



## KENYA RURAL ROADS AUTHORITY

### ADDENDUM NO. 2

#### UPGRADING TO BITUMEN STANDARD, REHABILITATION, RECARPETING & GRAVELLING WORKS OF VARIOUS ROADS – LOT 6

Reference is made to the Tender Notice that appeared in the MyGov Edition Star Newspaper dated 13<sup>th</sup> January 2026, the Long Advert dated 28<sup>th</sup> January 2026 and Addendum No.1 dated 18<sup>th</sup> February, 2026.

Interested Applicants are requested to note the following clarification;

1. New Tender Documents shall be re-uploaded for the following roads to be accessed with effect from **25<sup>th</sup> February 2026.**

S/No.	Tender Number	Road Name
1.	RWC 875	Upgrading to Bitumen Standard of Enegetia – Olpusimorru Road
2.	RWC 877	Upgrading to Bitumen Standard of Gatura – Ngere – Karangi Road
3.	RWC 884	Upgrading to Bitumen Standard of Kapkatet – Boito – Kapset – Kaptien – Kapleleito – Kiptenden – Kapkoros – Kiplelji – Kapsimotwa – Kapkwen – Olbutyo – Siongiroi Road Project
4.	RWC 890	Upgrading to Bitumen Standard of Kieni Kiandege – Mworoga – Maraa Road (Phase II: Mworoga – Maraa)
5.	RWC 927	Upgrading to Bitumen Standard of Silibwet – Masese – Kiptagich Road
6.	RWC 929	Upgrading to Bitumen Standard of Suswa – Inkorionito – Nairragie – Enkare Road
7.	RWC 932	Upgrading to Bitumen Standard of Tendin - Kibigos – Makutano Road

2. The Tender Security Amount for **RWC 909: Upgrading to Bitumen Standard of Mount Kenya Mwiki Bridge – Kwangethe Primary School – Mwhoko Primary School Road** shall be **Kshs. 2,000,000.00.**
3. The Tender for **RWC 914: Upgrading To Bitumen Standard of Ngong (Kibiku) – Kangiria Road** shall have the following amendments:
  - **Appendices A, B and C** form part of the Bill of Quantities for and have been attached as **Annex 1.**
  - Quantities for **Bill Items 8.07 and 8.08** have been amended and attached as **Annex 2** and should be used in place of those attached in the tender document BOQ.
4. That Quantities for work under **Bills No. 15, 16 and 17** shall be applicable as captured in the tender document and form part of the scope of work under the **Special Specifications, Clause 102. Extent of Contract** in Tender **RWC 923: Upgrading to Bitumen Standard of Rianjeru – Rwika/ Gachuriri – Kiritiri.**
5. The Summary page in the Bill of Quantities for **RWC 926: Upgrading to Bitumen Standard of Sikusi – Mukhweya – Lurende – Katenya Junction Road** has been amended to include **Bill Item 21 for Miscellaneous Bridge Works** as captured under **Annex 3.**

6. **Clause 101** of the **Special Specifications** has been amended for the following project roads as below;

- **RWC 883:** Upgrading to Bitumen Standard of Kambi Mwanza - River Isiukhu – Kambiri – Mukhonje – Rondo Junction.

S/No.	Clarification and Amendment		
1.	The table with the traverse of the project road has been amended to read as follows: “...The road section is as shown below...”		
	S/No.	Link Name	Description of Works
	1	Kambi Mwanza - River Isiukhu – Kambiri – Mukhonje – Rondo Junction	New Construction
	<b>Total</b>		<b>27.0</b>

- **RWC 893:** Upgrading to Bitumen Standard of Kionyo – Kanyakine – Kithino.

S/No.	Clarification and Amendment		
2.	The table with the traverse of the project road has been amended from <b>27.0Km</b> to <b>24.0Km</b> . <b>Link 5 (Access to Gakondi Secondary School) has been removed</b> from this tender to read as follows:		
	S/No.	Road Section	Link Length (Km)
	1.	Kanyakine – Iruru – Igandene – Kionyo	1.3
	2.	Kanyakine – Iruru – Igandene – Kionyo	9.3
	3.	Kanyakine – Iruru – Igandene – Kionyo	0.5
	4.	Kanyakine – Mutiokiamama – Mitunguu	12.9
<b>Total</b>		<b>24.0</b>	

- The submission date remains as on or before 4<sup>th</sup> March, 2026 and 5<sup>th</sup> March, 2026 at 11:00AM as detailed in Addendum No. 1 dated 18<sup>th</sup> February, 2026.
- Interested Applicants are required to continually check the Authority’s website: [www.kerra.go.ke](http://www.kerra.go.ke) for any tender addendums or clarifications that may arise before submission date.
- Bidders with enquiries are encouraged to do so vide the email address [procurement@kerra.go.ke](mailto:procurement@kerra.go.ke).
- All other information pertaining to the tenders remains the same.

**Deputy Director (Supply Chain Management)**  
**For: DIRECTOR GENERAL**

**ANNEX 1 (Appendices A, B, C and D for RWC 914: Upgrading To Bitumen Standard of Ngong  
(Kibiku) – Kangiria Road)**

<b>APPENDIX TO BILL ITEM 1.05: APPENDIX A</b>					
<b>PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE (KSHS)</b>	<b>AMOUNT (KSHS)</b>
	<b>EQUIPMENT</b>				
	<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)</b>				
	2. General Equipment				
A104/2.02	2.49kg. Compaction hammer, drop regulated to 304.8mm	No	2		
A104/2.03	4.535kg compaction hammer drop regulated to 457.2mm	No	2		
A104/2.04	Electric vibrating Kango Hammer fitted with steel tamper(BS 1377) with support frame	No	1		
A104/2.05	Straight edge 300 mm long with handles	No	4		
A104/2.06	Steel Tamper (BS1377) compatible with Kango hammer	No	3		
A104/2.07	Compaction mould 152.4 mm. dia x 116.43 mm complete with base plate and extension collar, 101.6 mm	No	2		
A104/2.08	Galvanized metal tray 1m x 0.5m x 75 mm deep	No	4		
A104/2.09	75mm brush(4' N 2')	No	8		
A104/2.10	Semi-automatic balance, 25kg Capacity accurate to 1g, including weights	No	1		
A104/2.11	20mm BS Sieve, 300mm diameter	No	1		
A104/2.12	Stop Clock	No	2		
A104/2.13	Thermostatically controlled electric oven 105-1100C, capacity 0.225 m <sup>3</sup>	No	2		
A104/2.14	As above but gas heated	No	1		
A104/2.15	Moisture content tins, 75 mm dia, Cadmium or aluminium plated	No	60		
A104/2.16	Cone penetrometer with gauge and automatically controlled test cup	No	2		
<b>C/Forward to next page</b>					
<b>B/Forward From previous page</b>					
	3. Density (Sand replacement method BS 1377)				
A104/3.01	Metal containers 450mm diameter	No	2		
A104/3.02	Stainless steel tray 305mm diameter	No	2		
A104/3.03	Metal tray with 150 mm diameter hole in the centre, 300mmx300 mm square or equivalent area, 40mm deep	No	2		
A104/3.04	Metal tray with 200mm diameter hole in the centre, 500mm x 500 mm square , 50 mm deep	No	2		
A104/3.05	Steel pegs for fixing tray in position	No	12		
A104/3.06	Sand pouring cylinder, 150 mm diameter	No	2		
A104/3.07	Sand pouring cylinder, 215 mm diameter	No	2		
A104/3.08	Cold steel chisel 20mm x 300mmm	No	3		
A104/3.09	Cold steel chisel 10mm x 250mmm	No	4		
A104/3.10	3.5kbl hammer	Set	3		
A104/3.11	Serving spoons (small)	No	4		
A104/3.12	100mm brush, soft	No	3		
A104/3.13	75mm brush, soft	No	4		
A104/3.14	Primus gas stove	No	1		
A104/3.15	Calibrating can 150 mm diameter x 150 mm deep	No	3		
A104/3.16	Ditto but 200 mm diameter x 250 mm deep	No	3		
	6. Relative Density of Aggregates (BS 812)				
A104/6.01	Wire mesh basket with apertures not greater than 6.5 mm large enough to contain 2.5 kg of aggregate	No	2		
A104/6.02	A stout watertight container in which the basket can be freely suspended	No	2		

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A104/6.03	Soft absorbent cloth (tea towel)	No	10		
A104/6.04	Shallow tray of area not less than 0.065 m <sup>2</sup>	No	2		
A104/6.05	An airtight container of similar capacity to the basket	No	2		
A104/6.06	Pycnometer of 1 litre capacity	No	4		
A104/6.07	Semi automatic 5 kg balance accurate to 0.1g to be of size and type to permit the basket containing the sample to be suspended in water(to be supplied with weights)	No	1		
A104/6.08	Hot air drier (electric)	No	2		
	7. Flakiness (BS 812)				
A104/7.01	Thickness gauge (various sizes)	No	2		
	8. Sieve Analysis (BS 1377)				
A104/8.01	BS Sieve 300mm diameter in sizes 75, 63, 50, 37.5, 28, 20, 14, 10, 6.3, 5 and 4 mm, plus lid and receiver	Set	2		
A104/8.02	BS Sieve 200mm diameter in sizes 2, 1, 0.6, 0.5, 0.425, 0.300,0.150 and 0.075 mm, plus lid and receiver	Set	2		
A104/8.03	Electric sieve shaker	No	1		
A104/8.04	BS sieve 200mm diameter 0.425 and 0.075 mm	set	1		
A104/8.05	1 m x 1 m x 75mm deep galvanized metal tray	No	10		
A104/8.06	Riffle box with 50mm slots (BS 1377)	No	1		
	9. Miscellaneous Equipment				
A104/9.01	Wheel barrow	No	3		
A104/9.02	Dustpan and brush	No	3		
A104/9.03	Shovel	No	4		
A104/9.04	Pick axe with handle	No	4		
A104/9.05	Metal scoop, large (150mm wide)	No	3		
A104/9.06	Metal scoop, medium (100mm wide)	No	4		
A104/9.07	Garden trowel	No	2		
A104/9.08	Steel tray 0.3m x 0.3m x 0.01m deep	No	15		
A104/9.09	Palette knife 200mm long blade	No	3		
A104/9.10	Palette knife 100mm long blade	No	4		
A104/9.11	BS sieve 450mm diameter, 37.5mm	No	1		
A104/9.12	BS sieve 450mm diameter, 20mm	No	1		
A104/9.13	BS sieve 450mm diameter, 5mm	No	1		
A104/9.14	BS sieve 450mm diameter, 0.425mm	No	1		
A104/9.15	BS sieve 450mm diameter, 0.3mm	No	1		
A104/9.16	BS sieve 450mm diameter, 0.075mm	No	1		
A104/9.17	Set of lid and receiver for metal scoop and steel trays	No	2		
A104/9.18	BS Sieve brush	No	2		
A104/9.19	Measuring cylinder set, 25 ml, 100 ml, 500 ml, 1000 ml, 2000 ml	set	2		
A104/9.20	Glass jar capacity 5 litres with lid	No	10		
A104/9.21	200mm x 200mm x 20mm cadmium plated or aluminium tin	No	20		
A104/9.22	Electronic balance capacity 1000 g, accurate to 0.01gm.	No	1		
A104/9.23	Balance 2000 g capacity accuracy to 0.1g (manual), including weights	No	1		
A104/9.24	Balance 50kg capacity accurate to 10gm including weights	No	1		
A104/9.25	Still for producing distilled water	No	1		
A104/9.26	Polythene or glass 20 litres storage vessel with tap at bottom	No	2		
A104/9.27	Stiff broom	No	2		
A104/9.28	Vernier calipers, 150mm	No	2		
A104/9.29	Vernier calipers, 250mm	No	2		
A104/9.30	Pestle and mortar	No	2		

<b>APPENDIX TO BILL ITEM 1.05: APPENDIX A</b>					
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<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE (KSHS)</b>	<b>AMOUNT (KSHS)</b>
A104/9.31	Linear shrinkage mould (BS 1377)	No	6		
A104/9.32	Liquid Limit Device	No	2		
A104/9.33	Average least dimension gauge	No	2		
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	1		
A104/9.35	Plastic or metal bucket including lid,10 litres capacity	No	6		
A104/9.36	Polythene wash bottle (500 ml)	No	5		
A104/9.37	A4 size clipboard	No	4		
A104/9.38	Thermometer, range -10°C to150°C, glass (BS 593)	No	2		
A104/9.39	Laboratory thermometer, range + 0°C to + 250°C (BS 593)	No	2		
A104/9.40	Maximum and minimum thermometer (BS692)	No	2		
A104/9.41	Rain gauge	No	1		
A104/9.42	Portable dial thermometer + 50°C to +250°C accurate to ± 3%	No	1		
A104/9.43	Ditto with 0.75m long stem	No	1		
A104/9.44	Pocket thermometer + 50°C to +250°C accurate to ± 3% with 0.1 m stem	No	2		
A104/9.45	5 litre capacity steel storage containers with leak and dust proof lids for storage of bitumen samples	No	50		
A104/9.46	Hotplate 200mm diameter with Simmerstat heat control unit.	No	2		
A104/9.47	450mm diameter x 150mm deep metal mason's basin	No	6		
	10. Standard Specifications (Copies of each of the latest editions of the following Standards)				
A104/10.01	BS 598	No	1		
A104/10.02	BS 812	No	1		
A104/10.03	BS 882	No	1		
A104/10.04	BS 1377	No	1		
A104/10.05	BS 1881	No	1		
A104/10.06	BS 1924	No	1		
A104/10.07	Standard Specifications for Transportation Material and Methods of Sampling and Testing (AASHTO) Parts I and II, 14th Edition	Set	1		
A104/10.08	ASTM D1559	No	1		
A104/10.09	Asphalt Institute, Superpave Manual Series No.2(SP-2)	No	1		
A104/10.10	Overseas Road Note 19	No	1		
A104/10.11	BS 5911 Part 1 &3	No	1		
	11. Concrete: Slump and Cube Manufacture (BS 1881)				
A104/10.12	BS 4449	No	1		
A104/11.01	Slump cone, tamping rod and base	set	2		
A104/11.02	Concrete cube mould, 150mm cube	No	30		
A104/11.03	Soaking tank for cubes (capacity 50 No.)	No	1		
A104/11.04	Cube tamping bars	No	10		
	12. Concrete: Cube Compression Testing				
A104/12.01	Concrete compression machine to BS1610 Grade A with 300 mm gauge, rectangular platens, capacity 1560 kN with load spacer	No	1		
A104/12.02	Safety guard for above				
A104/12.03	50mm distance piece				
A104/12.04	70mm distance piece				

<b>APPENDIX TO BILL ITEM 1.05: APPENDIX A</b>					
<b>PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE (KSHS)</b>	<b>AMOUNT (KSHS)</b>
A104/12.05	Electro-mechanical load pacer, 100 mm or equivalent distance piece 13. Aggregate and Chippings				
A104/13.01	Sand equivalent to AASHTO T176 including graduated plastic cylinder, rubber stopper, irrigation tube weighted foot assembly, siphon assembly, 85ml tin box (57mm dia.), 100 mm dia wide mouth funnel, stop clock, mechanical shaker and 10 litre jar	Set	1		
A104/13.02	Beaker 250ml	No	2		
A104/13.03	Aggregate Crushing Value Apparatus, 150 mm nominal diameter , including plunger and base plate	No	2		
A104/13.04	Tamping rod and metal measure for above	Set	4		
A104/13.05	Los Angeles Abrasion to ASTM standards	No	1		
A104/13.06	Set of 12 abrasive charges	No	2		
A104/13.07	Thermometer, 0°C to +50°C	No	2		
A104/13.08	Thermometer, 0°C to +250°C	No	2		
A104/13.09	Reagent grade Silica gel, 500g container	No	50		
	14. Bitumen Spray Test (BS 1707)				
A104/14.1	Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent.	Set	1		
A104/14.02	Steel tray 20 mm deep x0.1m <sup>2</sup> (for measuring bitumen spray rates) with purpose made detachable handle 1.5m long.	No.	6		
	16. Bitumen Extraction Test				
	A) Extractor Bottle Method BS 598 Part 2				
A104/16.01	Electronic top pan balance 4kg capacity, sensitive to 0.1gm	No	1		
A104/16.02	Flat bottomed scoop	No	3		
A104/16.03	Steel garden trowel	No	2		
A104/16.04	Large steel spoon	No	2		
A104/16.05	Heat resistant gloves	pair	10		
A104/16.06	Foot pump for pressurising air water assemblies up to a maximum of 700KN/m <sup>2</sup> and fitted with flexible hose approximately 1.2m long and connector	No	2		
A104/16.07	Steel bottle 600ml capacity with 49mm rubber stopper	No	2		
A104/16.08	Steel bottle 2500ml capacity with 71mm rubber stopper	No	2		
A104/16.09	Steel bottle 7000ml capacity with 71mm rubber stopper	No	2		
A104/16.10	Flask funnel for fitting to the 700ml steel bottle with rim of funnel retaining sieve 200mm nominal diameter	No	2		
A104/16.11	Bottle roller compact bench mounted unit designed to rotate 2 bottles simultaneously about longitudinal axis	No	1		
A104/16.12	Pressure filter complete with cutting tool for making hole in the filter paper	No	1		
A104/16.13	Filter funnel to take 200mm nominal diameter sieves	No	2		
A104/16.14	Centrifuge complying with BS 598	No	1		
A104/16.15	Binder recovery	No	1		
A104/16.16	Volumetric flask 250ml, 500ml, 1000ml and 2000ml capacity	set	2		
A104/16.17	Recovery still for Dichloromethane	No	1		
	B) Hot Extractor Method BS 598 Part 2				
A104/16.18	Hot extractor complete with wire gauze container gasket, cork lid and support assembly	No	2		

<b>APPENDIX TO BILL ITEM 1.05: APPENDIX A</b>					
<b>PROVIDE AND MAINTAIN FURNITURE AND EQUIPMENT FOR THE ENGINEER'S LABORATORY</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE (KSHS)</b>	<b>AMOUNT (KSHS)</b>
A104/16.19	Dean and Stark receiver with condenser to suite Trichloroethylene		2		
A104/16.20	Gyratory compactor ELE Servo Pac or equivalent with 1 x 100mm and 1 x 150mm moulds	No	1		
A104/16.21	PRD Vibrating hammer compactor complete with 6 moulds, 7 base plates from ELE		1		
A104/16.22	Two (2) sets of Tamping foot 102mm diameter and 146mm diameter and shanks to fit the supplied vibratory hammer	No	1		
	17. Consumables				
A104/17.01	Paraffin wax	Kg	10		
A104/17.02	Gas	Kg	1600		
A104/17.03	Gunny sack	No	500		
A104/17.04	Plastic bag 900x450x1000 gauge	No	100		
A104/17.05	Plastic bag 450x300x1000 gauge	No	200		
A104/17.06	Filter paper 150mm diameter Whatman No. 5 (Boxes of 100)	No	2		
A104/17.07	Filter paper 400mm diameter Whatman No. 5 (Boxes of 100)	No	20		
A104/17.08	Filter paper 100mm diameter Whatman No. 5 (Boxes of 100)	No	1		
A104/17.09	Filter paper 400mm diameter Whatman No. 54 (Boxes of 100)	No	10		
A104/17.10	Filter paper 270mm diameter with 33 diameter hole at centre Whatman No. 5 (Boxes of 100)	No	15		
A104/17.11	Trichloroethylene 50 Litres	No	1		
A104/17.12	Dichloromethane	kg	0		
A104/17.13	Cotton waste	kg	50		
A104/17.14	Gas cylinders compatible with supplied stoves	No	10		
A104/17.15	Sodium sulphate	kg	45		
A104/17.16	Sand for density test	kg	250		
<b>C/Forward to item 1.05</b>					

<b>APPENDIX TO BILL ITEM 1.06 (APPENDIX B)</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE</b>	<b>AMOUNT (KSHS)</b>
<b>1. ENGINEER'S MAIN OFFICE AND FURNITURE</b>					
A102/1.01	<b>Executive desk 2.2x0.9 m with six lockup drawers</b>	No	2		
A102/1.02	Desk 2.2x0.9 m with chair and three lockup drawers	No	4		
A102/1.03	Office tables	No	3		
A102/1.04	Executive Swivel orthopedic chair adjustable height	No	2		
A102/1.05	Standard office chairs	No	8		
A102/1.06	Bench 3m long with cushioned backrest (located as directed)	No	1		
A102/1.07	Typist's desk	No	1		
A102/1.08	Typist's chair	No	3		
A102/1.09	Lockable steel stationery cupboard, 1.2 m <sup>3</sup> , lockable	No	4		
A102/1.10	Medium size steel filing cabinet, 4 drawers lockable	No	4		
A102/1.11	Medium size steel filing cabinet, 2 lockable drawers lockable	No	3		
A102/1.12	Bookshelf, 1.5 m wide 3 shelves (for box files) sliding glass door	No	3		
A102/1.13	Conference table with 12 chairs	No	1		
A102/1.14	Waste paper basket	No.	24		
A102/1.15	Curtains for office and laboratory -for all windows and doors	Set	2		
A102/1.16	Ordinary 2 hole paper punch	No	8		
A102/1.17	Heavy duty 2 hole paper punch	No	2		
A102/1.18	Set of full divided scale (metric 1/1000, 1/2500, 1/500, 1/2000, 1/1250,	No	4		
A102/1.19	Computer meeting the following specifications or equivalent: Personal computer with minimum 20" screen full multimedia, 1TB hard disk, 16.0GB RAM, Core i9 processor, complete with all accessories preloaded with latest versions of windows OS, MS Office, Professional and MS Project	No	3		
A102/1.20	Autocad Civil 3D 2025 and Licences for above computers	No	10		
A102/1.21	As A102/1.19 but with 15" screen	No	6		
A102/1.22	Laptop PC with Intel Core i9 Processor 15.4" screen, 16GB	No	2		
A102/1.23	Latest HP (A4) Laser Printer with accessories	No	6		
A102/1.24	Latest HP (A3) Laser Printer with accessories	No	1		
A102/1.25	UPS 600 VA	No	10		
A102/1.26	Wall clocks, battery powered min size 350mm x 350mm	No	4		
A102/1.27	Safe for cash and valuables minimum size approx. 0.8mx0.5mx0.4m to be concreted in place (wall/floor mounted) complete with lock and keys	No	1		
A102/1.28	First Aid Kit	No	4		
A102/1.29	Fire Extinguisher	No	4		
A102/1.30	Filing Tray - set of 3no.	set	10		
A102/1.31	Refrigerator minimum capacity 0.2 m3	No	1		
A102/1.32	Drinking water dispenser, hot/cold	No	2		
A102/1.33	Table - 0.8 m <sup>2</sup> surface area	No	1		
A102/1.34	Cupboard, 0.15 m <sup>3</sup> , lockable	No	1		
A102/1.35	Cooker 4 plate electric cooker with oven and grill	No	1		

<b>APPENDIX TO BILL ITEM 1.06 (APPENDIX B)</b>					
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE</b>	<b>AMOUNT (KSHS)</b>
A102/1.36	A3 Photocopier (approved make), with feeder sorting trays, scanner and print capability	No	1		
A102/1.37	Reams of A4 photocopying paper	No	100		
A102/1.38	Reams of A3 photocopying paper	No	20		
A102/1.39	Electronic scientific calculator, Casio fx 992s or equivalent approved	No	10		
A102/1.40	Stapling machine Ofrex size 50 or similar with 5000 staples	No	10		
A102/1.41	Heavy duty punch and spiral binder, IBICO AG or similar approved	No	2		
A102/1.42	Inkjet Plain Paper Fax Machine with 4MB of memory	No	1		
A102/1.43	Pencil sharpener (desk mounted type)	No	10		
A102/1.44	Digital Camera, 20 Megapixel(min), 1920x1080 full HD movie recording, optical steady Shot, sweep panorama, 2.7" LCD screen, minimum 5x digital zoom, multimedia card/SD 8GB memory, 12 scene selection modes, all inclusive.	No	2		
A102/1.45	Provision of mobile phones for supervision team with the latest android version to the approval of the Engineer.	item.	8		
<b>Total carried to Bill No. 1, Item 1.06</b>					

APPENDIX C					
APPENDIX TO BILL ITEM 1.06 ENGINEERS'S SURVEY EQUIPMENT					
ITEM		UNIT	QTY	RATE	AMOUNT (KSHS)
1.01	Digital Total Station <u>reading to 1"accuracy (one second)</u> with the following facilities	No.	1		
	· Inbuilt data logger				
	· Uploading/downloading software				
	· Data transfer cable				
	· Battery (2No)				
	· Battery charger				
	· Tool kit				
	· Two face keyboard				
	· User manual				
	It must have the following inbuilt survey programs as a minimum				
· Traverse					
· Cogo					
1.02	The following mandatory total station accessories must be included per Total station instrument				
a)	1No. Heavy duty telescopic tripod( <i>preferably wooden</i> )	No.	1		
b)	Telescopic plumbing prism pole complete with a prism and prism holder with target and plumbing bubble ( <i>length not less than 2.15m</i> )	No.	3		
c)	Triple prism holder set, in a casing, comprising triple prisms, prisms holder with target, tribrach and a tribrach adaptor	No.	1		
d)	Survey umbrella	No.	1		
e)	1No. Telescopic Tripod	No.	1		
1.03	Engineer's Automatic Level Wild NAK 2 or similar with a tripod and the following specifications:-	No.	2		
	· Accuracy of 0.7 mm per 1 km double run				
	· Standard magnification of: 32x				
	· Shortest focusing distance of 1.6m				
	· Compensator setting accuracy of 0.3"				
1.04	Hand held GPS with accuracy of 1 Metre	No.	1		
1.05	Set of two way radio communication with a range of 1 kilometer	set.	1		
1.06	5 M Leveling staff with leveling bubble	No.	4		
1.07	3 M Ranging Rods	No.	10		
1.08	Scientific Calculators FX 912ms or equivalent	No.	3		
1.09	50m. Linen Measuring Tape	No.	6		
1.10	1 M stainless steel straight edge	No.	1		
1.11	3 m tape measure	No.	6		
1.12	Sledge hammer 2kg weight	No.	2		
1.13	Mattock	No.	2		
1.14	Pangas (16'')	No.	10		
1.15	Marker Pens	No.	20		
1.16	Levelling Survey books	No.	100		
1.17	Reflector Jacts	No.	30		
1.18	Provision of Geodetic GNSS receivers comprising of one base and two rovers as per the specifications in Appendix D	No.	1		
<b>Total carried to Bill Item 1.06B</b>					

		APPENDIX D
S/No.	Item Description	GEODETIC GLOBAL NAVIGATION SATELLITE SYSTEM SPECIFICATIONS (GNSS)
1	Geodetic GNSS Receivers	<p><b>General Characteristics</b></p> <p>Geodetic Set enabled for both Static and RTK functions with respective supporting software and accessories</p> <hr/> <p><b>Specific Specifications</b></p> <p><b>1. Channels:</b> At least 120 enabled for simultaneous signal tracking</p> <hr/> <p><b>2. Reception</b></p> <p>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 <b>Note: Should be configured to receive new and upcoming constellations (if any)</b></p> <hr/> <p><b>2. Accuracy :</b></p> <hr/> <p><b>Real Time Kinematics (RTK)</b> Horizontal: 8 mm + 1 ppm RMS Vertical: 15 mm + 1 ppm RMS Initialization time: typically &lt; 5 s - Initialisation reliability &gt;99.9%</p> <p><b>Post Processing Static</b> Horizontal: 3 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS Baseline Length: ≤ 80 km</p> <hr/> <p><b>3. Special functionalities</b></p> <hr/> <p><b>Extended RTK range - base setup</b> - the base receiver to be able to stream RTK data via integrated GSM modem and to support upto 10 rovers simultaneously - the base to provide WiFi hotspot functionality for better control/setup of the receiver - the base to provide web interface functionality via any smart phone, tablet or computer - the base to provide NTRIP caster and dyndns functions</p> <hr/> <p><b>Increased reliability - rover setup</b> - the rover to provide a mode for better performance under difficult condtions (close to buildings, trees and urban areas) - the rover to be able to connect to any CORS GNSS networks or Single stations via internet</p> <hr/> <p><b>4. Communications</b></p> <p><b>a) I/O</b></p> <ul style="list-style-type: none"> <li>· 2x TNC connector ( 1 for UMTS antenna and 1 for UHF antenna)</li> <li>· 2x LEMO</li> <li>· 1x high speed USB</li> <li>· Integrated GSM/GPRS modem</li> <li>· Integrated Bluetooth class 2</li> <li>· Optional radio modem (2): Internal Rx/Tx: 403473 MHz External Radio: 1W 35W adjustable (at least 12Km range)</li> <li>· Should be configured to log into any upcoming CORS protocol</li> <li>· Should be enabled to use SIM card</li> </ul> <hr/> <p><b>b) Radio Transmission Protocols (RTK)</b> RTCM2.1, RTCM2.3, RTCM3.0, CMR, CMR+ input and output NMEA0183 output</p>

		<b>5. Data Storage:</b>
		· Must be able to store raw data
		· Must have at least 4 GB internal storage
		· Optional external microSD storage
		· Device should mount as a USB external hard drive
		<b>6. Power Supply</b>
		· 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
		<b>7. Software</b>
		<b>Two types of software</b>
		<b>a) for Static</b>
		· Permanent licence to be included ( protected by USB dongle)
		· Must be able to process raw data ( GPS L1&L2, Glonass L1&L2) from leading brands
		· Must be able to define datums and compute various transformations
		· Must be able to do 3D adjustment
		· Must be able to export/import raw data to RINEX format and process the same. This feature must be inclusive of the total cost
		<b>b) for RTK</b>
		Supplier should 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 stakeout
		▪Operating platform - Windows Mobile 6.5 or equivalent
		<b>8. Sourcing</b>
		The equipment must be sourced from manufacturer's authorized dealers in Kenya who must be capable of training users and commissioning the equipment for full use.
		<b>9. Warranty</b>
		Minimum of One year

**ANNEX 2 (RWC 914: Upgrading To Bitumen Standard of Ngong (Kibiku) – Kangiria Road)**

**Upgrading To Bitumen Standard of Ngong (Kibiku) – Kangiria Road**

**RWC 914**

**BILL NO. 8. CULVERTS AND DRAINAGE WORKS**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>QTY</b>	<b>RATE</b>	<b>AMOUNT (KSHS)</b>
8.07	Provide, lay and joint 1200mm dia. concrete pipes (precast to BS 5911 Parts 1 & 3) for cross culverts	m	160		
8.08	Provide and place class 15/20 concrete to beds, surround and haunches	m <sup>3</sup>	1,200		

**ANNEX 3 (RWC 926: Upgrading to Bitumen Standard of Sikusi – Mukhweya – Lurende – Katenya Junction Road)**

<b>BILLS OF QUANTITIES FOR UPGRADING TO BITUMEN STANDARD OF SIKUSI - MUKHWEYA - LURENDE-KATENYA JUNCTION ROAD RWC 926</b>		
<b>SUMMARY OF BILLS OF QUANTITIES</b>		
<b>BILL ITEM</b>	<b>DESCRIPTION</b>	<b>AMOUNT (Kshs)</b>
1	Preliminaries and General Items	
4	Site Clearance and Top soil stripping	
5	Earthworks	
7	Excavation and Filling for Structures	
8	Culvert and Drainage Works	
9	Passage of Traffic	
12	Natural Material Base and Subbase	
14	Cement and Lime Treated Material	
15	Bituminous Surface Treatment and Surface Dressing	
16	Bituminous Mixes	
17	Concrete Works	
20	Road Furniture	
21	Miscellaneous Bridge Works	
22	Schedule of Dayworks	
25	HIV/AIDS, Gender & Social Issues, Local Participation	
26	Relocation of Services	
<b>A.</b>	<b>Sub-Total (1)</b>	
B.	Add 5% Variation of Price On Sub-Total 1	
C.	Add 5% Contingency on Sub-Total 1	
<b>D.</b>	<b>Sub-Total (2) = (A + B + C)</b>	
E.	Add 0.03% PPCBL on Sub-Total 2	
F.	Add .....16% VAT of sub-total (2)	
<b>TOTAL (D+E+F)</b>		