	BILLS OF QUANTITIES FOR NEW CONSTRUCTION RWC 68				
BILL NO	O. 1. PRELIMINARIES AND GENERAL ITEMS DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Provide or rent accomodation for Engineer's senior and junior staff (i)Type I - 1 No. (i)Type II - 2 No.	Month Month	24	65,000.00 55,000.00	1,560,000.00 - 1,320,000.00
	(iii) Type III - 3 No. (iv) Type IV - 4 No.	Month Month	24	40,000.00	- 960,000.00 - 720,000.00
	(v) Type V - 5 No. Total	Month	24	21,000.00	504,000.00 5,064,000.00
1.03	E.O item 1.01 for contractor's overhead and profit 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, ownership to revert to the Contractor at the end of the Contract	% LS	1		-
1.04	Provide or rent and maintain Engineer's Site Laboratory for the duration of the Contract, ownership to revert to the Contractor at the end of the Contract	LS	1		-
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, ownership to revert to the Employer at the end of the Contract.	LS	1		_
1.06A 1.06B	Provide and maintain furniture, tools and other items for the Engineers Representative office for the duration of the Contract as priced in Appendix `B', ownership to revert to the Employer at the end of Contract. Provide and maintain survey equipment as priced in Appendix C for the duration of the contract, ownership to revert to the	LS	1		-
	Employer at the end of Contract. Provide with drivers, fuel and maintain two (2) new 4WD fully loaded double cabin pick-up of minimum diesel engine capacity 2500 CC approved by the Engineer for his exclusive use, inclusive of the first 5000km per vehicle month. Vehicle to revert to the	LS Veh Month	60		
	Contractor at the end of the project. E.O item 1.09 for total aggregated mileage in excess of 5000 km per vehicle month.	Km	60,000		
1.13	Ditto item 1.09, but one(1) 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. Vehicle to revert to the Contractor at the end of the project.	Veh Month	24		_
1.15	E.O item 1.13 for total aggregated mileage in excess of 5000 km per vehicle per month. Allow a Prime Cost Sum of Kshs. <i>3,000,000</i> for the RE's miscellaneous account to be spent in whole or part as directed by the RE	Km PC Sum	2,400		-
1.16	against receipts. E.O. item 1.15 for Contractor's overheads and profits.	%	10%		_
1.18	<ul><li>Allow a Prime Cost Sum of Kshs. 16,800,000 for attendance upon the Resident Engineer' staff.</li><li>E.O. item 1.17 for Contractor's overheads and profits.</li><li>Provide, erect and maintain publicity signs as directed by the Engineer.</li></ul>	PC Sum % No	1 10% 6		-
1.20	Allow for Prime Cost Sum of Kshs. 2,000,000.00 for training of Engineers	PC Sum	1		-
1.24	<ul><li>E.O. item 1.20 for Contractor's overheads and profits.</li><li>Provide and maintain for the duration of the contract a mobile weigh bridge with manufacturers warranty, as specified in Appendix</li><li>E in a PDF file. The weigh bridge to revert to employer at commencement of the project. Allowances for repairs and maintenance</li></ul>	% No	10%		-
	must be included in the quotation Bill No. 1 Total Carried Forward to Grand Summary				5,064,000.00
BILL NO	O. 4 : SITE CLEARANCE AND TOP SOIL STRIPPING DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Note: No separate payments 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 Clear site on road reserve including removal of all growths, bushes, hedges, trees, stumps, grub up roots, and other deleterious				
4.01	materials and back-fill and compact to 100% MDD(AASHTO T99) with approved material as directed by the Engineer.	Ha.	20		-
4.02	Strip top soil upto 0.2m in thickness along alignment or material sites including removal of all grass and other vegetation, transport to spoil and spread or stock pile for re-use as directed by the Engineer.	m <sup>3</sup>	48,000		_
4.03 4.04	Provide KShs.2,000,000 for the removal of structures and obstructions as instructed by the Engineer to be paid on dayworks basis E.O. item 4.03 for Contractor's overheads and profits.	Prov. Sum	1		-
	Demolish reinforced or mass concrete structures and cart to spoil or stockpile for re-use as directed by the Engineer	m <sup>3</sup>	200		_
	Bill No. 4 Total Carried Forward to Grand Summary O. 5 : EARTHWORKS				0.00
ITEM	DESCRIPTION           Note: No separate payments shall be made for gravel for blinding or hauling to spoil unsuitable excavation materials and the cost	UNIT	QTY	RATE	AMOUNT
5.01	<i>of such shall be included in the rates and prices</i> Fill in soft material including benching of shoulders and embankments and compaction to 95% MDD (AASHTO T99) in layers not	m <sup>3</sup>	28,200		0.00
5.02 5.03	exceeding 150mm Extra Over Item 5.01 for compaction of the top 300 subgrade to 100% MDD. Ditto item 5.01 but in hard material	m <sup>3</sup> m <sup>3</sup>	4,050 4,230		0.00 0.00
5.05	Cut to spoil in soft material Ditto item 5.04 but in hard material	m <sup>3</sup> m <sup>3</sup>	18,450 1,845		0.00
5.06 5.07 5.08	Provide improved subgrade material as instructed by the Engineer and compaction to 100% MDD (AASHTO T99) Compaction of top 300mm below formation level in cuts to 100% MDD.(AASHTO T99) Compaction of 150mm original ground below fills to 95% MDD.(AASHTO T99)	m <sup>3</sup> m <sup>3</sup> m <sup>3</sup>	7,050 3,900 2,250		0.00 0.00 0.00
5.09	Compaction of 150mm original ground below fills to 95% MDD.(AASHTO T99) Top-soiling prior to planting grass as directed by the Engineer Grassing as directed by the Engineer	m <sup>3</sup> m <sup>2</sup> m <sup>2</sup>	2,250 2,550 2,550		0.00 0.00 0.00
	Provide Rock Fill to swampy areas as directed by Engineer Provide Filter fabric to swamp under, over and around rock fill	m <sup>3</sup> m <sup>2</sup>	300 60		0.00
	Scarify existing bituminous pavement material and store for re-use or cart away to spoil	m <sup>3</sup>	5,000		_
	Bill No. 5 Total Carried Forward to Grand Summary				0.00
BILL NO	D. 7 : EXCAVATION AND FILLING OF STRUCTURES DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>Note:</b> No separate payments 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				
7.02	Excavate to spoil in soft materials. As item 7.01 but in hard material. Provide,place and compact rockfill below and around structures.	m <sup>3</sup> m <sup>3</sup> m <sup>3</sup>	615 45 350		-
	Provide and place 150mm thick stone pitching as directed by the Engineer including cement grouting Bill No. 7 Total Carried Forward to Grand Summary	m <sup>2</sup>	15,500		- 0.00
BILL NO	O. 8. CULVERTS AND DRAINAGE WORKS				
ITEM	DESCRIPTION           Note: No separate payments 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	UNIT	QTY	RATE	AMOUNT
8.01	Excavate for inlet,outfall,mitre and catch water drains in soft material As per item 8.01, but for hard material	m <sup>3</sup> m <sup>3</sup>	2,400 100		_
8.03		1115			-
	Excavation in soft material for pipe culverts, headwalls, wingwalls, apron, toewalls, and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material	m <sup>3</sup> m <sup>3</sup>	2,300 100		-
	Excavation in soft material for pipe culverts, headwalls, wingwalls, apron, toewalls, and drop inlets and compact as directed by the Engineer	m <sup>3</sup>			-
8.04 8.05 8.06	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup>	100 800		-
8.04 8.05 8.06 8.08 8.09 8.10	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m	100 800 850		- - - - - - - -
<ul> <li>8.04</li> <li>8.05</li> <li>8.06</li> <li>8.08</li> <li>8.09</li> <li>8.10</li> <li>8.11</li> </ul>	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup>	100 800 850 400 575		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Remove existing invert block drains with two course side slabs or stone pitching and discard as directed by the Engineer	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup>	100 800 850 400 575 900 320		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.13 8.14 8.15 8.16 8.17	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean existing drainage structures of any description and size Clean and shape existing outfall and mitre drains to free flow conditions	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m <sup>3</sup> m m <sup>3</sup> m	100 800 850 400 575 900 320 100 380		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.13 8.14 8.15 8.16 8.17 8.19	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Remove existing invert block drains with two course side slabs or stone pitching and discard as directed by the Engineer Clean existing drainage structures of any description and size	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m <sup>3</sup> m m <sup>3</sup> m m <sup>3</sup> m m m <sup>3</sup> m	100         800         850         400         575         900         320         100         380         1,400         960		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Remove existing invert block drains with two course side slabs or stone pitching and discard as directed by the Engineer Clean existing drainage structures of any description and size Clean and shape existing outfall and mitre drains to free flow conditions Provide,lay and joint ducts and sleeves including150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m <sup>3</sup> m m <sup>3</sup> m m m m m m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean existing invert block drains with two course side slabs or stone pitching and discard as directed by the Engineer Clean existing drainage structures of any description and size Clean and shape existing outfall and mitre drains to free flow conditions Provide,lay and joint ducts and sleeves including150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves Bill No. 8 Total Carried Forward to Grand Summary O.9: PASSAGE OF TRAFFIC	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m <sup>3</sup> m m <sup>3</sup> m m m m m m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600 250		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO ITEM 9.02	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls, and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide, lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for access roads Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide usbsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean existing drainage structures of any description and size Clean and shape existing outfall and mitre drains to free flow conditions Provide, lay and joint ducts and sleeves including 150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves Bill No. 8 Total Carried Forward to Grand Summary O.9: PASSAGE OF TRAFFIC DESCRIPTION Note: Notwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be deemed to be included in the rates inserted herein Grade, water and compact existing road; provide, spread, water and compact gravel as directed by the Engineer for maintenance ahead of works.	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m <sup>3</sup> m m m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600 250		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO ITEM 9.02 9.03	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron.toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads Provide, place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean existing drainage structures of any description and size Clean and shape existing outfall and mitre drains to free flow conditions Provide,lay and joint ducts and sleeves including 150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves Bill No. 8 Total Carried Forward to Grand Summary D. 9: PASSAGE OF TRAFFIC DESCRIPTION Note: Notwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be deemed to be included in the rates inserted herein Grade, water and compact existing road; provide, spread, water and compact gravel as directed by the Engineer for maintenance	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m <sup>3</sup> m m <sup>3</sup> m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600 250		-
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO ITEM 9.02 9.03	Excavation in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide,lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean existing drainage structures of any description and size Clean and shape existing outfall and mitre drains to free flow conditions Provide, lay and joint ducts and sleeves including 150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves Bill No. 8 Total Carried Forward to Grand Summary D.9: PASSAGE OF TRAFFIC DESCRIPTION Note: Notwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be dueeneed to be included in the rates inserted herein Grade, water and compact existing road; provide, spread, water and compact gravel as directed by the Engineer for maintenance ahead of works. Allow for the passage of traffic through and around the works	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m <sup>3</sup> m m m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600 250		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.16 8.17 8.19 BILL NO 9.02 9.03 BILL NO 1TEM	Excavation in soft material for pipe culverts, headwalls, wingwalls, apron, toewalls, and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide, lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 parts 1 & 3) for cross culverts Provide and place class 15/20 concrete to beds, surround and haunches Provide, place and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains scour checks as instructed Provide taginger reasons and inclusion of provide shows of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean and shape existing outfall and mitre drains to free flow conditions Provide, lay and joint ducts and sleeves including 10mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves Bill No. 8 Total Carried Forward to Grand Summary D.9: PASSAGE OF TRAFFIC DESCRIPTION Note: Notwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be doemed to be included in the rates inserted herein Grade, water and compact existing road; provide, spread, water and compact gravel as directed by the Engineer for maintenance ahead of works. Allow for the passage of traffic through and around the works Bill No. 9 Total Carried Forward to Grand Summary D. 10: GRADING AND GRAVELLING Provide gravel wearing course, spread and compact to a finished thickness of 150mm to at least 95% M.D.D (AASHTO T-180) and	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600 250 2,925 1		- - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL N 10.01 BILL N	Exervition in soft material for pipe culverts,headwalls, wingwalls, upron,toewalls,and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide, lay and joint 600mm dia, concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and place invert block drains with two course side slabs Construct in concrete class 15(20) side drains secon rehecks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean existing invert block drains with two course side slabs or stone pitching and discard as directed by the Engineer Clean existing durinage structures of any description and size Clean and shape existing outfall and mitre drains to free flow conditions Provide, lay and joint ducts and sleeves including 150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 191 Parts 1 & 3) ducts/alecves Bill No. 8 Total Carried Forward to Grand Summary O. 9: PASSAGE OF TRAFFIC DESCRIPTION Note: Notwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shalt be deemed to be included in the rates inserted herein Grade, water and compact existing road; provide, spread, water and	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m m m m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600 600 250 250 0 0 0 1 0 1 1 0 1 1 1 0 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO 10.01 BILL NO 10.01	Execution in soft material for pipe cutverts, headwalls, wingwalls, apron, toewalls, and drop inlets and compact as directed by the Engineer As per item 8.03, but for hard material Provide, lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete to beds, surround and haunches Provide and place class 15/20 concrete to beds, surround and haunches Provide and place invert block drains with two course side slabs Construct in concrete class 15/20) side drains scour checks as instructed Provide subsoli filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean and shape existing outfall and mitre drains to free flow conditions Provide, lay and joint ducts and sleeves including 150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves Bill No. 8 Total Carried Forward to Grand Summary O. 9: PASSAGE OF TRAFFIC DESCRIPTION Nate: Notwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be deemed to be included in the rates inserted herein Grade, water and compact existing road, provide, spread, water and compact gravel as directed by the Engineer for maintenance ahead of works. Allow for the passage of traffic through and around the works Bill No. 10 Total Carried Forward to Grand Summary D. 10: GRADING AND GRAVELLING Provide gravel wearing course, spread	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m m m m m m m	100 800 850 400 575 900 320 100 380 1,400 960 600 250 2,925 1 2,925 1		- - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO 10.01 BILL NO 10.01	Excavation in soft material for pipe culverts, headwalls, wingwalls, apron, toewalls, and drop inlets and compact as directed by the Engineer A. By or item 8.03, but for hard material Provide, lay and joint 600mm dia, concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads. As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads. As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads. Provide, lay and joint 600mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads. As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads. Provide, and place class 15/20 concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings. Provide and place invert block drains scour checks as instructed Provide subsoil filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer (Clean wishing and size clean using and size curvers of any diameter either for re-use or to be discarded as directed by the Engineer (Clean and shape existing drainage structures of any description and size Clean and shape existing unital and mire drains to free flow conditions. Provide, lay and joint ducts and sleeves including 150mm concrete (Cl5/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5011 Parts 1 & 3) ducts/decves Bibl No. 8 Total Carried Forward to Grand Summary D. 9: PASSAGE OF TRAFFIC DESCRIPTION Note: Notwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be deemed to be included in the rates inserted herein. Create Associated Specification, no extra payments shall be due as all costs shall be deemed to roads. A	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m m m m m m m m m m m m m m m m m	100         800         850         400         575         900         320         100         380         1,400         960         600         250		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO 17EM 10.01 BILL NO 112.01 12.01 12.02	Execution in soft material for pipe culverts, beadwalts, wingwalts, apron, toewalts, and drop inlets and compact as directed by the Engineer As por item 8.03, but for hard material Provide, lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia concrete pipes (precast to BS 5911 Parts 1 & 3) for access roads Provide, and place class 15/20 concrete to beds, surround and haunches Provide and place class 15/20 concrete to beds, surround and haunches Provide and place and compace tlass 25(20) solide the headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide absoli filter drains fabric to isolated wet spots inclusive of artestim cloth, and 14/20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer Clean existing during estructures of any description and size Clean and shape existing outfail and miter drains to free flow conditions. Provide, lay and joint ducts and sleeves including 150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) ducts/sleeves Bill No. 8 Total Carried Forward to Grand Summary D. 9: PASSAGE OF TRAFFIC EXPENDENTION Note: Notvikstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be deteneed to works. Bill No. 9 Total Carried Forward to Grand Summary D. 10: GRADING AND GRAVELLING DESCRIPTION Note: Notwikstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be deteneed to works. Bill No. 9 Total Carried Forward to Grand Summary D. 10: GRADING AND GRAVELLING DESCRIPTION DES	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m m m m m m m m	100         800         850         400         575         900         320         100         380         1,400         960         600         250		- - - - - - - - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL NO 11.001 BILL NO 11.001 BILL NO 11.001 12.01 12.02	Execution in soft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Regineer  As per item 8.03, but for hard material  Provide, and joint 600mm dia. concrete pipes (precast to BS 5911 parts 1 & 3) for access roads  As for item 8.05 but 900mm dia. concrete pipes (precast to BS 5911 parts 1 & 3) for access roads  Provide, pipe and cass 15/20 concrete to beds, surround and haumches. Provide, pipe and cans 15/20 concrete to beds, surround and haumches. Provide, pipe and compact class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts  including all form work, and the provision and placing of reinforcement as shown in the drawings. Provide and place class 25(20) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts  including all form work and the provision and placing of reinforcement as shown in the drawings. Provide and place class 15(20) ided drains source beds as instructed Provide subsoft filter drains fabric to isolated wet spots inclusive of artesian cloth, and 14/20mm single size aggregates as directed by the Engineer  Remove existing pipe culverts of any diameter either for re-use or to be discarded as directed by the Engineer  Clean existing drainage structures of any discription and size  Clean existing drainage structures of any discription and size  Clean and shape existing outful and thire drains to free flow conditions  Provide, and joint ducts and sile eves including 150mm concrete (C15/20) 300mm heavy dury PVC class B with 150mm surround  precess to 15 S 5911 Parts 1 & 3) ducts/decves  Bill No. 8 Total Carried Forward to Grand Summary  D. 9: PASSAGE OF TRAFFIC  DESCRIPTION  Net: Northistanding the provide of Grand Summary  D. 10: GRADING AND GRAVELLING  DESCRIPTION  Provide mark existing coal: provide, spread, water and compact gravel as directed by the Engineer for maintenance  date of works. Bill No. 9 Total Carried Forward to Grand Summary  D. 10: GRADI	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m m m m m m m m m m m m m m m m m	100         800         850         400         575         900         320         100         380         1,400         960         600         250		- - - - - - - - - - - - - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL N 9.02 9.03 BILL N 10.01 BILL N 112.01 12.01 12.01 12.01	Execution in soft material for pipe culverts, headwalls, wingwalls, apron, toewalls, and drop inlets and compact as directed by the Engineer. As per item 8.03, but for hard material Provide, lay and joint 600mm dia: concrete pipes (precast to BS 5911 Parts 1 & 3) for access reads As for item 8.05 but 900mm dia: concrete pipes (precast to BS 5911 Parts 1 & 3) for access reads Provide, lay and joint 600mm dia: concrete pipes (precast to BS 5911 Parts 1 & 3) for access reads As for item 8.05 but 900mm dia: concrete pipes (precast to BS 5911 Parts 1 & 3) for access reads Provide, place and compact class 52(2) concrete for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide and and compact class 15(20) side drains secure checks as instructed. Construct in concrete class 15(20) side drains secure checks as instructed. Provide subsoil fifter drains fabric to isolated wet yous inclusive of artesian cloth, and 14:20mm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-uses or to be discarded as directed by the Engineer Remove existing outfall and miter drains to free flow conditions Provide subsoil fifter drains fabric to isolated wet yous inclusive of artesian cloth, and 14:20mm single size aggregates and directed by the Engineer Clean and shape existing outfall and miter drains to free flow conditions Provide, yang on that and seleves including 150mm concrete (C15/20) 300mm heavy duty PVC class B with 150mm surround (precast to BS 5911 Parts 1 & 3) datts/sleeves. BiH No. 8 Total Carried Forward to Grand Summary D.9: PASAGE OF TRAFFIC DESCRIPTION Note: Norbithstanding the provision of Section 9 of the Sandard Specification, no extra payments shall be due as all costs shall be deemed to be included in the rates inserted herein. Class Querter of tool and section 9 of the Sandard Specification, no extra payments shall be due as all cost	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m m m m m m m m m m m m m m m m m	100         800         850         400         575         900         320         100         380         1,400         960         600         250             QTY         QTY         1		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL N 9.02 9.03 BILL N 112.01 12.01 12.01 12.01 12.02	Execution in suft material for pipe culverts,headwalls, wingwalls, apron,toewalls,and drop inlets and compact as directed by the Engineer. As per fram X.03, but for hard material Provide, and joint 600mm dia, concrete pipes (precase to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia, concrete pipes (precase to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia, concrete pipes (precase to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia, concrete pipes (precase to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia, concrete pipes (precase to BS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm soft, and the provision and placing of reinforcement as shown in the drawings Provide, place and compact class 25(20) concrets for headwalls, wingwalls, aprons, and toewalls to access and cross pipe culverts including all form work and the provision and placing of reinforcement as shown in the drawings Provide uplace invert block drains with two course side slabs Construct in concrete class 1520 concrets for headwalls, wingwalls, apron, and 14/20nm single size aggregates as directed by the Engineer Remove existing pipe culverts of any diameter either for re-asc or to be discarded as directed by the Engineer Clean existing invert block drains with two course side slabs or stone pitching and discard as directed by the Engineer Clean existing ourbal and wire clarits for the ow conditions Provide, and all carried Forward to Grand Summary D.9: PASSAGE OF TRAFFIC DESCRIPTION Note: Norwithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all coats shall be due of the rate situation of Section 9 of the Standard Specification, no extra payments shall be due as all coats shall be due of ow class. Allow for the passage of TRAFFIC DESCRIPTION Discr. Morithstanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all coats shall be deceed to be the classed	m <sup>3</sup> m <sup>3</sup> m m m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m m m m m m m m m m m m m m m m m m m	100         800         850         400         575         900         320         100         380         1,400         960         600         250             QTY             QTY             QTY             QTY             QTY		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 9.02 9.02 9.03 BILL NO 17.01 12.01 12.01 12.01 12.02	Economic in soft material for pipe cuberts, beadwalls, wingwalls, apron, towalls, and drop intest and compact as directed by the Engineer. As per item 8.03, but for hard material. Provide algo and joint 600mm dia: concrete pipes (precast to DS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia: concrete to beds, surround and haunches Provide place class 15/20 concrete to beds, surround and haunches Provide place and compact class 25(20) concrete to beds, surround and haunches Provide and place invert block drains with two course side slabs Construct in concrete thesis 15/20 side drains scour checks as instructed Provide and place invert block drains with two course side slabs Construct in concrete thesis 15/20 side drains scour checks as instructed Provide and place invert block drains with two course side slabs Construct in concrete thesis 15/20 side drains scour checks as instructed Provide and place invert block with two courses slabe slabs or stone pitching and directed by the Engineer. Remove existing place cuberts of any diameter either for re-use or to be discarded an directed by the Engineer. Clean asisting drainage structures of any description and size Clean and shape existing ordinates including 150nm concrete (CI 5/20) 300nm heavy dury PVC class B with 150nm surround firecture US 911 Parts 1 & 2) a classifierees BBH No. 8 Total Carried Forward to Grand Summary O.9 FASSAGE OF TRAFFIC DESCRIPTION Note: Notvithistanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be downed to be included in the rate inserted hereis. Grands, water and compact existing road; provide, spread, water and compact gravel as directed by the Engineer for maintensance alaed of works. Allow for the passage of traffic through and around the works BBH No. 9 Total Carried Forward to Grand Summary D. 12: NATURAL MATERIAL FOR SUBBASE AND BASE DESCRIPTION Nate: No overhaud will be paid for separately andar these items as fit shal	m <sup>3</sup> m         m         m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m         m <sup>3</sup> m         m <sup>3</sup> m         m	100         800         850         400         575         900         320         100         380         1,400         960         600         250             QTY         QTY         1         2,925         1         15,225         1         9,000         8,000		- - - - - - - - - - - - - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 9.02 9.03 9.02 9.03 BILL NO 17.01 12.01 12.01 12.01 12.01 12.02	Economic in soft material for pipe cuberts, beadwalls, wingwalls, apron, towalls, and drop intest and compact as directed by the Engineer. As per item 8.03, but for hard material. Provide algo and joint 600mm dia: concrete pipes (precast to DS 5911 Parts 1 & 3) for access roads As for item 8.05 but 900mm dia: concrete to beds, surround and haunches Provide place class 15/20 concrete to beds, surround and haunches Provide place and compact class 25(20) concrete to beds, surround and haunches Provide and place invert block drains with two course side slabs Construct in concrete thesis 15/20 side drains scour checks as instructed Provide and place invert block drains with two course side slabs Construct in concrete thesis 15/20 side drains scour checks as instructed Provide and place invert block drains with two course side slabs Construct in concrete thesis 15/20 side drains scour checks as instructed Provide and place invert block with two courses slabe slabs or stone pitching and directed by the Engineer. Remove existing place cuberts of any diameter either for re-use or to be discarded an directed by the Engineer. Clean asisting drainage structures of any description and size Clean and shape existing ordinates including 150nm concrete (CI 5/20) 300nm heavy dury PVC class B with 150nm surround firecture US 911 Parts 1 & 2) a classifierees BBH No. 8 Total Carried Forward to Grand Summary O.9 FASSAGE OF TRAFFIC DESCRIPTION Note: Notvithistanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall be downed to be included in the rate inserted hereis. Grands, water and compact existing road; provide, spread, water and compact gravel as directed by the Engineer for maintensance alaed of works. Allow for the passage of traffic through and around the works BBH No. 9 Total Carried Forward to Grand Summary D. 12: NATURAL MATERIAL FOR SUBBASE AND BASE DESCRIPTION Nate: No overhaud will be paid for separately andar these items as fit shal	m <sup>3</sup> m         m         m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m         m <sup>3</sup> m         m	100         800         850         400         575         900         320         100         320         100         380         1,400         960         600         250             QTY         QTY         1         2,925         1         15,225         1         QTY         QTY         QTY         1         1,300         1,300		- - - - - - - - - - - - - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 9.02 9.02 9.03 BILL NO 17.EM 10.01 12.02 12.01 12.02 BILL NO 14.03 14.03 14.04	Execution in soft material for pipe culverts/headwalls, wingwalls, aprona, acwalls, and drop inlets and comparet as directed by the targineer A3D, but for hard material  Provide, by and joint 600mm dia concrete pipes (precent to B5 5911 Parts 1 & 3) for access reads.  A for fram 6.05 but 900mm dia concrete pipes (precent to B5 5911 Parts 1 & 3) for access reads.  Provide and place class 15/20 concrete for headvalls, wingwalls, aprons, and leweells to access and ennes pipe culverts  including all forms ordinating the provide material place interactions and placing of form informance and showed in the entering.  Provide and place invert block drains with two courses side slabs.  Construct in concrete class 15(20) side drains with two courses side slabs.  Construct in concrete class 15(20) side drains with one course side slabs.  Construct in concrete class 15(20) side drains with two courses side slabs.  Construct in concrete class 15(20) side drains with one course side slabs.  Provide absolf filter drains fabet to isolated wet spots inclusive of artistian doth, and 14/20nm single size aggregates as directed  by the Engineer.  Remove existing invert block drains with one course side slabs or stone piching and discard as directed by the Engineer.  Clean ackalang existing outfill and miter drains to free flow conditions  Provide absolf 1991.  By 3 description and size  DESCRIPTION  Desc. Nonthistanding the provision of Section 9 of the Standard Specification, no extra payments shall be due as all costs shall  be deemed to be included in the trains inserted herein  Grada, water and compact existing order and provide, special, water and compact gravel as directed by the Engineer for maintenance  absolf of water.  Disc. RIPTION  Disc.	m <sup>3</sup> m         m         m <sup>3</sup> m <sup>3</sup> m <sup>3</sup> m         m <sup>3</sup> m         m	100         800         850         400         575         900         320         100         320         100         380         1,400         960         600         250             QTY         QTY         1         2,925         1         15,225         1         QTY         QTY         QTY         1         1,300         1,300		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 9.02 9.03 9.02 9.03 BILL NO 17.01 12.01 12.01 12.01 12.02	Execution in not material for pipe subverts/headwalls, wingwalls, apront, netwalls and drop inlets and comparet as directed by the Engineer  As per time 300, but for hard material.  Provide, by and joint 600mm dim, concrete pipes (precast to 185 5911 Parts 1. & 3) for access runds.  As for time 30.5 but 900mm dim concrete pipes (precast to 185 5911 Parts 1. & 3) for access runds.  As for time 30.5 but 900mm dim concrete pipes (precast to 185 5911 Parts 1. & 3) for access runds.  Provide and place clina 1520 concrete to beds, surround and handhers  Provide and place clina 1520 concrete to beds, surround and handhers  Provide and place invert block drains with two ecurse side slats.  Construct in concrete clina 1520 side drains score the clina is influence of artistain all forms work and the provision and place provide side of future instead of the 1200 side drains score the clina is influence of artistain all clina and place provides about fifth trains father in and under either for re use or to be discarded as directed by the Engineer.  Remove existing piper-alt-rev of any diameter either for re use or to be discarded as directed by the Engineer  Clean activing clinaring situations of any description and size  Clean activing clinaring situations of any description and size  Clean activing clinaring situations of any description and size  Clean activing clinaring situations of any description and size  Clean activing clinaring situations of any description and size  Clean activing clinaring situations of any description and size  Clean activing clinaring situations of any description and size  Clean activing clinaring situations of a strand frammer  Astrophysics about 15000  Provide, by and joint dues and sleeves including 150mm concrete (C 1520) 300mm heavy day PVC class B with 150mm sortroud  (precast to 55 501 1 Parts 1.8.3 / datasidexes  Bill No.8.7 Acta Clear Clear Method Clear  DESCRIPTION  DESCRIPTION  Description  Astrophysics  Difference  Description  Description  Description  Description  Difference	m <sup>3</sup> m         m         m         m <sup>3</sup> m         m <sup>3</sup> m         m <sup>3</sup> m         m <t< td=""><td>100         800         850         400         575         900         320         100         320         100         380         1,400         960         600         250             QTY             QTY             QTY             QTY             QTY</td><td></td><td>- - - - - - - - - - - - - - - - - - -</td></t<>	100         800         850         400         575         900         320         100         320         100         380         1,400         960         600         250             QTY             QTY             QTY             QTY             QTY		- - - - - - - - - - - - - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 9.02 9.03 BILL NO 17.01 10.01 11.00	Execution is off naterial for pipe culters, beadwalls, wingwalls, spreat-covalis, and dop inlets and compact as directed by the Engineer.  As pet time 303, but for hard numerial. Provide, lay and joint 600mm dia. concrete pipes (precast to BS 5911 Parts 1.4.3) for access roads.  As for titem 850 shows that the provision of DS 5911 Parts 1.4.3) for access roads.  As for titem 850 shows and the provision of DS 5911 Parts 1.4.3) for access roads.  As for titem 850 shows and the provision of DS 5911 Parts 1.4.3 for cross culters. Provide, pipe and compact class 1520 concrete to beads-attinue discovering.  Provide, pipe and compact class 1520 is concrete to the advecting.  Provide, pipe and early face interver block drains with vice ocures also disks.  Construct in concrete class 1520 is die dains scour checks as instructed  Provide, pipe and pipe advects of any durineer either for re-use or to be discanded an directed by the Engineer.  Remove existing pipe culters of any durineer either for re-use or to be discanded an directed by the Engineer  Clean existing crintal parts of the obstatives of any durineer either for re-use or to be discanded an directed by the Engineer  Clean existing crintal parts of a directify them curved at (ES201) [100mm heavy dury PVC class 11 with 130mm surround  (provide salsed fifther provide of any durineer directify them curved at [15201] [100mm heavy dury PVC class 11 with 130mm surround  (provide pipe advectify and advectify the sals and 2000 [100mm heavy dury PVC class 11 with 130mm surround  (provide pipe advectify advectify and pipe advectify advec	m³         m         m         m³         m³         m³         m         m³         m3         m2         UNIT         m3         m2         m3         m2         m3         m2	100         800         850         400         575         900         320         100         320         100         380         1,400         960         600         250         QTY         QTY         QTY         1         0         9,000         8,000		- - - - - - - - - - - - - - - - - - -
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.15 8.16 8.17 8.19 BILL N 9.02 9.03 BILL N 10.01 112.02 12.01 12.01 12.02 BILL N 14.03 14.04 15.10 15.10	Execution is out numeral for pipe cultures, headwalls, wingwalls, apronutoevalls, and top intels and compact an directed by the Engineer As got item 50.9. but for hand material Provided yar and joint 600mm dia: concrete pipes (precase to BS 5911 Parts 1 & 5) for access rands As for ture 515 that 900mm dia: concrete pipes (precase to BS 5911 Parts 1 & 5) for access rands As for ture 515 that 900mm dia: concrete pipes (precase to BS 5911 Parts 1 & 5) for access rands Provide numerate and express 51203 concretes to bads, surgeable, surgeable, part, and the avariage Provide and place interve block drains with two course ide data Provide numeres Provi	m³m³mm³m³m³mmm	100         800         850         400         575         900         320         100         320         100         380         1,400         960         600         250         QTY         QTY         QTY         1         2,925         1         15,225         1         9,000         8,000		
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.13 8.14 8.15 8.16 8.17 8.17 9.02 9.02 9.02 9.03 0 11.1.1 N 10.01 11.1.1 N 11.1.1 N 11.1 N 11	<ul> <li>Lanovatini with material for preprior backets, brockwalls, wingevalls, approxiavevalls, and deep infeks and compact as directed by the larginger.</li> <li>Apprix face 10.0, but for hand material</li> <li>Provideal py and plant follows disc concrete plots (precent to BS 5911 Parts 1.4.3) for access rooks.</li> <li>A for item 8.6.0 to 1500 concretes to hedge surround and haranches.</li> <li>Provide and place forces to bedge concretes for hedge surround and haranches.</li> <li>Provide and place forces to BS2031 data inscore theoles as instructed.</li> <li>Provide and place forces to BS2031 data inscore theoles as instructed.</li> <li>Provide and place forces to BS203 did data secore theoles as instructed.</li> <li>Provide and place forces to BS203 did data secore theoles as instructed.</li> <li>Provide place theoret block data instructe of the rooks or too back data data effect by the Engineer.</li> <li>Remove cesting prive colverts of any diameter other for re-use or to be disended as directed by the Engineer.</li> <li>Chen activity description and secore theoles.</li> <li>Chen activity description and description and secore (C15:29) Solumi heavy duty PVC class B with. 150mm surround geness to BS 5011 Pars 1.8.3. (activity for Specification, no extra payments shall be due as all construction of Secore PVC class B with. 150mm surround geness to BS 5011 Pars 1.8.3. (activity for Specification, no extra payments shall be due as all construction data and extra to thread summary.</li> <li>D. PASSAGE OF TRAFFIC</li> <li>DESCRIPTION</li> <li>Nete: Moriethistanting the providua of Secore PVC back and Secore PVC class B with 150mm surround geness to BS 5011 Pars 1.8.3. (activity for Specification, no extra payments shall be due as all construction data and extra to erron data and extra to errow data and extra</li></ul>	m³ m m m m m m m m m m m m m m m m m m	100         800         850         400         575         900         320         100         320         100         380         1,400         960         600         250         QTY         2,925         1         2,925         1         QTY         15,225         QTY         38,000         131,000         76,500         131,000         77,000         500	Image: Control of the second of the secon	
8.04 8.05 8.06 8.08 8.09 8.10 8.11 8.13 8.14 8.13 8.14 8.15 8.16 8.17 8.19 9.02 9.02 9.03 BILL N 9.02 9.03 BILL N 11.001 12.01 12.01 12.01 12.01 12.02 BILL N 14.03 14.04 13.01 14.03 14.04 15.10 15.10 15.10 15.01 15.0	Exacertion is out material for page calculation benefable, segments and scope index and compact as shareded by the Engleter . As per tens 865, but for hard contexts pipes (precent to 185 9911 parts 1.6.3) for excess codes	m <sup>3</sup> m m m m <sup>3</sup> m <sup>3</sup> m m m m m m m m m m m m m m m m m m m	100         800         850         400         575         900         320         100         380         1,400         960         600         250         QTY         QTY         1         QTY         1         QTY         1         QTY         1         0         38,000	Image: Control of the second of the secon	
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	i) Less than 1.0m <sup>2</sup>	No.	10	-
	ii) More than $1.0m^2$ but less than $5m^2$	No.	5	-
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>	8,000	-
20.06	As item 20.05 but for yellow reflectorized thermoplastic paint	$m^2$	3,000	-
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.	250	
20.08	Provide and erect flex-beam guardrails complete with connections as shown on the drawings or as directed by the Engineer	m	1,000	
20.09	Provide Edge marker posts	No.	50	
20.14	Provide and install cat-eyes as directed by the Engineer	No.	1,000	
20.15	Provide, plant, and nurture tree seedlings for a period not less than half the construction period of the project or as directed by the Engineer.	No.	1,000	

					0.
	O. 22: SCHEDULE OF DAYWORKS		1		
TEM	DESCRIPTION PLANT	UNIT	QTY	RATE	AMOU
	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.				
22.01	Crawler dozers with hydraulic attachments to include ripper				
	a) Up to 135 kw rated flywheel power	hrs	10		
	b) Over 135 kw rated flywheel power	hrs	10		
			0		
2.02	Motor Grader		0		
	a) Up to 110kw rated flywheel power	hrs	10		
	b) Over 110kw rated flywheel power	hrs	10		
<b>a</b> 0 <b>a</b>			0		
2.03	Vibratory Roller         a) 6.5 - 8.81 tonne un-ballasted weight	hr	0 10		
	b) Over 8.91 tonne un-ballasted weight	hr	10		
			0		
2.04	Hand propelled vibrating roller 650 - 1300kg	hrs	10		
2.05	Cat 950G wheel loader or equivalent	hrs	10		
2.06	10 Tonne tipper lorry	hrs	10		
2.07	Small dumpers, 750-1000kg rated payload	hrs	10		
2.08	Dual purpose hydraulic excavator with backhoe/loader and a rated bucket capacity of upto 1m3.	hrs	10		
2.09	Articulated wheel loader with 1.5-2.0m <sup>3</sup> SAE rated bucket capacity	hrs	10		
2.10	50mm delivery water pump and motor	hrs	10		
2.11	Self propelled water tanker 4,500ls min. capacity with pick-up pump	hrs	10		
2.12	Concrete Mixer of 100 - 150litres	hrs	10		
2.13	Concrete poker vibrator	hrs	10		
	LABOUR		0		
	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.Only the actual time engaged upon the work will be paid for.supervision, overheads and Profit.		0		
22.14	Unskilled Labour	hrs	10		
22.11	Artisans	hrs	10		
22.16	Office attendants and chainmen	hrs	10		
22.17	Watchmen (all round surveillance)	hrs	10		
	TOTAL CARRIED FORWARD TO THE NEXT PAGE				
TEM	DESCRIPTION	UNIT	QTY	RATE	AMOU
	TOTAL BROUGHT FORWARD				
	MATERIALS				
	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>a</b> 10					
2.18	Ordinary Portland Cement 42.5 N	Ton	5		
	Hydrated Lime	Ton	5		
2.20	Mild Steel( any diametre)	Ton	5		
2.21	High Yield Steel ( any diameter)	Ton	5		
2.22	Fine Aggregate for Concrete	m <sup>3</sup>	50		
2.23	Coarse Aggregate for Concrete Wrot Shuttering Timber	m <sup>3</sup> m <sup>2</sup>	50		
2.24 2.25	Wrot Shuttering Timber Rough shuttering timber.	m <sup>2</sup> m <sup>2</sup>	50		
2.25	Bitumen Emulsion KI-60.	Litre	100		
2.20	Straight run bitumen Grade 80/100.	Litre	100		
2.28	Kerosene	Litre	100		
2.29	14/20 mm nominal size surface precoated chippings	m <sup>3</sup>	50		
2.30	6/10mm nominal size surface precoated chippings	m <sup>3</sup>	50		
	AC Type I Ex-plant	m <sup>3</sup>	25		
2.31	AC Type II Ex-plant	m <sup>3</sup>	25		
		3	25		
<ul><li>2.31</li><li>2.32</li><li>2.33</li></ul>	Dense Bitumen Macadam	m <sup>3</sup>	23		
.32	Dense Bitumen Macadam	m <sup>3</sup>			

	BILL NO. 23: PILING WORKS						
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT		
23.01	Allow for bringing all plant, equipment and materials necessary for piling and removal after completion.	L/sum					
23.02	Move and set up piling rig for piling on each pile position	No.					
23.03	Form 600mm diameter cast insitu reinforced concrete piles. Pile capacity 1750KN reinforced full length. Pile length not exceeding	М					
23.04	Allow for sets of projecting steel reinforcements 1000mm from top of the piles	No.	-	NOT APPLICABLE			
23.05	Allow for trimming piles to level and bedding projecting reinforcement to shape	No.					
23.06	Allow for testing working piles (2No at abutments position) to one and half working load including all equipment and labour necessary	No.					
23.07	Allow for provision and erection of racked piles as per specifications or as directed by the Engineer.	LS.					

23.07 Allow for provision and erection of racked piles as per specifications or as directed by the Engineer. Bill No. 23: Total Carried Forward to Grand Summary BILL NO 24. STREET LIGHTING

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Supply, install, test and commission the following lighting component to the satisfaction of the Engineer.				
24.01	10m steel galvanised streetlighting column made from Class "B" steel galvanised pipe complete with bracket for mounting 4No. LED floodlights. Provide a triangular opening with lock and three common keys, and mouting base for Item no. below. And as approved by the Engineer.	No.	8	95,000.00	760,000.00
24.02	10m steel galvanised streetlighting column made from Class "B" steel galvanised pipe complete with bracket for mounting 2No. LED floodlights. Provide a triangular opening with lock and three common keys, and mouting base for Item no. below. And as approved by the Engineer.	No.	146	95,000.00	13,870,000.00
24.03	Class 25 concrete for foundation base for mounting street lights poles with anchoring bolts & nuts. 600mm * 600mm * 1000mm. As approved by the Engineer.	No.	154	19,755.00	3,042,270.00
24.04	25Amp single phase cut-out complete with a 5A HRC fuse or 6Amps MCB or equivalent. As approved by the Engineer.	No.	154	550.00	84,700.00
24.05	150Watts ultra High power LED floodlights, IP65 Philips, Tronic, Modi, As approved by the Engineer.	No.	324	17,750.00	5,751,000.00

24.05	25Amp single phase cut-out complete with a 5A TIKC fuse of oAmps web of equivalent. As approved by the Engineer.			550.00	84,700.00
	150Watts ultra High power LED floodlights, IP65 Philips, Tronic, Modi, As approved by the Engineer.	No.	324	17,750.00	5,751,000.00
24.06	1.5mm2 twin with earth PVC insulated copper cable. East african cables make or any other approved by the Engineer.	М	1700	250.00	425,000.00
24.07	Ground mounted Metal control pillar, with lockable facility and complete with concrete reinforced protection cage and for single	No.	4	95,570.00	382,280.00
24.08	phase power supply service line connection by Kenya Power and as approved by the Engineer. 6 way surface mounted Consumer unit with a 100 Amps DP intrgral isolator or 60Amps Double pole MCB or equivalent. ABB make or any other approved by the Engineer.	No.	4	7,500.00	30,000.00
24.09	20 Amp single phase MBC's ABB make or any other approved by the Engineer.	No.	16	550.00	8,800.00
24.10	40Amp current operated earth leakages circuit breaker withrated leakage current of 0.5A. ABB make or any other approved by the Engineer.	No.	4	8,500.00	34,000.00
24.11	40Amp Double pole contactor. ABB make or any other approved by the Engineer.	No.	4	6,500.00	26,000.00
24.12	2 core 10.0mm2 PVC/SWA/PVC Cu cable underground cable. East African cables make or any other approved by the Engineer.	М	4200	935.00	3,927,000.00
24.13	Earthing comprising of a 6mm2 earth lead and 1800mm long by 15mm diameter copper earth electrode with a driving tip and clamp in a 300mm by 300mm by 300mm concrete manhole with removable cover for each control pillar and every fourth pole. Approved by the Engineer.	No.	42	7,500.00	315,000.00
24.14	Provide for trenching, shifting, cable laying, tiling and backfilling complete with Hatari tiles or PVC electrical warning tape on top of the underground cables. As approved by the Engineer.	М	3800	850.00	3,230,000.00
24.15	Cable glands for terminating underground cables	No.	16	650.00	10,400.00
24.16	1.5mm2 3 core PVC/SWA/PVC copper cable for terminating Photo cell mounted on top of the nearest pole. East African Cables make or any other approved by the Engineer.	М	500	550.00	275,000.00
24.17	63Amp MCB with enclosure type ABB make or any other approved by the Engineer.	No.	4	670.00	2,680.00
24.18	UPVC ducts for carrying the service lines and cables across the road, to have concrete surround of $50 \text{mm}\acute{\Theta}$ for road crossing as	М	200	1,375.00	275,000.00
24.19	approved by the Engineer. Installation of complete kit of photocell controller together with the associated accessories and wiring works. ABB make or any	Pcs	4	8,500.00	34,000.00
24.20	other approved by the Engineer.         Allow for liason with Power Company in connection with works for incoming electricity supply including making such power	LS	1	250,000.00	250,000.00
	supply applications and submissions that they require         Allow for Contractor's overheads and profits for the above item No.		1	230,000.00	
24.21		%	0.15		37,500.00
24.22	Allow for provisionsal sum for payment of incoming electricity power supply connection to each control pillar by Kenya Power	LS	1	2,500,000.00	2,500,000.00
24.23	Allow for Contractor's overheads and profits for the above item No.	%	0.15		375,000.00
24.24	Allow for all working drawings and schematic drawings prior to commencing	LS	1	150,000.00	150,000.00
24.25	Allow for Contractor's overheads and profits for the above item No.	%	0.15		22,500.00
24.26	Allow for the testing and commissioning fo the entire electrical system to the satisfaction of the Engineer and the stakeholder	LS	1	200,000.00	200,000.00
24.27	Allow for Contractor's overheads and profits for the above item No.	%	0.15		30,000.00
24.28	Allow for as installed drawings, manuals and details of equipment installed.	LP	1	150,000.00	150,000.00
24.29	Allow for Contractor's overheads and profits for the above item No.	%	0.15		22,500.00
24.30	Allow for provisional sum of Kenya shillings Two Hundred Thousand (Kshs. 500,000/=) for allowances for Electrical Engineer	LP	1	500,000.00	500,000.00
24.31	Allow for Contractor's overheads and profits for the above item No.	%	0.15		75,000.00
24.32	Engagement of a Resident Electrical Technician	Mnths	32	75,000.00	2,400,000.00
24.33	Allow for Contractor's overheads and profits for the above item No.	%	0.15		360,000.00
24.34	Allow for all working drawings and schematic drawings prior to commencing	LS	1	150,000.00	150,000.00
24.35	Allow for the testing and commissioning fo the entire electrical system to the satisfaction of the Power Company & Engineer, including the provision of the equipment	LS	1	200,000.00	200,000.00
24.36	Allow for as installed drawings, manuals and details of equipment installed.	LS	1	150,000.00	150,000.00
	Bill No. 24 Total Carried Forward to Grand Summary				0.00
BILL NO	O. 25: ENVIRONMENTAL, HIV/AIDS, AND COVID-19 MITIGATION MEASURES				
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
25.01	Allow for a prime cost sum for of KShs 5,000,000 (five Million) for ESIA study, report, and environmental monitoring.	PC sum	1		
~	E.O for Item 25.01 for Contractor's Oveheads and Profit	Item	10%		
25.02					
25.02 25.03	Allow for engagement of a HIV/AIDS and COVID-19 specialist sub contractor to deal with prevention and awareness activities as per programme to be approved by the Engineer	Months	24		
		Months No.	24 12,000		
25.03	per programme to be approved by the Engineer				
25.03 25.04	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submmission of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities.	No.	12,000		
25.03 25.04 25.05 25.06 25.07	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submission of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months	No. Months	12,000		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer          Provide male and female condoms to workers and staff for the duration of the contract         Allow for preparation and submmision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities.         Report to be tabled at site meetings.         Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards	No. Months No.	12,000 24 4		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer         Provide male and female condoms to workers and staff for the duration of the contract         Allow for preparation and submmision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities.         Report to be tabled at site meetings.         Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m² fabricated as per specifications of permanent informatory sign boards         Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months         Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months         Provide HIV/AIDS and COVID-19 awareness material as follows:         a) T-Shirt printed with approved message and graphics         b) Ditto (a) above but caps	No. Months No. Quartely No. No.	12,000 24 4 6 500 100		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submission of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters	No. Months No. Quartely No. No. No. No.	12,000 24 4 6 500 100 20		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer         Provide male and female condoms to workers and staff for the duration of the contract         Allow for preparation and submmision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities.         Report to be tabled at site meetings.         Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m² fabricated as per specifications of permanent informatory sign boards         Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months         Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months         Provide HIV/AIDS and COVID-19 awareness material as follows:         a) T-Shirt printed with approved message and graphics         b) Ditto (a) above but caps	No. Months No. Quartely No. No.	12,000 24 4 6 500 100		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submission of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters	No. Months No. Quartely No. No. No. No. No.	12,000 24 4 6 500 100 20 100		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submmision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan	No. Months No. Quartely No. No. No. No. No. No. No.	12,000 24 4 6 500 100 20 100 100 100		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submission of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan f) Key rings with HIV/AIDS and COVID-19 awareness/prevention slogan	No. Months No. Quartely No. No. No. No. No. No. No. No.	12,000 24 4 6 500 100 20 100 100 100 100 500		
25.03 25.04 25.05 25.06 25.07 25.08	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submission of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan f) Key rings with HIV/AIDS and COVID-19 awareness prevention slogan g) Ball point pens with HIV/AIDS and COVID-19 awareness prevention slogan.	No. Months No. Quartely No. No. No. No. No. No. No. No. No. No.	12,000 24 4 6 500 100 20 100 100 100 100 500		
25.03 25.04 25.05 25.06 25.07 25.08 25.08 25.09	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and subminision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) Al size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan f) Key rings with HIV/AIDS and COVID-19 awareness/prevention slogan. Provide and maintain handwashing points at strategic locations as directed by the Engineer throughout the construction period. Provide face masks as specified or as shall be directed by the Engineer.	No. Months No. Quartely No. No. No. No. No. No. No. No. No. No.	12,000         24         4         6         500         100         20         100         20         100         500         3		
25.03 25.04 25.05 25.06 25.07 25.08 25.08 25.09 25.09	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and submission of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan f) Key rings with HIV/AIDS and COVID-19 awareness prevention slogan g) Ball point pens with HIV/AIDS and COVID-19 awareness prevention slogan. Provide and maintain handwashing points at strategic locations as directed by the Engineer throughout the construction period. Provide face masks as specified or as shall be directed by the Engineer. Bill No. 25 Total Carried Forward to Grand Summary	No. Months No. Quartely No. No. No. No. No. No. No. No. No. No.	12,000         24         4         6         500         100         20         100         20         100         20         100         3         3		
25.03 25.04 25.05 25.06 25.07 25.08 25.08 25.09 25.10 25.11	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and subminision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan f) Key rings with HIV/AIDS and COVID-19 awareness /prevention slogan g) Ball point pens with HIV/AIDS and COVID-19 awareness prevention slogan. Provide and maintain handwashing points at strategic locations as directed by the Engineer throughout the construction period. Provide face masks as specified or as shall be directed by the Engineer. Bill No. 25 Total Carried Forward to Grand Summary BILL No. 26: LAND ACQUISITION, AXLE LOAD CONTROL, AND RELOCATION OF S	No. Months No. No. Quartely No. No. No. No. No. No. No. No. No. SERVICES	12,000 24 4 6 500 100 20 100 20 100 100 500 500 3 3 3 20,000		
25.03 25.04 25.05 25.06 25.07 25.08 25.08 25.09 25.10 25.11 <b>Item</b>	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and subminision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide IIIV/AIDS and COVID-19 avareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan f) Key rings with HIV/AIDS and COVID-19 awareness prevention slogan. Provide and maintain hand sanitizing points at strategic locations as directed by the Engineer throughout the construction period. Provide face masks as specified or as shall be directed by the Engineer. Bill No. 25 Total Carried Forward to Grand Summary BILL No. 26: LAND ACQUISITION, AXLE LOAD CONTROL, AND RELOCATION OF S	No. Months No. No. Quartely No. No. No. No. No. No. No. No. No. SERVICES	12,000         24         4         6         500         100         20         100         20         100         20         100         3         3		
25.03 25.04 25.05 25.06 25.07 25.08 25.08 25.09 25.10 25.11 25.11	per programme to be approved by the Engineer Provide male and female condoms to workers and staff for the duration of the contract Allow for preparation and subminision of monthly reports on HIV/AIDS and COVID-19 awareness and prevention activities. Report to be tabled at site meetings. Provide, Install and maintain HIV/AIDS and COVID-19 awareness bill boards with approved message and graphics with maximum area 4m <sup>2</sup> fabricated as per specifications of permanent informatory sign boards Allow for video shows on HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 related awareness and prevention matters every 3 months Provide HIV/AIDS and COVID-19 awareness material as follows: a) T-Shirt printed with approved message and graphics b) Ditto (a) above but caps c) A1 size weather proved posters d) A3 size weather proved posters e) 200x150mm stickers with HIV/AIDS and COVID-19 awareness/prevention slogan f) Key rings with HIV/AIDS and COVID-19 awareness /prevention slogan g) Ball point pens with HIV/AIDS and COVID-19 awareness prevention slogan. Provide and maintain handwashing points at strategic locations as directed by the Engineer throughout the construction period. Provide face masks as specified or as shall be directed by the Engineer. Bill No. 25 Total Carried Forward to Grand Summary BILL No. 26: LAND ACQUISITION, AXLE LOAD CONTROL, AND RELOCATION OF S	No. Months No. No. Quartely No. No. No. No. No. No. No. No. No. SERVICES	12,000 24 4 6 500 100 20 100 20 100 100 500 500 3 3 3 20,000		

## CONTRACT NO.: RWC 682B GRAND SUMMARY OF BILL OF QUANTITIES

BILL ITEM	DESCRIPTION	AMOUNT(KShs)
1	Preliminaries and General Items	
4	Site Clearance and Top Soil Stripping	
5	Earth Works	
7	Excavation and Filling of Structures	
8	Culverts and Drainage Works	
9	Passage to Traffic	
10	Grading and Graveling	
12	Natural Gravel Base and Subase	
14	Lime/Cement Improved gravel Subbase and Base	
15	Bituminous Surface Treatment and Surface Dressing	
16	Bituminous Mixes	
20	Road Furniture	
22	Schedule of Dayworks.	
25	HIV/AIDS, Gender & Social Issues, Local Participation	
26	Relocation of Services and Land Aquisition	
(A)	Sub-Total (1)	
(B)	Add 15% Variation of Price On Sub-Total 1	
(C)	Add 10% Contingency on Sub-Total 1	
(D)	Sub-Total $2 = A + B + C + D$	
(E)	Add .03% For PPCBLof sub total (1)	
(F)	Add16% VAT of sub-total (2)	
	TOTAL ( D+ E )	

	RWC						
S/NO	DESCRIPTION	AMOUNT(KSHS)					
1	BID SUM 1	-					
2	BID SUM 2	0.00					
	TOTAL AMOUNT	-					

	APPENDIX A D BILL ITEM 1.05: D MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LAB DESCRIPTION		QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
A104/1.01 A104/1.02	<b>1. FURNITURE</b> Desk 2.2x0.9 m with chair and lockup drawers         Desk chair (standard)	No	2 15		
A104/1.03 A104/1.04	Stationery cupboard, 1.2 m <sup>3</sup> , lockable Steel filing cabinet, 4 drawers, lockable	No	2		
A104/1.05 A104/1.06	Steel filing cabinet, 2 drawers, lockable Bookshelf, 3 shelves 1.2 m long (to hold box files)	No	2		
A104/1.07 A104/1.08	Bookshen, 5 sherves 1.2 in long (to hold box files)       Table - 6 m <sup>2</sup> Two Plate electric heater	No	2		
A104/1.09 A104/1.10	Fire extinguisher, 10 litre capacity, CO <sub>2</sub> type Complete first aid kit	No	4		
	<b>EQUIPMENT</b> (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) 2. General Equipment				
A104/2.02 A104/2.03 A104/2.04	<ul> <li>2.49kg. Compaction hammer, drop regulated to 304.8mm</li> <li>4.535kg compaction hammer drop regulated to 457.2mm</li> <li>Electric vibrating Kango Hammer fitted with steel tamper(BS 1377) with support</li> </ul>	No No No	2 2 1		
A104/2.05	frame Straight edge 300 mm long with handles	No	4		
A104/2.06 A104/2.07	Steel Tamper (BS1377) compatible with Kango hammer         Compaction mould 152.4 mm. dia x 116.43 mm complete with base plate and extension collar, 101.6 mm	No	3		
A104/2.08 A104/2.09	Galvanized metal tray 1m x 0.5m x 75 mm deep         75mm brush	No	4		
A104/2.10 A104/2.11 A104/2.12	Semi-automatic balance, 25kg Capacity accurate to 1g, including weights 20mm BS Sieve, 300mm diameter Stop Clock	No No No	1		
A104/2.13 A104/2.14	Thermostatically controlled electric oven 105-110°C, capacity 0.225 m <sup>3</sup> As above but gas heated	No	2		
A104/2.15 A104/2.16	Moisture content tins, 75 mm dia, Cadmium or aluminium plated Cone penetrometer with gauge and automatically controlled test cup	No	60		
	C/Forward to next page				
	B/Forward from previous page 3. Density (Sand replacement method BS 1377)				
A104/3.01 A104/3.02	Metal containers 450mm diameter Stainless steel tray 305mm diameter	No	2		
A104/3.03 A104/3.04	Metal tray with 150 mm diameter hole in the centre, 300mmx300 mm square or equivalent area, 40mm deep Metal tray with 200mm diameter hole in the centre, 500mm x 500 mm square , 50	No	2		
A104/3.05 A104/3.06	mm deep Steel pegs for fixing tray in position Sand pouring cylinder, 150 mm diameter	No	15		
A104/3.07 A104/3.08 A104/3.09	Sand pouring cylinder, 215 mm diameter         Cold steel chisel 20mm x 300mmm         Cold steel chisel 10mm x 250mmm	No No No	2 4 4		
A104/3.10 A104/3.11	1.5kg, 3.5kg hammers and 1kg rubber mallet         Scoop for removing excavated material from hole, 250 mm long handle	Set	1 6		
A104/3.12 A104/3.13	100mm brush, soft       50mm brush, soft	No No	3		
A104/3.14 A104/3.15 A104/3.16	Primus gas stove         Calibrating can 150 mm diameter x 150 mm deep         Ditto but 200 mm diameter x 250 mm deep	No No No	3		
A104/5.01	<ul> <li>5. CBR (AASHTO T193)</li> <li>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</li> </ul>	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		40		
A104/5.03 A104/5.04 A104/5.05	2.25 kg split surcharge weight         Set of annular surcharge weights         Solid base plate for CBR mould	No No No	2 1 2		
A104/5.06 A104/5.07	Static compaction displacer discs 1 Nox 61.4 mm, 1 No x 50.8 mm and 2 Nox 38.8 mm thick with handles Disk lifting handle	set	2		
A104/5.08 A104/5.09	Central extruder, complete with 20kN hydraulic jack and accessories 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 A104/5.11	Set of guards for above press.         50 kN CBR Load frame complete with stabilising bar (electric and hand operated)	No	1		
	including proving rings for 10KN, 28KN and 50KN, piston and bracket				
A104/5.12 A104/5.13	C/Forward to next page         B/Forward From previous page         Penetration gauge range 0 - 25mm         CBR piston including bracket	No	2 2		
A104/5.14 A104/5.15	Swell measurement tripod complete with guage calibrated in 0.01 mm divisions Soaking tank for CBR mould sufficient for 50 moulds	No	2		
A104/6.01	6. Relative Density of Aggregates (BS 812)         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 A104/6.03	A stout watertight container in which the basket can be freely suspended Soft absorbent cloth (tea towel)	No	2		
A104/6.04 A104/6.05 A104/6.06	Shallow tray of area not less than 0.065 m²         An airtight container of similar capacity to the basket         Pycnometer of 1 litre capacity	No No No	2 2 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 A104/7.01	Hot air drier (electric) 7. Flakiness (BS 812) Thickness gauge (various sizes)	No	2		
A104/8.01	8. Sieve Analysis (BS 1377)         BS Sieve 300mm diameter in sizes 75, 63, 50, 37.5, 28, 20, 14, 10, 6.3, 5 and 4 mm,	Set	2		
A104/8.02	plus lid and receiver 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 A104/8.04 A104/8.05	Electric sieve shakerBS sieve 200mm diameter 0.425 and 0.075 mm1 m x 1 m x 75mm deep galvanized metal tray	No set No	1 1 10		
A104/8.06 A104/9.01	Riffle box with 50mm slots (BS 1377)         9. Miscellaneous Equipment         Wheel barrow	No	1		
A104/9.02 A104/9.03 A104/9.04	Dustpan and brush         Shovel         Pick axe with handle	No No No	3 4 4		
A104/9.05 A104/9.06 A104/9.07	Metal scoop, large (150mm wide) Metal scoop, medium (100mm wide) Garden trowel	No No No	3 4 2		
A104/9.08 A104/9.09 A104/9.10	Steel tray 0.3m x 0.3m x 0.01m deep         Palette knife 200mm long blade         Palette knife 100mm long blade	No No No	15 3 4		
A104/9.11 A104/9.12 A104/9.13	BS sieve 450mm diameter, 37.5mm         BS sieve 450mm diameter, 20mm         BS sieve 450mm diameter, 5mm	No No No	1 1 1		
A104/9.14 A104/9.15	BS sieve 450mm diameter, 0.425mm BS sieve 450mm diameter, 0.3mm Page 5 C/Forward tonext page B/Forward from prevoius page	No No	1		
A104/9.16 A104/9.17 A104/9.18	BS sieve 450mm diameter, 0.075mm         Set of lid and receiver for metal scoop and steel trays         BS Sieve brush	No No No	1 2 2		
A104/9.19 A104/9.20 A104/9.21	Measuring cylinder set, 25 ml, 100 ml, 500 ml, 1000 ml, 2000 ml Glass jar capacity 5 litres with lid 200mm x 200mm x 20mm cadmium plated or aluminium tin	set No No	2 10 20		
A104/9.22 A104/9.23	Electronic balance capacity 1000 g, accurate to 0.01gm. Balance 2000 g capacity accuracy to 0.1g (manual), including weights	No	1		
A104/9.24 A104/9.25	Balance 50kg capacity accurate to 10gm including weights       Still for producing distilled water	No	1		
A104/9.26 A104/9.27	Polythene or glass 20 litres storage vessel with tap at bottom Stiff broom	No	2		
A104/9.28 A104/9.29 A104/9.30	Vernier calipers, 150mm Vernier calipers, 250mm Pestle and mortar	No No No	2 2 2 2		
A104/9.31 A104/9.32 A104/9.33	Linear shrinkage mould (BS 1377) Liquid Limit Device Average least dimension gauge	No No No	6 2 2 1		
A104/9.34	Lockable tool box containing: 1 pr"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			
A104/9.35 A104/9.36	Plastic or metal bucket including lid,10 litres capacity Polythene wash bottle (500 ml)	No	6		
A104/9.37 A104/9.38 A104/9.39 A104/9.40	A4 size clipboardThermometer, range -10°C to150°C, glass (BS 593)Laboratory thermometer, range + 0°C to + 250°C (BS 593)Maximum and minimum thermometer (BS692)	No No No No	4 2 2 2 2		
A104/9.41 A104/9.42 A104/9.43 A104/9.44	Rain gaugePortable dial thermometer + 50°C to +250°C accurate to $\pm 3\%$ Ditto with 0.75m long stemPocket thermometer + 50°C to +250°C accurate to $\pm 3\%$ with 0.1 m stem	No No No	1 1 1 2		
A104/9.45 A104/9.46	5 litre capacity steel storage containers with leak and dust proof lids for storage of bitumen samples         Hotplate 200mm diameter with Simmerstat heat control unit.	No	50		
A104/9.47	450mm diameter x 150mm deep metal mason's basin C/Forward to next page B/Forward from previous page 11 Concrete: Slump and Cube Manufacture (BS 1881)	No	6		
A104/11.01 A104/11.02 A104/11.03	11. Concrete: Slump and Cube Manufacture (BS 1881)Slump cone, tamping rod and baseConcrete cube mould, 150mm cubeSoaking tank for cubes (capacity 50 No.)	set No No No	2 30 1 10		
A104/11.04	Cube tamping bars				
A104/11.04 A104/12.01	Cube tamping bars <b>12. Concrete: Cube Compression Testing</b> Concrete compression machine to BS1610 Grade A with 300 mm gauge,         rectangular platens, capacity 1560 kN with load spacer				
	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge,	No	1		
A104/12.01 A104/12.02 A104/12.03	<b>12. Concrete: Cube Compression Testing</b> Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         50mm distance piece	No Set	1		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         13. Aggregate and Chippings		1 1 1 1 2 2 2		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.06	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         13. Aggregate and Chippings         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         Beaker 250ml	Set			
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.06 A104/13.07 A104/13.07 A104/13.08 A104/13.09	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         13. Aggregate and Chippings         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         Beaker 250ml         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate         Tamping rod and metal measure for above         Los Angeles Abrasion to ASTM standards         Set of 12 abrasive charges         Thermometer, 0°C to +50°C         Thermometer, 0°C to +250°C         Reagent grade Silica gel, 500g container         14. Bitumen Spray Test (BS 1707)         Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707)	Set No No Set No No No No No No	2 4 1 2		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.05 A104/13.06 A104/13.07 A104/13.08	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         13. Aggregate and Chippings         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         Beaker 250ml         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate         Tamping rod and metal measure for above         Los Angeles Abrasion to ASTM standards         Set of 12 abrasive charges         Thermometer, 0°C to +50°C         Thermometer, 0°C to +250°C         Reagent grade Silica gel, 500g container         14. Bitumen Spray Test (BS 1707)	Set No No Set No No No No No No No	2 4 1 2 2 2 2		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.05 A104/13.07 A104/13.08 A104/13.09 A104/14.1	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         13. Aggregate and Chippings         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         Beaker 250ml         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate         Tamping rod and metal measure for above         Los Angeles Abrasion to ASTM standards         Set of 12 abrasive charges         Thermometer, 0°C to +50°C         Reagent grade Silica gel, 500g container         14. Bitumen Spray Test (BS 1707)         Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent.         Steel tray 20 mm deep x0.1m² (for measuring bitumen spray rates) with purpose made detachable handle 1.5m long.         16. Bitumen Extraction Test         A) Extractor Bottle Method BS 598 Part 2         Electronic top pan balance 4kg capacity, sensitive to 0.1gm         Flat bottomed scoop         Steel garden trowel	Set No No Set No No No No No No No Set	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.02 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.06 A104/13.07 A104/13.07 A104/13.08 A104/13.09 A104/13.09 A104/14.11 A104/14.02 A104/14.02 A104/16.01 A104/16.03 A104/16.05 A104/16.05 A104/16.06	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         20mm distance piece         13. Aggregate and Chippings         Sad 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         Beaker 250ml         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate         Tamping rod and metal measure for above         Los Angeles Abrasion to ASTM standards         Set of 12 abrasive charges         Thermometer, 0°C to +250°C         Reagent grade Silica gel, 500g container         14. Bitumen Spray Test (BS 1707)         Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent.         Stel tray 20 mm deep x0.1m <sup>2</sup> (for measuring bitumen spray rates) with purpose made detachable handle 1.5m long.         16. Bitumen Extraction Test         A) Extractor Bottle Method BS 598 Part 2         Electronic top pan balance 4kg capacity, sensitive to 0.1gm         Flat bottomed scoop         Steel graden trowel         Large steel spoon <td>Set No No Set No No No No No Set Set No No</td> <td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td></td> <td></td>	Set No No Set No No No No No Set Set No	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.02 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.06 A104/13.07 A104/13.07 A104/13.08 A104/13.09 A104/13.09 A104/14.11 A104/14.02 A104/14.02 A104/16.01 A104/16.03 A104/16.05 A104/16.05 A104/16.06	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         13. Aggregate and Chippings         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         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate         Tamping rod and metal measure for above         Los Angeles Abrasion to ASTM standards         Set of 12 abrasive charges         Thermometer, 0°C to +50°C         Reagent grade Silica gel, 500g container         14. Bitumen Spray Test (BS 1707)         Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent.         Steel tray 20 mm deep x0.1m² (for measuring bitumen spray rates) with purpose made detachable handle 1.5m long.         16. Bitumen Extraction Test <t< td=""><td>Set No No Set No No No No No Set Set No No</td><td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td><td></td><td></td></t<>	Set No No Set No No No No No Set Set No	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
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A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.02 A104/13.02 A104/13.04 A104/13.05 A104/13.06 A104/13.07 A104/13.08 A104/13.09 A104/13.09 A104/14.11 A104/14.02 A104/16.01 A104/16.03 A104/16.05 A104/16.05 A104/16.05 A104/16.10 A104/16.10 A104/16.11 A104/16.12 A104/16.14	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         20mm distance piece         70mm distance piece         21. Aggregate and Chippings         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         Beaker 250ml         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate.         Tamping rod and metal measure for above         Los Angles Abrasion to ASTM standards         Set of 12 abraive charges         Thermometer, 0°C to ±50°C         Reagent grade Silica gel, 500g container         14. Bitumen Spray Test (BS 1707)         Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent.         Steel Tay 20 mm deep x0. Im² (for measuring bitumen spray rates) with purpose made detachable handle 1.5m long.         16. Bitumen Extraction Test         A) Extractor Bottle Method BS 598 Part 2         Electronic top pan balance 4kg capacity, sensitive to 0.1gm         Flat bottomed scoop       Steel garden frowel <t< td=""><td>Set           No           No           No           Set           No           No</td><td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td><td></td><td></td></t<>	Set           No           No           No           Set           No	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.01 A104/13.02 A104/13.02 A104/13.03 A104/13.05 A104/13.06 A104/13.07 A104/13.08 A104/13.09 A104/14.11 A104/14.02 A104/14.02 A104/16.01 A104/16.03 A104/16.05 A104/16.05 A104/16.05 A104/16.07 A104/16.07 A104/16.07 A104/16.07 A104/16.07 A104/16.01 A104/16.10 A104/16.10 A104/16.11 A104/16.11 A104/16.12 A104/16.13	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Fleetro-mechanical load pacer, 100 mm or equivalent distance piece         13. Aggregate and Chippings         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 litrigar         Beaker 250ml         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate         Tarmping rod and metal measure for above         Los Angeles Abrasion to ASTM standards         Set of 12 abrasive charges         Thermometer, 0°C to 1250°C         Thermometer, 0°C to 150°C         Thermometer, 0°C to 150°C         Thermometer, 0°C to 150°C         Thermometer, 0°C to 150°C         Themometer, 0°C to 150°C         Themometer	Set         No         No <td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td></td> <td></td>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.01 A104/13.02 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.06 A104/13.07 A104/13.08 A104/13.09 A104/14.11 A104/14.02 A104/16.01 A104/16.03 A104/16.03 A104/16.05 A104/16.05 A104/16.05 A104/16.10 A104/16.11 A104/16.11 A104/16.12 A104/16.13 A104/16.14 A104/16.14	12. Concrete: Cube Compression Testing.         Concrete compression machine to BS1610 Grade A with 300 mm gauge, reetangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece	Set           No	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.01 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.07 A104/13.08 A104/13.09 A104/14.02 A104/14.02 A104/16.01 A104/16.03 A104/16.05 A104/16.05 A104/16.05 A104/16.07 A104/16.10 A104/16.10 A104/16.11 A104/16.12 A104/16.13 A104/16.14 A104/16.15 A104/16.15 A104/16.15 A104/16.16 A104/16.17	12. Concrete: Cube Compression Testing         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         70mm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         73m digvialent to AASHTO 1176 including graduated plastic cylinder, rubber stopper, irrigation tube weighted foot assembly, siphon assembly, 85ml tin hox (57mm dia,) 100 mm dia wide mouth funnel, stop clock, mechanical shaker and 10 litre jar         Heaker 220ml       Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate         Tamping rod and metal measure for above       Los Angeles Abrasion to ASTM standards         Set of 12 abrasive charges       Thermometer, 0°C to -50°C         Thermometer, 0°C to -50°C       Reagent grade Silica gel, 500g container         14. Bitnume Spray Test (BS 1707)       Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent         15. Bitumen Extraction Test       A) Staretor Dautle Method BS 598 Part 2         Electronic top pan balance 4ge capacity, sensitive to 0.1gm       Elat bottimed for filting to the 700ml steel bottle with rime of fournel retaining sieve 200mm mominal diameter         Test page       C/Yorward from previous page </td <td>Set No No No No No No No No No No No No No</td> <td><math display="block"> \begin{array}{c} 2 \\ 4 \\ 1 \\ 2 \\ 2 \\ 2 \\ 3 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 4 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1</math></td> <td></td> <td></td>	Set No No No No No No No No No No No No No	$ \begin{array}{c} 2 \\ 4 \\ 1 \\ 2 \\ 2 \\ 2 \\ 3 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 4 \\ 2 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$		
A104/12.01 A104/12.02 A104/12.03 A104/12.04 A104/12.05 A104/13.01 A104/13.01 A104/13.02 A104/13.03 A104/13.04 A104/13.05 A104/13.07 A104/13.08 A104/13.09 A104/14.02 A104/14.02 A104/16.03 A104/16.03 A104/16.05 A104/16.05 A104/16.10 A104/16.11 A104/16.12 A104/16.12 A104/16.13 A104/16.14 A104/16.15 A104/16.15 A104/16.17 A104/16.17	12. Concrete: Cube Compression Testing.         Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer         Safety guard for above         Somm distance piece         Electro-mechanical load pacer, 100 mm or equivalent distance piece         I.3. Aggregate and Chippings         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         Header 250ml         Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and hase plate         Tamping rod and metal measure for above         Los Angeles Abrasion to ASHTO MI standards         Set of 12 abrasive charges         Thermometer, 0°C to +250°C         Reagent grade Stille gel, 500g container         14. Bitumen Spray Test (BS 1707)         Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707)         or equivalent.         Stee 12 abrasive charge space         14. Bitumen Spray Test (BS 1707)         or equivalent.         Stee 10 abrasive darge space         14. Bitumen Spray Test (BS 1707)         or equivalent.         Stee 10 bitte Method BS 598 Part 2         Electronic top pan balance 4kg capacity, sc	Set         No         No <td><math display="block"> \begin{array}{c} 2 \\ 4 \\ 1 \\ 2 \\ 2 \\ 2 \\ 5 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 2 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2</math></td> <td></td> <td></td>	$ \begin{array}{c} 2 \\ 4 \\ 1 \\ 2 \\ 2 \\ 2 \\ 5 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 4 \\ 1 \\ 2 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2$		
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A104/12.01         A104/12.02         A104/12.03         A104/12.04         A104/12.05         A104/12.05         A104/13.01         A104/13.02         A104/13.03         A104/13.04         A104/13.05         A104/13.06         A104/13.07         A104/13.08         A104/13.08         A104/13.09         A104/14.02         A104/16.03         A104/16.03         A104/16.04         A104/16.05         A104/16.06         A104/16.07         A104/16.08         A104/16.09         A104/16.01         A104/16.02         A104/16.03         A104/16.04         A104/16.05         A104/16.07         A104/16.10         A104/16.11         A104/16.12         A104/16.13         A104/16.14         A104/16.15         A104/16.20         A104/16.21         A104/17.03         A104/17.04         A104/17.05         A104/17.07         A104/17.08         A104/17.09		Set         No         Set         No         No <td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td></td> <td></td>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		

APPENDIX TO BILL ITEM 1.06A: PROVIDE, FURNISH AND MAINTAI	B N THF R F 'S OF	FICE		
DESCRIPTION	UNIT	QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
1. ENGINEER'S MAIN OFFICE AND FURNITURE				
Executive desk 2.2x0.9 m with six lockup drawers	No	2		
Desk 2.2x0.9 m with chair and three lockup drawers	No	4		
Office tables 2.2x0.9 m	No	5		
Executive Swivel orthopeadic chair adjustable height	No	6		
Standard office chairs	No	10		
Typist's desk	No	1		
Typist's chair	No.	1		
Lockable steel stationery cupboard, 1.2 m <sup>3</sup> , lockable	No.	2		
Medium size steel filing cabinet, 4 drawers lockable	No.	2		
Medium size steel filing cabinet, 2 lockable drawers	No.	2		
Bookshelf, 1.5 m wide 3 shelves (for box files) sliding glass door	No.	2		
Conference table with 15 chairs	No.	1		
Waste paper basket	No.	10		
Curtains for office and laboratory -for all windows and doors	Set	2		
Ordinary 2 hole paper punch	No	5		
Heavy duty 2 hole paper punch	No	2		
Computer meeting the following specifications or equivalent: Personal computer with 17" screen full multimedia, 500GB hard disk, 4.0GB RAM, Core i7 processor, complete with all accessories preloaded with latest versions of windows OS, MS Office, Professional and MS Project	No	5		
Autocad Civil 3D 2016 and Licences for above computers Laptop PC with Intel Core i7-45IOU Processor 15.4" screen, CPU @ 2.6GHz 8GB RAM 1TB 8xDVD+/-RW approved with Microsoft Windows professional	No	4		
Latest HP (A4) Laser Printer with accessories	No	5		
Latest HP (A3) Laser Colour Printer with accessories	No	1		
UPS 600 VA wall clocks, battery powered min size 350mm x 350mm	No No	6		
First Aid Kit	No	4		
Fire Extinguisher	No	4		
Filing Tray - set of 3no. Refrigerator minimum capacity 0.2 m <sup>3</sup>	set No	1		
Drinking water dispenser, hot/cold	No	3		
Table - 0.8 m <sup>2</sup> surface area	No	1		
Cupboard, 0.15 m <sup>3</sup> , lockable	No	1		
13 Kg Gas cylinder with three gas burners	No	2		
	No	2		
13 Kg Gas cylinder with three gas burners	No UNIT	2 QUANTITY	RATE	AMOUNT
13 Kg Gas cylinder with three gas burners C/Forward			RATE	AMOUNT
13 Kg Gas cylinder with three gas burners C/Forward DESCRIPTION			RATE	AMOUNT
13 Kg Gas cylinder with three gas burners C/Forward DESCRIPTION			RATE	AMOUNT
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability	UNIT	QUANTITY 1	RATE	AMOUNT
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper	UNIT No No	QUANTITY           1           120	RATE	AMOUNT
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper	UNIT No No No	QUANTITY           1           120           24	RATE	AMOUNT
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper	UNIT No No	QUANTITY           1           120	RATE	AMOUNT
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved	UNIT No No No	QUANTITY           1           120           24	RATE	
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital	UNIT No No No No No No No	QUANTITY           1           120           24           6	RATE	
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         6         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		
13 Kg Gas cylinder with three gas burners         C/Forward         DESCRIPTION         B/Forward         A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability         Reams of A4 phocopying paper         Reams of A3 phocopying paper         Electronic scientific calculator, Casio fx 991ES PLUS or equivalent approved         Stapling machine Ofrex size 50 or similar with 5000 staples         Heavy duty punch and spiral binder, IBICO AG or similar approved         Digital Camera, 16.1 Megapixel(min), 1920x1080 full HD movie recording, optical steadyShot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.         Provision of mobile phones for supervision team with the latest android version	UNIT No No No No No No No	QUANTITY         1         120         24         6         22         2         2         2         2         2         2         2         2		

## **APPENDIX B**

## **APPENDIX C**

ГЕМ	Description	UNIT	QTY	RATE	AMOUNT(Kshs)
	Digital Total Station <u>reading to 1"accuracy</u> ( <i>one second</i> ) with the following facilities:				
	<ul> <li>Inbuilt data logger</li> <li>Uploading/downloading</li> <li>software</li> </ul>				
	· Data transfer cable				
	• Battery (2No)				
.01	· Battery charger	No.	0		
	• Tool kit				
	<ul> <li>Two face keyboard</li> <li>User manual</li> </ul>				
	It must have the following inbuilt survey programs as a minimum · Survey				
	· Staking out				
	· Resection/intersection				
	· Traverse				
.02	Cogo The following mandatory total station				
.02	accessories must be included per Total station instrument				
a)	1No. Heavy duty telescopic tripod( <i>preferably wooden</i> )	No.	0		
b)	Telescopic plumbing prism pole complete with a prism and prism holder with target and plumbing bubble <i>(</i> <i>length not less than 2.15m</i> )	No.	0		
0)	• Triple prism holder set, in a casing, comprising triple prisms, prisms holder with target, tribrach and	No.	0		
c)	a tribrach adaptor				
d)	· Survey umbrella	No.	1		
e)	· 1No.Telescopic Tripod	No.	0		
/	Engineer's Automatic Level Wild NAK 2 or similar with a tripod and the following specifications				
.03	<ul> <li>Accuracy of 0.7 mm per 1 km double</li> <li>Standard magnification of: 32x</li> </ul>	No.	2		
	Shortest focusing distance of 1.6m				
	Compensator setting accuracy of 0.3"				

	Description	UNIT	QTY	RATE	AMOUNT(Kshs)
TEM					
	Brought Forward				
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		
	5 M Leveling staff with leveling bubble	No.	4		
1.07	3 M Ranging Rods	No.	10		
1.08	equivalent	No.	3		
1.09	50m. Linen Measuring Tape	No.	5		
1.10	1m stainless steel straight edge	No.	1		
1.11	3 m tape measure	No.	10		
1.12	Sledge hammer 2kg weight	No.	2		
1.13	Mattock	No.	2		
1.14	Pangas (16'')	No.	10		
1.15	Marker Pens	No.	20		
1.16	Reflector Jackets	No.	30		
1.17	Levelling Survey books	No.	100		
1.18	Provision of Geodetic GNSS receivers comprising of one base and two rovers as per the specfications in Appendix D	No.	1.00		
1.19	Provide with license and install the latest version of <i>(insert software)</i>	L.S			
	Total carried to Bill Item 1.06B				

/ <sub>™</sub> _		APPENDIX D	
	Item Geodetic GNSS Receivers	GEODETIC GLOBAL NAVIGATION SATELLITE SYSTEM SPECIFICATIONS (GNSS) General Characteristics	REMARKS
		Geodetic Set enabled for both Static and RTK functions with respective supporting software and accessories	
		Specific Specifications	
		1. Channels: At least 120 enabled for simulteneous signal tracking	
		2. Reception	
		Must be enabled for Multi - Constellation / Frequency i.e current systems e.g. GPS (L1, L2, L2C, L5) GLONASS (L1C/A, L1P, L2C/A); SBAS (EGNOS, WAAS, MSAS, GAGAN, QZSS)	
		Galileo ready: E1, E5A, E5B BeiDou ready (Compass) : B1, B2	
		Must have some multipath mitigation technology embeded	
		Note: Should be configured to recieve new and upcoming constellations (if any)	
		2. Accuracy :	
		Real Time Kinematics (RTK)         Horizontal: 8 mm + 1 ppm RMS	
		Vertical: 15 mm + 1 ppm RMS         Initialization time: typically < 5 s	
		- Initialisation reliability >99.9%	
		Post Processing Static         Horizontal: 3 mm + 0.5 ppm RMS	
		Vertical: $5 \text{ mm} + 0.5 \text{ ppm RMS}$ Baseline Length: $\leq 80 \text{ km}$	
		3. Special functionalties	
		Extended RTK range - base setup - the base receiver to be able to stream RTK data via integrated GSM modem and to support upto 10 rovers	
		- the base to provide WiFi hotspot functionality for better control/setup of the receiver	
		<ul> <li>the base to provide web interface functionality via any smart phone, tablet or computer</li> <li>the base to provide NTRIP caster and dyndns functions</li> </ul>	
		Increased reliability - rover setup	
		<ul> <li>the rover to provide a mode for better performance under dificult conditions (close to buildings, trees and urban areas)</li> <li>the rover to be able to connect to any CORS GNSS networks or Single stations via internet</li> </ul>	
		4. Communications	
		<ul> <li>a) I/O</li> <li>2x TNC connector (1 for UMTS antenna and 1 for UHF antenna)</li> </ul>	
		<ul> <li>2x LEMO</li> <li>1x high speed USB</li> </ul>	
		· Integrated GSM/GPRS modem	
$\rightarrow$		<ul> <li>Integrated Bluetooth class 2</li> <li>Optional radio modem (2):</li> </ul>	
		Internal Rx/Tx: 403473 MHz	
		External Radio: 1W 35W adjustable (at least 12Km range)         . Should be configured to log into any upcoming CORS protocol	
		. Should be enabled to use SIM card	
		b) Radio Transmission Protocols (RTK)	
		RTCM2.1, RTCM2.3, RTCM3.0, CMR, CMR+ input and output         NMEA0183 output	
		5. Data Storage:	
		<ul><li>Must be able to store raw data</li><li>Must have at least 4 GB internal storage</li></ul>	
		Must have at least 4 GB internal storage     Optional external microSD storage	
		Must have at least 4 GB internal storage     Optional external microSD storage     Device should mount as a USB external hard drive	
		Must have at least 4 GB internal storage     Optional external microSD storage	
		Must have at least 4 GB internal storage     Optional external microSD storage     Device should mount as a USB external hard drive  6. Power Supply	
		<ul> <li>Must have at least 4 GB internal storage</li> <li>Optional external microSD storage</li> <li>Device should mount as a USB external hard drive</li> </ul> 6. Power Supply <ul> <li>Battery life: at least 5 hours in RTK mode</li> <li>Must have External power input option</li> <li>Each set should be supplied with two internal battery packs</li> </ul> 7. Software	
		<ul> <li>Must have at least 4 GB internal storage</li> <li>Optional external microSD storage</li> <li>Device should mount as a USB external hard drive</li> <li>6. Power Supply <ul> <li>Battery life: at least 5 hours in RTK mode</li> <li>Must have External power input option</li> <li>Each set should be supplied with two internal battery packs</li> </ul> </li> <li>7. Software <ul> <li>Two types of software</li> <li>Image: Storage</li> </ul> </li> </ul>	
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		<ul> <li>Must have at least 4 GB internal storage</li> <li>Optional external microSD storage</li> <li>Device should mount as a USB external hard drive</li> </ul> 6. Power Supply <ul> <li>Battery life: at least 5 hours in RTK mode</li> <li>Must have External power input option</li> <li>Each set should be supplied with two internal battery packs</li> </ul> 7. Software Two types of software <ul> <li>a) for Static</li> <li>Permanent licence to be included ( protected by USB dongle)</li> </ul>	
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		. Must have at least 4 GB internal storage         . Optional external microSD storage         . Device should mount as a USB external hard drive         6. Power Supply         • Battery life: at least 5 hours in RTK mode         • Must have External power input option         • Each set should be supplied with two internal battery packs         7. Software         7 Not types of software         •       •	
		<ul> <li>Must have at least 4 GB internal storage</li> <li>Optional external microSD storage</li> <li>Device should mount as a USB external hard drive</li> <li>6. Power Supply <ul> <li>Battery life: at least 5 hours in RTK mode</li> <li>Must have External power input option</li> <li>Each set should be supplied with two internal battery packs</li> </ul> </li> <li>7. Software <ul> <li>Two types of software</li> <li>a) for Static</li> <li>Permanent licence to be included ( protected by USB dongle)</li> <li>Must be able to process raw data ( GPS L1&amp;L2, Glonas L1&amp;L2) from leading brands</li> <li>Must be able to define datums and compute varios trasformations</li> <li>Must be able to export/inport raw data to RINEX format and process the same. This feature must be inclusive of</li> </ul> </li> </ul>	
		. Must have at least 4 GB internal storage         . Optional external microSD storage         . Device should mount as a USB external hard drive         6. Power Supply         • Battery life: at least 5 hours in RTK mode         • Must have External power input option         • Each set should be supplied with two internal battery packs         7. Software         7. Software         a) for Static         • Permanent licence to be included ( protected by USB dongle)         • Must be able to process raw data ( GPS L1&L2, Glonas L1&L2) from leading brands         . Must be able to define datums and compute varios trasformations         . Must be able to export/inport raw data to RINEX format and process the same. This feature must be inclusive of the total cost         b) for RTK         Supplier should provide licence free field data collection software that has the following key survey operational features:-	
		Must have at least 4 GB internal storage     Optional external microSD storage     Device should mount as a USB external hard drive      G. Power Supply     Battery life: at least 5 hours in RTK mode     Must have External power input option     Each set should be supplied with two internal battery packs      Two types of software      a) for Static     Permanent licence to be included ( protected by USB dongle)     Must be able to process raw data ( GPS L1&L2, Glonas L1&L2) from leading brands     Must be able to define datums and compute varios trasformations     Must be able to do 3D adjustment     Must be able to a 3D adjustment     Must be able to export/inport raw data to RINEX format and process the same. This feature must be inclusive of the total cost      must provide licence free field data collection software that has the following key survey operational features:-     must provide functions for topo survey     must provide functions for topo survey	
		Must have at least 4 GB internal storage     Optional external microSD storage     Device should mount as a USB external hard drive      G.Power Supply     Battery life: at least 5 hours in RTK mode     Must have External power input option     Each set should be supplied with two internal battery packs      7. Software      Two types of software      a) for Static      Permanent licence to be included ( protected by USB dongle)     Must be able to process raw data ( GPS L1&L2, Glonas L1&L2) from leading brands     Must be able to a 3D adjustment     Must be able to do 3D adjustment     Must be able to a 3D adjustment     Must be able to a 3D adjustment     Must be able to export/inport raw data to RINEX format and process the same. This feature must be inclusive of the total cost      must provide licence free field data collection software that has the following key survey operational features:-     "must provide functions for topo survey     "must provide functions for topo survey	
		Must have at least 4 GB internal storage     Optional external microSD storage     Device should mount as a USB external hard drive      G. Power Supply     Battery life: at least 5 hours in RTK mode     Must have External power input option     Each set should be supplied with two internal battery packs      Two types of software      a) for Static     Permanent licence to be included ( protected by USB dongle)     Must be able to process raw data ( GPS L1&L2, Glonas L1&L2) from leading brands     Must be able to define datums and compute varios trasformations     Must be able to do 3D adjustment     Must be able to a 3D adjustment     Must be able to export/inport raw data to RINEX format and process the same. This feature must be inclusive of the total cost      must provide licence free field data collection software that has the following key survey operational features:-     must provide functions for topo survey     must provide functions for topo survey	