	m <sup>3</sup>	10.00		
22.31	AC Type I Ex-plant	m <sup>3</sup>	50.00		
22.32	AC Type II Ex-plant	m <sup>3</sup>	50.00		
<b>Total Bill 22 Taken to Summary Page</b>					-

## BILL OF QUANTITIES

BILL No. 25 : HIV/AIDS, Gender & Social Issues, Local Participation					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (KES)
25.01	All for a prime cost sum of KShs 3,000,000 (five Million) for ESIA study and report, Compliance Audits and environmental monitoring.	PC sum	1.00	3,000,000.00	3,000,000.00
25.02	E.O for Item 25.01 for Contractor's Oveheads and Profit	%	3,000,000.00		
25.03	Allow for engagement of a HIV/AIDS specialist subcontractor to deal with prevention, awareness activities as per programme to be approved by the Engineer	Months	24.00		
25.04	Allow for the availability of male and female condoms to workers and staff strategically and socially presented for the duration of the contract	No.	1,500.00		
25.05	Allow for preparation and submmision of monthly reports on HIV/AIDS awareness and prevention activities. Report to be tabled at site meetings.,	Months	24.00		
25.06	Provide, Instal and maintain HIV/AIDS awareness bill boards with approved message and graphics with maximum area 4m2 fabricated as per specifications of permanent infromatory sign boards	No.	3.00		
25.07	Allow for vedio shows on HIV/AIDS related awareness and prevention matters every 3months	No.	3.00		

## BILL OF QUANTITIES

25.08	Allow for production and distribution of HIV/AIDS awareness material as follows:				
	a) T-Shirt printed with approved message and graphics	No.	60.00		
	b) Ditto (a) above but caps	No.	60.00		
	c) A1 size weather proved posters	No.	12.00		
	d) A3 size weather proved posters	No.	60.00		
	e) 200x150mm stickers with HIV/AIDS awareness/prevention slogan	No.	60.00		
	f) Key rings with HIV/AIDS awareness/prevention slogan	No.	60.00		
	g) Ball point pens with HIV/AIDS awareness / prevention slogan.	No.	150.00		
					-
<b>Total Bill 25 Taken to Summary Page</b>					<b>3,000,000.00</b>

<b>BILL No. 26 : Land Acquisition, Axle Load Control, and Relocation of Services</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QUANTITY</b>	<b>RATE</b>	<b>AMOUNT (KES)</b>
26.01	Allow a Prime Cost sum of Ksh.3,000,000 for acquisition of land required for the works,etc.in accordance with Specifications	PC Sum	1	3,000,000.00	3,000,000.00
26.02	E.O. item 26.01 for allowance for Contractor's profit and overheads	%	3,000,000.00		
26.03	Allow a Prime Cost Sum of Ksh. 1,800,000 for relocation of services as instructed or directed by the Engineer.	PC Sum	1	1,800,000.00	1,800,000.00
26.04	E.O. item 26.03 for Contractor's overheads and profits.	%	1,800,000.00		
					-
<b>Total Bill 26 Taken to Summary Page</b>					<b>4,800,000.00</b>

## APPENDIX A

## APPENDIX TO BILL ITEM 1.05:

## PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
	<b>1. FURNITURE</b>				
A104/1.01	Desk 2.2x0.9 m with chair and lockup drawers	No	2		
A104/1.02	Desk chair (standard)	No	15		
A104/1.03	Stationery cupboard, 1.2 m <sup>3</sup> , lockable	No	2		
A104/1.04	Steel filing cabinet, 4 drawers, lockable	No	2		
A104/1.05	Steel filing cabinet, 2 drawers, lockable	No	2		
A104/1.06	Bookshelf, 3 shelves 1.2 m long (to hold box files)	No	2		
A104/1.07	Table - 6 m <sup>2</sup>	No	2		
A104/1.08	Two Plate electric heater	No	1		
A104/1.09	Fire extinguisher, 10 litre capacity, CO <sub>2</sub> type	No	4		
A104/1.10	Complete first aid kit	No	2		
	<b>EQUIPMENT</b>				
	<i>(The following equipment shall be purpose made for use in the Engineer's laboratories and shall comply with the relevant British (BS) or American (AASHTO) Standard)</i>				
	<b>2. General Equipment</b>				
A104/2.02	2.49kg. Compaction hammer, drop regulated to 304.8mm	No	2		
A104/2.03	4.535kg compaction hammer drop regulated to 457.2mm	No	2		
A104/2.04	Electric vibrating Kango Hammer fitted with steel tamper(BS 1377) with support frame	No	1		
A104/2.05	Straight edge 300 mm long with handles	No	4		
A104/2.06	Steel Tamper (BS1377) compatible with Kango hammer	No	3		
A104/2.07	Compaction mould 152.4 mm. dia x 116.43 mm complete with base plate and extension collar, 101.6 mm	No	2		
A104/2.08	Galvanized metal tray 1m x 0.5m x 75 mm deep	No	4		
A104/2.09	75mm brush	No	2		

## APPENDIX A

**APPENDIX A****APPENDIX TO BILL ITEM 1.05:****PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE (KSHS)</b>	<b>AMOUNT (KSHS)</b>
A104/2.10	Semi-automatic balance, 25kg Capacity accurate to 1g, including weights	No	1		
A104/2.11	20mm BS Sieve, 300mm diameter	No	1		
A104/2.12	Stop Clock	No	2		
A104/2.13	Thermostatically controlled electric oven 105-110 <sup>0</sup> C, capacity 0.225 m <sup>3</sup>	No	2		
A104/2.14	As above but gas heated	No	1		
A104/2.15	Moisture content tins, 75 mm dia, Cadmium or aluminium plated	No	60		
A104/2.16	Cone penetrometer with gauge and automatically controlled test cup	No	2		
<b>C/Forward to next page</b>					

## APPENDIX A

## APPENDIX TO BILL ITEM 1.05:

## PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
<b>B/Forward From previous page</b>					
	<b>3. Density (Sand replacement method BS 1377)</b>				
A104/3.01	Metal containers 450mm diameter	No	2		
A104/3.02	Stainless steel tray 305mm diameter	No	2		
A104/3.03	Metal tray with 150 mm diameter hole in the centre, 300mmx300 mm square or equivalent area, 40mm deep	No	2		
A104/3.04	Metal tray with 200mm diameter hole in the centre, 500mm x 500 mm square , 50 mm deep	No	2		
A104/3.05	Steel pegs for fixing tray in position	No	15		
A104/3.06	Sand pouring cylinder, 150 mm diameter	No	2		
A104/3.07	Sand pouring cylinder, 215 mm diameter	No	2		
A104/3.08	Cold steel chisel 20mm x 300mmm	No	4		
A104/3.09	Cold steel chisel 10mm x 250mmm	No	4		
A104/3.10	1.5kg, 3.5kg hammers and 1kg rubber mallet	Set	1		
A104/3.11	Scoop for removing excavated material from hole, 250 mm long handle	No	6		
A104/3.12	100mm brush, soft	No	3		
A104/3.13	50mm brush, soft	No	3		
A104/3.14	Primus gas stove	No	1		
A104/3.15	Calibrating can 150 mm diameter x 150 mm deep	No	3		
A104/3.16	Ditto but 200 mm diameter x 250 mm deep	No	3		
	<b>4. Density (Nuclear Density method AASHTO T238)</b>				
A104/4.01	Nuclear density gauge (Troxler 3411B or similar approved) complete with 3 no. hole forming device and 3 no. guide	No	1		
	<b>5. CBR (AASHTO T193)</b>				

**APPENDIX A****APPENDIX TO BILL ITEM 1.05:****PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY**

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/5.01	CBR mould, 152.4 mm dia x 178 mm high, complete with perforated base plate and extension collar 50.8 mm high that can be fitted to either side of mould	No	50		
A104/5.02	Perforated swell plate 150 mm dia with an adjustable centre post of rust proof metal provided with a lock-nut	No	40		
A104/5.03	2.25 kg split surcharge weight	No	2		
A104/5.04	Set of annular surcharge weights	No	1		
A104/5.05	Solid base plate for CBR mould	No	2		
A104/5.06	Static compaction displacer discs 1 No x 61.4 mm, 1 No x 50.8 mm and 2 No x 38.8 mm thick with handles	set	1		
A104/5.07	Disk lifting handle	No	2		
A104/5.08	Central extruder, complete with 20kN hydraulic jack and accessories	No	1		
<b>C/Forward to next page</b>					
<b>B/Forward From previous page</b>					
A104/5.09	Automatic CBR Proctor Compaction press, 50 tonnes capacity with an adjustable distance between platens of 530mm-250mm, rammer weights and automatic count selector	No	1		
A104/5.10	Set of guards for above press.	No	1		
A104/5.11	50 kN CBR Load frame complete with stabilising bar (electric and hand operated) including proving rings for 10KN, 28KN and 50KN, piston and bracket	No	1		
A104/5.12	Penetration gauge range 0 - 25mm	No	2		
A104/5.13	CBR piston including bracket	No	2		
A104/5.14	Swell measurement tripod complete with guage calibrated in 0.01 mm divisions	No	2		
A104/5.15	Soaking tank for CBR mould sufficient for 50 moulds	No	1		
	<b>6. Relative Density of Aggregates (BS 812)</b>				



## APPENDIX A

## APPENDIX A

## APPENDIX TO BILL ITEM 1.05:

## PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/6.01	Wire mesh basket with apertures not greater than 6.5 mm large enough to contain 2.5 kg of aggregate	No	2		
A104/6.02	A stout watertight container in which the basket can be freely suspended	No	2		
A104/6.03	Soft absorbent cloth (tea towel)	No	10		
A104/6.04	Shallow tray of area not less than 0.065 m <sup>2</sup>	No	2		
A104/6.05	An airtight container of similar capacity to the basket	No	2		
A104/6.06	Pycnometer of 1 litre capacity	No	4		
A104/6.07	Semi automatic 5 kg balance accurate to 0.1g to be of size and type to permit the basket containing the sample to be suspended in water(to be supplied with weights)	No	1		
A104/6.08	Hot air drier (electric)	No	2		
	<b>7. Flakiness (BS 812)</b>				
A104/7.01	Thickness gauge (various sizes)	No	2		
	<b>8. Sieve Analysis (BS 1377)</b>				
A104/8.01	BS Sieve 300mm diameter in sizes 75, 63, 50, 37.5, 28, 20, 14, 10, 6.3, 5 and 4 mm, plus lid and receiver	Set	2		
A104/8.02	BS Sieve 200mm diameter in sizes 2, 1, 0.6, 0.5, 0.425, 0.300, 0.150 and 0.075 mm, plus lid and receiver	Set	2		
A104/8.03	Electric sieve shaker	No	1		
A104/8.04	BS sieve 200mm diameter 0.425 and 0.075 mm	set	1		
A104/8.05	1 m x 1 m x 75mm deep galvanized metal tray	No	10		
A104/8.06	Riffle box with 50mm slots (BS 1377)	No	1		
<b>C/Forward to next page</b>					
<b>B/Forward From previous page</b>					
	<b>9. Miscellaneous Equipment</b>				
A104/9.01	Wheel barrow	No	3		
A104/9.02	Dustpan and brush	No	3		
A104/9.03	Shovel	No	4		

## APPENDIX A

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## APPENDIX TO BILL ITEM 1.05:

## PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/9.04	Pick axe with handle	No	4		
A104/9.05	Metal scoop, large (150mm wide)	No	3		
A104/9.06	Metal scoop, medium (100mm wide)	No	4		
A104/9.07	Garden trowel	No	2		
A104/9.08	Steel tray 0.3m x 0.3m x 0.01m deep	No	15		
A104/9.09	Palette knife 200mm long blade	No	3		
A104/9.10	Palette knife 100mm long blade	No	4		
A104/9.11	BS sieve 450mm diameter, 37.5mm	No	1		
A104/9.12	BS sieve 450mm diameter, 20mm	No	1		
A104/9.13	BS sieve 450mm diameter, 5mm	No	1		
A104/9.14	BS sieve 450mm diameter, 0.425mm	No	1		
A104/9.15	BS sieve 450mm diameter, 0.3mm	No	1		
A104/9.16	BS sieve 450mm diameter, 0.075mm	No	1		
A104/9.17	Set of lid and receiver for metal scoop and steel trays	No	2		
A104/9.18	BS Sieve brush	No	2		
A104/9.19	Measuring cylinder set, 25 ml, 100 ml, 500 ml, 1000 ml, 2000 ml	set	2		
A104/9.20	Glass jar capacity 5 litres with lid	No	10		
A104/9.21	200mm x 200mm x 20mm cadmium plated or aluminium tin	No	20		
A104/9.22	Electronic balance capacity 1000 g, accurate to 0.01gm.	No	1		
A104/9.23	Balance 2000 g capacity accuracy to 0.1g (manual), including weights	No	1		
A104/9.24	Balance 50kg capacity accurate to 10gm including weights	No	1		
A104/9.25	Still for producing distilled water	No	1		
A104/9.26	Polythene or glass 20 litres storage vessel with tap at bottom	No	2		
A104/9.27	Stiff broom	No	2		
A104/9.28	Vernier calipers, 150mm	No	2		
A104/9.29	Vernier calipers, 250mm	No	2		
C/Forward to next page					
B/Forward From previous page					
A104/9.30	Pestle and mortar	No	2		
A104/9.31	Linear shrinkage mould (BS 1377)	No	6		
A104/9.32	Liquid Limit Device	No	2		
A104/9.33	Average least dimension gauge	No	2		

## APPENDIX A

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## APPENDIX TO BILL ITEM 1.05:

## PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/9.34	Lockable tool box containing: 1 pair "Molegrips", 2 x 150mm screwdriver, 2 x 200 mm screwdriver, 2 x 300 mm screwdriver, (1 standard and 1 Phillips head of each) adjustable spanners 200 mm and 300 mm, 1 pair round nosed pliers, 1 pair general purpose pliers,	No	1		
A104/9.35	Plastic or metal bucket including lid, 10 litres capacity	No	6		
A104/9.36	Polythene wash bottle (500 ml)	No	5		
A104/9.37	A4 size clipboard	No	4		
A104/9.38	Thermometer, range -10°C to 150°C, glass (BS 593)	No	2		
A104/9.39	Laboratory thermometer, range + 0°C to + 250°C (BS 593)	No	2		
A104/9.40	Maximum and minimum thermometer (BS 692)	No	2		
A104/9.41	Rain gauge	No	1		
A104/9.42	Portable dial thermometer + 50°C to +250°C accurate to ± 3%	No	1		
A104/9.43	Ditto with 0.75m long stem	No	1		
A104/9.44	Pocket thermometer + 50°C to +250°C accurate to ± 3% with 0.1 m stem	No	2		
A104/9.45	5 litre capacity steel storage containers with leak and dust proof lids for storage of bitumen samples	No	50		
A104/9.46	Hotplate 200mm diameter with Simmerstat heat control unit.	No	2		
A104/9.47	450mm diameter x 150mm deep metal mason's basin	No	6		
	<b>10. Standard Specifications</b> ( <i>Copies of each of the latest editions of the following Standards</i> )				
A104/10.01	BS 598	No	1		
A104/10.02	BS 812	No	1		

## APPENDIX A

**APPENDIX A****APPENDIX TO BILL ITEM 1.05:****PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY**

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/10.03	BS 882	No	1		
A104/10.04	BS 1377	No	1		
A104/10.05	BS 1881	No	1		
A104/10.06	BS 1924	No	1		
A104/10.07	Standard Specifications for Transportation Material and Methods of Sampling and Testing (AASHTO) Parts I and II, 14th Edition	Set	1		
A104/10.08	ASTM D1559	No	1		
A104/10.09	Asphalt Institute, Superpave Manual Series No.2(SP-2)	No	1		
A104/10.10	Overseas Road Note 19	No	1		
A104/10.11	BS 5911 Part 1 &3	No	1		
<b>C/Forward to next page</b>					
<b>B/Forward From previous page</b>					
	<b>11. Concrete: Slump and Cube Manufacture (BS 1881)</b>				
A104/10.12	BS 4449	No	1		
A104/11.01	Slump cone, tamping rod and base	set	2		
A104/11.02	Concrete cube mould, 150mm cube	No	30		
A104/11.03	Soaking tank for cubes (capacity 50 No.)	No	1		
A104/11.04	Cube tamping bars	No	10		
	<b>12. Concrete: Cube Compression Testing</b>				

## APPENDIX A

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## APPENDIX TO BILL ITEM 1.05:

## PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/12.01	Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer	No	1		
A104/12.02	Safety guard for above				
A104/12.03	50mm distance piece				
A104/12.04	70mm distance piece				
A104/12.05	Electro-mechanical load pacer, 100 mm or equivalent distance piece				
13. Aggregate and Chippings					
A104/13.01	Sand equivalent to AASHTO T176 including graduated plastic cylinder, rubber stopper, irrigation tube weighted foot assembly, siphon assembly, 85ml tin box (57mm dia.), 100 mm dia wide mouth funnel, stop clock,mechanical shaker and 10 litre jar	Set	1		
A104/13.02	Beaker 250ml	No	2		
A104/13.03	Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate	No	2		
A104/13.04	Tamping rod and metal measure for above	Set	4		
A104/13.05	Los Angeles Abrasion to ASTM standards	No	1		
A104/13.06	Set of 12 abrasive charges	No	2		
A104/13.07	Thermometer, 0°C to +50°C	No	2		
A104/13.08	Thermometer, 0°C to +250°C	No	2		
A104/13.09	Reagent grade Silica gel, 500g container	No	50		
	14. Bitumen Spray Test (BS 1707)				

**APPENDIX A****APPENDIX TO BILL ITEM 1.05:****PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY**

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/14.1	Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent.	Set	1		
A104/14.02	Steel tray 20 mm deep x0.1m <sup>2</sup> (for measuring bitumen spray rates) with purpose made detachable handle 1.5m long.	No.	4		
<b>C/Forward to next page</b>					
<b>B/Forward From previous page</b>					
	<b>16. Bitumen Extraction Test</b>				
	<b>A) Extractor Bottle Method BS 598 Part 2</b>				
A104/16.01	Electronic top pan balance 4kg capacity, sensitive to 0.1gm	No	1		
A104/16.02	Flat bottomed scoop	No	3		
A104/16.03	Steel garden trowel	No	2		
A104/16.04	Large steel spoon	No	2		
A104/16.05	Heat resistant gloves	pair	10		
A104/16.06	Foot pump for pressurising air water assemblies up to a maximum of 700KN/m <sup>2</sup> and fitted with flexible hose approximately 1.2m long and connector	No	2		
A104/16.07	Steel bottle 600ml capacity with 49mm rubber stopper	No	2		
A104/16.08	Steel bottle 2500ml capacity with 71mm rubber stopper	No	2		
A104/16.09	Steel bottle 7000ml capacity with 71mm rubber stopper	No	2		

**APPENDIX A****APPENDIX TO BILL ITEM 1.05:****PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY**

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
A104/16.10	Flask funnel for fitting to the 700ml steel bottle with rim of funnel retaining sieve 200mm nominal diameter	No	2		
A104/16.11	Bottle roller compact bench mounted unit designed to rotate 2 bottles simultaneously about longitudinal axis	No	1		
A104/16.12	Pressure filter complete with cutting tool for making hole in the filter paper	No	1		
A104/16.13	Filter funnel to take 200mm nominal diameter sieves	No	2		
A104/16.14	Centrifuge complying with BS 598	No	1		
A104/16.15	Binder recovery	No	1		
A104/16.16	Volumetric flask 250ml, 500ml, 1000ml and 2000ml capacity	set	2		
A104/16.17	Recovery still for Dichloromethane	No	1		
	<b>B) Hot Extractor Method BS 598 Part 2</b>				
A104/16.18	Hot extractor complete with wire gauze container gasket, cork lid and support assembly	No	2		
A104/16.19	Dean and Stark receiver with condenser to suite Trichloroethylene				
A104/16.20	Gyratory compactor ELE Servo Pac or equivalent with 1 x 100mm and 1 x 150mm moulds	No	1		
A104/16.21	PRD Vibrating hammer compactor complete with 6 moulds, 7 base plates from ELE	No	1		
A104/16.22	Two (2) sets of Tamping foot 102mm diameter and 146mm diameter and shanks to fit the supplied vibratory hammer				
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## APPENDIX A

## APPENDIX A

## APPENDIX TO BILL ITEM 1.05:

## PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY

ITEM	DESCRIPTION	UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
<b>B/Forward From previous page</b>					
	<b>17. Consumables</b>				
A104/17.01	Paraffin wax	Kg	50		
A104/17.02	Gas	Kg	1600		
A104/17.03	Gunny sack	No	500		
A104/17.04	Plastic bag 900x450x1000 gauge	No	500		
A104/17.05	Plastic bag 450x300x1000 gauge	No	500		
A104/17.06	Filter paper 150mm diameter Whatman No. 5 (Boxes of 100)	No	20		
A104/17.07	Filter paper 400mm diameter Whatman No. 5 (Boxes of 100)	No	20		
A104/17.08	Filter paper 100mm diameter Whatman No. 5 (Boxes of 100)	No	20		
A104/17.09	Filter paper 400mm diameter Whatman No. 54 (Boxes of 100)	No	10		
A104/17.10	Filter paper 270mm diameter with 33 diameter hole at centre Whatman No. 5 (Boxes of 100)	No	15		
A104/17.11	Trichloroethylene (205 Litre Drum)	No	2		
A104/17.12	Dichloromethane	kg	0		
A104/17.13	Cotton waste	kg	50		
A104/17.14	Gas cylinders compatible with supplied stoves	No	10		
A104/17.15	Sodium sulphate	kg	45		
A104/17.16	Sand for density test	kg	250		
<b>C/Forward to item 1.05</b>					



## APPENDIX B

APPENDIX B					
APPENDIX TO BILL ITEM 1.06A: PROVIDE, FURNISH AND MAINTAIN THE R.E.'S OFFICE					
DESCRIPTION		UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
	<b>1. ENGINEER'S MAIN OFFICE AND FURNITURE</b>				
1	Executive desk 2.2x0.9 m with six lockup drawers	No	2		
2	Desk 2.2x0.9 m with chair and three lockup drawers	No	4		
3	Office tables	No	3		
4	Executive Swivel orthopaedic chair adjustable height	No	2		
5	Standard office chairs	No	8		
6	Bench 3m long with cushioned backrest (located as directed)	No	1		
7	Typist's desk	No	1		
8	Typist's chair	No	3		
9	Lockable steel stationery cupboard, 1.2 m <sup>3</sup> , lockable	No	4		
10	Medium size steel filing cabinet, 4 drawers lockable	No	4		
11	Medium size steel filing cabinet, 2 lockable drawers lockable	No	3		
12	Bookshelf, 1.5 m wide 3 shelves (for box files) sliding glass door	No	3		
13	Conference table with 12 chairs	No	1		
14	Waste paper basket	No.	5		
15	Curtains for office and laboratory -for all windows and doors	Set	2		
16	Ordinary 2 hole paper punch	No	2		
17	Heavy duty 2 hole paper punch	No	2		
18	Set of full divided scale (metric 1/1000, 1/2500, 1/500, 1/2000, 1/1250, 1/1500)	No	1		

## APPENDIX B

<b>APPENDIX B</b>					
<b>APPENDIX TO BILL ITEM 1.06A: PROVIDE, FURNISH AND MAINTAIN THE R.E.'S OFFICE</b>					
<b>DESCRIPTION</b>		<b>UNIT</b>	<b>QTY</b>	<b>RATE (KSHS)</b>	<b>AMOUNT (KSHS)</b>
19	Computer meeting the following specifications or equivalent: Personal computer with 20" screen full multimedia, 1000GB hard disk, 12.0GB RAM, Core i7 processor, complete with all accessories preloaded with latest versions of windows OS, MS Office, Professional and MS Project	No	2		
20	Autocad Civil 3D 2012 and Licences for above computers	No	2		
21	As A103/2.11 but with 15" screen	No	4		
22	Laptop PC with Intel Core i7-350M Processor 15.4" screen, 12GB DDR3 RAM 1000GB 8xDVD+/-RW or simillar approved with Microsoft Windows professional	No	1		
23	Latest HP (A4) Laser Printer with accessories	No	3		
24	Latest HP (A3) Laser Printer with accessories	No	1		
25	UPS 600 VA	No	6		
26	wall clocks, battery powered min size 350mm x 350mm	No	2		
27	Safe for cash and valuables min.size approx. 0.8mx0.5mx0.4m to be concreted in place (wall/floor mounted) complete with lock and keys	No	1		
28	First Aid Kit	No	4		
<b>C/Forward to next page</b>					

## APPENDIX B

APPENDIX B					
APPENDIX TO BILL ITEM 1.06A: PROVIDE, FURNISH AND MAINTAIN THE R.E.'S OFFICE					
DESCRIPTION		UNIT	QTY	RATE (KSHS)	AMOUNT (KSHS)
<b>B/Forward From previous page</b>					
29	Fire Extinguisher	No	4		
30	Filing Tray - set of 3no.	set	10		
31	Refrigerator minimum capacity 0.2 m <sup>3</sup>	No	1		
32	Drinking water dispenser, hot/cold	No	1		
33	Table - 0.8 m <sup>2</sup> surface area	No	1		
34	Cupboard, 0.15 m <sup>3</sup> , lockable	No	1		
35	Cooker 4 plate electric cooker with oven and grill	No	1		
36	A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability	No	1		
37	Reams of A4 photocopying paper	No	100		
38	Reams of A3 photocopying paper	No	20		
39	Electronic scientific calculator, Casio fx 992s or equivalent approved	No	6		
40	Stapling machine Ofrex size 50 or similar with 5000 staples	No	6		
41	Heavy duty punch and spiral binder, IBICO AG or similar approved	No	2		
42	Inkjet Plain Paper Fax Machine with 4MB of memory	No	1		
43	Pencil sharpener (desk mounted type)	No	6		
44	Digital Camera, 20.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 15x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.	No	1		
45	PABX Telephone system including intercom connecting all offices and laboratory. rate includes headsets, wiring and operational costs. including High Speed Internet Access using optic fibre or HDSL (High Data Digital Subscriber Line) broadband connection networked to all computers, with annual subscription paid during the entire contract period.	item	1		
<b>Total carried to Bill Item 1.06A</b>					

APPENDIX C					
APPENDIX TO BILL ITEM 1.06B ENGINEERS'S SURVEY EQUIPMENT					
ITEM	Description	UNIT	QTY	RATE	AMOUNT (KSHS)
1.01	Digital Total Station <b>reading to 1"accuracy (one second)</b> with the following facilities	No.	1		
	· Inbuilt data logger				
	· Uploading/downloading software				
	· Data transfer cable				
	· Battery (2No)				
	· Battery charger				
	· Tool kit				
	· Two face keyboard				
	· User manual				
	It must have the following inbuilt survey programs as a minimum				
	· Survey				
	· Staking out				
	· Resection/intersection				
	· Traverse				
	· Cogo				
1.02	The following mandatory total station accessories must be included per Total station instrument				
	1No. Heavy duty telescopic tripod( <i>preferably wooden</i> )	No.	1		
	Telescopic plumbing prism pole complete with a prism and prism holder with target and plumbing bubble ( <i>length not less than 2.15m</i> )	No.	3		
	Triple prism holder set, in a casing, comprising triple prisms, prisms holder with target, tribrach and a tribrach adaptor	No.	1		
	1No. Survey umbrella	No.	1		
	1No. Telescopic Tripod	No.	1		
1.03	Engineer's Automatic Level Wild NAK 2 or similar with a tripod and the following specifications:-	No.	2		
	· Accuracy of 0.7 mm per 1 km double run				
	· Standard magnification of: 32x				
	· Shortest focusing distance of 1.6m				
	· Compensator setting accuracy of 0.3"				
1.04	Hand held GPS with accuracy of 1 Metre	No.	1		
1.05	Set of two way radio communication with a range of 1 kilometer	set.	1		
1.06	5 M Leveling staff with leveling bubble	No.	4		
1.07	3 M Ranging Rods	No.	10		

## APPENDIX C

<b>APPENDIX C</b>					
<b>APPENDIX TO BILL ITEM 1.06B ENGINEERS'S SURVEY EQUIPMENT</b>					
<b>ITEM</b>	<b>Description</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE</b>	<b>AMOUNT (KSHS)</b>
1.08	Scientific Calculators FX 912ms or equivalent	No.	3		
1.09	30m. Linen Measuring Tape	No.	6		
1.10	1 M stainless steel straight edge	No.	1		
1.11	3 m tape measure	No.	6		
1.12	Sledge hammer 2kg weight	No.	2		
1.13	Mattock	No.	2		
1.14	Pangas (16'')	No.	4		
1.15	Roll of Tracing Paper	No.	1		
1.16	Graph Paper A3 Size	No.	10		
1.17	Marker Pens	No.	20		
1.18	Reflector Jackets	No.	10		
1.19	Laptop	No.	1		
1.2	Scale Rules	No.	2		
1.21	Drawing Pen (0.25mm)	No.	2		
1.22	Graph paper 1mm(roll)	No.	1		
<b>Total carried to Bill Item 1.06B</b>					