REPUBLIC OF KENYA



# MINISTRY OF PUBLIC WORKS

# DETAILED DESIGN STUDY

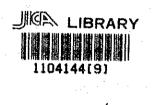
ON

# THE NAIROBI BYPASS PROJECT

# COST ESTIMATE

SEPTEMBER 1992

Japan International Cooperation Agency The Permanent Secretary Ministry of Public Works P.O.Box 30260 NAIROBI The Chief Engineer (Roads) Ministry of Public Works P.O.Box 30260 NAIROBI



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## **AUGUST 1992**

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# CONTENTS

1. GENERAL	1
2. BASIC CONDITIONS	1
3. CONSTITUTION OF CONSTRUCTION COST	2
4. DIRECT CONSTRUCTION COST	3
5. INDIRECT COST	4
5.1 Land Acquisition and Compensation	4
5.2 Engineering Services	5
5.3 Contingency	5
6. CONSTRUCTION COST	5
7. ANNUAL DISBURSEMENT SCHEDULE	6
8. CONSTRUCTION COST (VAT EXEMPTION)	6

.

### TABLE

:			Page
· .	Table 4.1	Labor Cost	T-1
•	Table 4.2	Material Cost	T-3
	Table 4.3	Equipment Cost	T-6
•	Table 6.1	Summary of Construction Cost (1)	T-9
	Table 6.2	Summary of Construction Cost (2)	T-10
· · · ·	Table 7.1	Annual Disbursement Schedule	T-11
	Table 8.1	Summary of Construction Cost (1)	T-12
	Table 8.2	Summary of Construction Cost (2)	T-13
	Table 8.3	Annual Disbursement Schedule	T-14
	an a		

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## APPENDIX

APPENDIX A	DETAILED DIREST CONSTRUCTION COST
APPENDIX B	DETAILED DIRECT CONSTRUCTION COST (VAT EXEMPTION)
	DETAILED DIRECT CONSTRUCTION COST (FC, LC and VAT) FURNITURE AND EQUIPMENT FOR THE ENGINEER'S OFFICE (GENEI
APPENDIX E	SURVEY AND LABORATORY EQUIPMENT (GENERAL 1.05)
APPENDIX F	EXTERNAL LABORATORY TEST (GENERAL )
APPENDIX G	ENGINEERING SERVICES
APPENDIX H	LAND ACQUISITION AND COMPENSATION
APPENDIX I	UNIT PRICE LIST

APPENDIX J UNIT PRICE BREAKDOWN

## GENERAL

1.

This Report presents the construction cost for the implementation of the Nairobi Bypass Project. The construction cost of the project is estimated as follows with February 1992 prices.

Foreign Currency	:	K.Shs.	868.42 x 10 <sup>6</sup>
Local Currency	:	K.Shs.	766.02 x 10 <sup>6</sup>
Total (Equivalent to)	:	K.Shs.	1,634.44 x 10 <sup>6</sup>
		(1	U.S.S 56.36 x 10 <sup>6</sup> )
			(Yen 7,159 x 10 <sup>6</sup> )

The construction cost of the project is estimated on the basis of the detailed design and the proposed construction plan and schedule. In order to attain an accurate cost estimate, an unit price estimate method is mainly applied for each work. Furthermore, the estimate procedures and the breakdown are applied taking into account a recent tender system and a financial source.

The unit prices are estimated and analysed on the basis of local conditions, the proposed construction method, accurate unit rate of labor rate, material cost and equipment cost, and the cost data referring to the recent tender prices on the similar project.

## BASIC CONDITIONS

2.

The basic conditions and assumptions applied for the cost estimate are presented below:

- The unit prices and rates are based on the current prices for labor, material and equipment as of February 1992.

- The estimated cost is composed of a foreign currency portion and a local currency portion expressed in Kenya Shilling. The total amount is converted into U.S. Dollar and Japanese Yen as an equivalent price.

The exchange rate are employed in consideration of the prevailing exchange rate in February 1992. The exchange rate used in this cost estimate is as follows:

U.S. 1.0 = Yen 127 = K.Shs. 29.0 (1 K.Shs. = 4.38 Yen)

- 1 -

- The work quantities are calculated from the detailed design drawings and the technical specifications of the tender documents. The work quantities are shown in APPENDIX A.
- The construction works will be carried out by a contractor selected through an international competitive bidding in accordance with a guideline of the financial source.

## 3. CONSTITUTION OF CONSTRUCTION COST

The construction cost consists of a direct cost and an indirect cost. The direct construction cost is estimated based on the work items and quantities derived from the detailed design. This cost includes the labor cost, material cost, equipment cost and contractor's indirect cost such as overhead and profit. The direct construction cost is estimated in the priced Bill of Quantities as shown in APPENDIX A.

The work items for the direct cost cover the following items:

No. 1 General

No. 2 Site clearance and topsoil stripping

No. 5 Earthworks

No. 7 Excavation and filling for structures

No. 8 Culverts and drainage works

No. 9 Passage of traffic

No.10 Gravel wearing course

No.13 Graded crushed stone subbase and base

No.14A Lean concrete

No.15 Bituminous surface treatment and surface dressing

No.16 Bituminous wearing course

No.17 Concrete works

No.20 Road furniture

No.21 Miscellaneous

No.22 Daywork

No.23 Piling

While, the indirect cost includes the costs for land acquisition and compensation, engineering services, physical contingency and price escalation.

## DIRECT CONSTRUCTION COST

The direct construction cost is estimated by adopting unit prices and lump sum costs, which include labor cost, material cost and equipment cost. The contractor's indirect cost consisting of overhead expenses and profit is included in the unit price of each work item. The main components of the cost are described as follow:

(1) Labor Cost

4.

All the labors required for the construction are assumed to be local labors. The direct daily wages in 8-hour shift of labor applied to the cost estimate are based on the wages obtained in Nairobi. The applied labor cost is shown in Table 4.1.

## (2) Material Cost

Most of the construction materials are to be supplied by contractors mainly from local markets. Major local materials employed in the cost estimate are cement, fuel, gasoline, reinforcement bar, asphalt bitumen, structural steel, explosives, timber, plywood, etc. The material prices of the above items are canvassed in Nairobi. The material prices are assumed to be purchased price at site including inland transportation expenses from the markets. The local material prices are divided into foreign and local portions. The local materials include Value Added Tax (VAT).

While, imported material costs for steel pipe pile, consumable goods of drilling and concrete works, etc. are estimated referring to the prevailing prices in Japan. These costs are estimated on the basis of CIF price at Mombasa including freight and insurance premium. The CIF price is estimated in foreign currency. The cost of handling charge at port and inland transportation expenses from Mombasa to the site are included in the material price and estimated in local currency. The imported materials are exempted from import duties and VAT. The material cost is shown in Table 4.2.

(3) Equipment Cost

The construction equipment and plant will be provided by a contractor. The prices of equipment are prevailing prices in Japan on February 1992. The equipment cost is estimated based on the CIF price at Mombasa. The import duties and taxes for equipment are excluded in

this cost estimate according to the re-export conditions after the completion of the project. The equipment cost is divided into foreign and local currency portions. The foreign currency portion includes mainly depreciation cost, spare parts and consumable cost, while the local portion includes the cost of mechanic labor cost for the repair and maintenance and administration expenses. The equipment cost is listed in Table 4.3.

(4) Contractor's Indirect Cost

The overhead and profit is distributed to the unit prices and lump sum of each work item. These expenses are estimated at 15% of direct unit cost comprising labor cost, material cost and equipment cost.

(5) Direct Construction Cost

The unit prices for various work items in the Bill of Quantities are estimated in accordance with the above conditions. The unit prices are as shown in APPENDIX I and APPENDIX J.

The direct construction cost of the project is estimated at K.Shs. 1,055.64 million in total, comprising K.Shs. 664.60 million in foreign currency (63.0%) and K.Shs. 391.04 million in local currency (37.0%)

#### INDIRECT COST

5.1

5.

Land Acquisition and Compensation

All required land acquisition and compensation shall be acquired by the Ministry of Public Works in accordance with the project implementation schedule. This cost is estimated based on the information such as land value and housing value obtained from the Ministry of Lands and Housings.

The cost for land acquisition and compensation is estimated at K.Shs. 132.40 million. However, this cost will be actually estimated on the financial arrangement stage between the Commissioner of Lands and Housing and the Ministry of Public Works.

- 4 -

#### 5.2 Engineering Services

The cost of consulting services for the construction supervision is estimated referring to assumed man-month (Expatriate 90 M/M, Local 82 M/M). The engineering services cost includes remuneration, direct cost and contingency.

Contingency

5.3

6.

The contingency is provided to cope with unforeseen physical conditions and price escalation due to inflation. The physical contingency amounting to 10 percent of the direct construction cost is applied for both foreign and local portions.

The price escalation is estimated by applying the inflation rate of 2 percent per annum for foreign currency portion and 10 percent per annum for local currency portion. These escalation rate are referred to "International Finance Statistics, 1992", "Economic Survey, 1991" and "Statistical Abstract". The cost of price escalation is estimated over 2.5 years from Mid 1994 on the basis of expected disbursement schedule. The land acquisition and compensation will be performed from 1993 to 1994.

## CONSTRUCTION COST

The construction cost of the project is estimated at K.Shs. 1,634.44 million in total, comprising K.Shs. 868.42 million for foreign currency portion (53.1%) and K.Shs. 766.02 million for local currency portion (46.9%).

The construction cost is summarized as follows and as tabulated in Table 6.1 and Table 6.2.

- 5 -

	Foreign	Local Currency	Total	Total (Mill USS or J. Yen
	Currency (Mill K.Shs.)	(Mill K.Shs.)	(Mill K.Shs.)	in equivalent)
1. Direct Construction Cost	664.60	391.04	1,055.64	USS 36.40
	(63.0%)	(37.0%)		Yen 4,624
2. Land Acquisition and Compensation	0.00	132.40	132.40	
3. Engineering Services	79.06	8.37	87,43	
4. Physical Contingency	66.46	39.11	105.37	
Total	810.12	570.92	1,381.04	USS 47.62
				Yen 6,049
5. Price Escalation	58.30	195.10	253.40	
Grand Total	868.42	766.02	1,634.44	USS 56.36
	(53.1%)	(46.9%)		Yen 7,159

#### 7.

## ANNUAL DISBURSEMENT SCHEDULE

The annual disbursement schedule is estimated according to the construction schedule and summarized below. The disbursement schedule of the construction cost is tabulated in Table 7.1.

	Foreign Currency	Local Currency	Total
	(Mill K.Shs.)	(Mill K.Shs.)	(Mill K.Shs)
- 1st Year (1993)	0.00	76.46	76.46
1st Year (1994)	239.63	299.42	539.05
2nd Year (1995)	378.73	234.54	613.27
3rd Year (1996)	250.06	155.60	405.66
Total	868.42	766.02	1,634.44

#### 8.

## CONSTRUCTION COST (VAT EXEMPTION)

The construction cost is estimated in case VAT-exemption conditions for local materials. The construction cost and the annual disbursement are summarized below and tabulated in Table 8.1 to Table 8.3.

The breakdown of direct construction cost is shown in APPENDIX B.

					•
		Foreign Currency	Local Currency	Total	Total (Mill USS or J. Yen
		(Mill K.Shs.)	(Mill K.Shs.)	(Mill K,Shs.)	in equivalent)
1. Ľ	Direct Construction Cost	664.60	306.94	971.54	USS 33.50
		(68.4%)	(31.6%)		Yen 4,255
	and Acquisition and Compensation	0.00	132.40	132.40	
3.E	ingincering Services	79.06	8.37	87.43	
4. F	hysical Contingency	66.46	30.69	97.15	
	Total (1 to 4)	810.12	478.40	1,288.52	USS 44.43
		en e			Yen 5,644
5. F	rice Escalation	58.30	157.19	215.49	
-	Grand Total	868.42	635.59	1,504.01	USS 51.86
- - -		(57.7%)	(42.3%)	· · · ·	Yen 6,588
		and the second second			

# Annual Disbursement

	Foreign	Local Currency	Total
	Currency (Mill K.Shs.)	(Mill K.Shs.)	(Mill K.Shs)
1st Year (1993)	0.00	76.46	76.46
1st Year (1994)	239.63	269.53	509.16
2nd Year (1995)	378.73	179.33	558.06
3rd Year (1996)	250.06	110.27	360.33
Total	868.42	635.59	1,504.01

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TABLE

Table 4.1 Labor Cost (1/2)

		*******
Description	Unit	Wage Rate Kshs.
		**-*
Foreman	M.D.	199
Skilled labor, III	N.D.	142
Skilled labor, II	H.D.	157
Skilled labor,I	M.D.	185
Unskilled labor	M.D.	114
Operator,light	M.D.	132
Operator, heavy	M.D.	189
Assist operator	N.D.	125
Driver, truck	N.D.	143
Driver,vehicle	M.D.	133
Electrician	N.D.	192
Assist electrician	M.D.	141
Mechanic	M.D.	193
Assist mechanic	M.D.	142
Carpenter/Formworker, III	H.D.	143
Carpenter/Formworker,11	M.D.	158
Carpenter/Formworker,1	H.D.	186
Concrete worker	M.D.	142
Steel worker	M.D.	158
Masonry	M.D.	158
Asphalt paver	M.D.	142
Driller	N.D.	158
Blaster	M.D.	186

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	Annual Leave Trav Sick Tool Other Mont Leave Allowance Leave Allowance Allowance Tota	
r Cost	⊶	
l Labo	Sunday Annual Working Leave	
Table 4.1 Labor Cost (2/2)	Overtime te	
	House Allowanc	
	Monthly	
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y	44	8	73	61	11	26	ខេ	57	66	36 96	15	66	8	55	42.	28	16	87	84 .	06	87	84	94
Daily Fage	 199	141.	156	184.61	1.4	132	188.	124	142	132.	192.	140	193.	141.	143	158	186.	141	157.	158.	141	157.	185.
Monthly Total	5,185.55	3,658.68	4,075.01	4,799.93	2,968.30	3,438.71	4,904.47	3,238.73	3, 709, 13	3,456.89	4,995.78	3 657 28	5,018.78	3,680.28	3,728.93	4,115.26	4,840.18	3,688.68	4,103.76	4,109.51	3,688.68	4,103.76	4,834.43
Other Allowance	584.80	420.12	464.32	547.26	337.70	391.52	559.22	368.64	422.46	393.60	565.72	412.58	565.72	412.58	420.12	464.32	547.26	420.12	464.32	464.32	420.12	464.32	547.26
Tool Allowance				0.00				···				-			-		-		-	-			
Sick Leave	 609.17	437.63	483.67	570.06	351.77	407.83	582.52	384.00	440.06	410.00	589.29	429.77	589.29	429.77	437.63	483.67	570.06	437.63	483.67	483.67	437.63	483.67	570.06
Leave Trav Allowance	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67	16.67
Annual Leave	243.67	175.05	193.47	228.03	140.71	163.13	233.01	153.60	176.03	164.00	235.72	171 91	235.72	171.91	175.05	193.47	228.03	175.05	193.47	193.47	175.05	193.47	228.03
Sunday Working	479.84	344.71	380.98	449.03	277.09	321.25	458.85	302.47	346.63	322.95	464.18	338.53	464.18	338.53	344.71	380.98	449.03	344.71	380.98	380.98	344.71	380.98	449.03
Overtime	269.91	193.90	214.30	252.58	155.86	180.70	258.10	170.14	194.98	181.66	261.10	190.42	261.10	190.42	193.90	214.30	252.58	193.90	214.30	214.30	193,90	214.30	252.58
House Allowance	376.00	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50	336.50
Monthly	2,548.00	1,764.10	1,985.10	2,399.80	1,352.00	1,621.10	2,459,60	1,506.70	1,775.80	1,631.50	2,492.10	1,726.40	2,492.10	1,726.40	1,764.10	1,985.10	2,399.80	1,764.10	1,985.10	1,985.10	1,764.10	1,985.10	2,399.80
Minimum Wage(Day)	98.00	67.85	76.35	92.30	52.00	62.35	94.60	57.95	68.30	62.75	95.85	66.40	95.85	66.40	67.85	76.35	92.30	67.85	76.35	76.35	67.85	76.35	92.30
Description	Foreman	Skilled labor, III	Skilled labor, II	Skilled labor, I	Unskilled labor	Operator, light	Operator, heavy	Assist.operator	Driver, truck	Driver, vehicle	Electrician	Assist.electrician	Mechanic	Assist.mechanic	Carpenter, III	Carpenter, II	Carpenter, I	Concrete worker	Steel worker	Masonry	Asphalt paver	Driller	Blasterer

T-2

Table 4.2 Material Cost (1/3)

(Unit:Kshs.)

Description	Unit	F.C.	L.C. (Excl.VAT)	Total (Excl.VAT)	Valu Added Tax	Total (Incl.VAT)
ement(Athi River)	ton	1,718.96	978.48	2,697.44		3,100.24
ement(Bamburi)	ton	1,773.22	1,009.37	2,782.59	319.32	3,101.91
ight oil	litre	6,83	0.59	7.42	4.02	11.44
soline	litre	7.70	0.81	8.51	6.44	
avy oil	litre	6.58	0.13	6.71	2.73	9.44
	litre	25.49	2.30	27.79	4.17	31.96
bricant			1.24			
ease	kg	35.26		36.50	2.73	39.23
tuain 80/100	ton	6,778.05	256.56	7,034.61	2,351.65	
tumin 80/100	kg	6.78	0.26	7.04	2.35	9.39
tumin MC30,MC70,drum	litre	15.50	0.31	15.81	2.79	
tumin KL70,drum	litre	15.50	0.31	15.81	2.79	
t-back bit NC3000,drum		17.80	0.36	18.16	3.20	
tumin KL60,drum	litre	10.95	0.22	11.17	1.97	13.14
inforcement, round						
More than 16 💵	ton	8,928.00	•			
Equal.less.16 mm	ton	9,490.00	5,402.00	14,892.00	2,628.00	17,520.00
inforcement, twist.high						
More than 16 mm	ton	9,620.00	5,476.00	15,096.00	2,664.00	17,760.00
Equal.less.16 mm	ton	9,880.00	5,624.00	15,504.00	2,736.00	18,240.00
plosive	kg	125.60	39.25	164.85	28.26	193.11
tonator,s/delay	No	64.00	20.00	84.00	14.40	98.40
ad wire	19	1.51	0.08	1.59	0.00	1.59
FO	kg	18.00		18.90	0.00	18.90
iber, square	n3	0.00	4,284.00		756.00	5,040.00
iber,plain	<b>a</b> 3	0.00	4,284.00		756.00	5,040.00
wood		7,000.00	7,280.00		2,520.00	
-	kg	15.60		24.48	4.32	28.80
re			6.29	17.34	3.06	20.40
il , ,	kg	11.05			0.38	2.52
rbed wire	<b>6</b>	1.37				
annel steel	ton	10,530.00	5,994.00		2,916.00	
gle steel 8mm	ton	9,360.00			2,592.00	
gle steel 10mm	ton	10,075.00	5,735.00		2,790.00	
ncrete pipe,300mm	8	147.50	162.25	309.75	53.10	362.85
ncrete pipe,600mm	1	466.00	512.60		167.76	
ncrete pipe,750mm	Q	722.50	794.75	1,517.25	260.10	1,777.35
ncrete pipe,900mm	ß	905.50	996.05	1,901.55	325.50	2,227.05
ncrete pipe,1200am	Ø	1,479.00	1,626.90	3,105.90	532.44	3,638.34
mber,log	<b>m</b> 3	0.00	2,142.00	2,142.00	378.00	2,520.00
int	kg	47.70	2.39		0.00	50.09
C pipe,50mm,VP	0	83.30	4.17	87.47	0.00	
C pipe,50mm,VU	1	39.27	1.96	41.23	0.00	41.23
pipe,75mm,VP	11	163.00	8.15	171.15	0.00	171.15
pipe,75mm,VU	 D	80.36	4.02	84.38	0.00	
C pipe,100mm,VP	n D	241.00	12.05	253.05	0.00	
C pipe,100am,VU	u D	121.00	6.05	127.05	0.00	
/C pipe,150mm,VP		0.00		0.00	0.00	
	11 m	463.00	23.15	486.15	0.00	
VC pipe,150mm,VU	0	403.00	34.75	729.75	0.00	
VC pipe,200mm,VP VC pipe,200mm,VU	มี -	695.00 464.00	23.20	487.20	0.00	
orno "Willing III	4	ana [[[]	4.5 AU	467.70	0.00	407.60

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Concrete aggregate n3 342.00 92.41 434.41 29.71 464. Sand n3 201.60 134.40 336.00 60.48 336. Graded crushed stone n3 342.00 92.41 434.41 29.71 464. Chipping, sealing n3 335.79 95.60 449.33 30.74 480. Stone dust ton 235.86 63.73 289.59 20.49 320. Rubble, cobble n3 256.50 69.31 325.81 22.28 348. Gabion rock n3 256.50 69.31 325.81 22.28 348. Stone pitching n4 2483.00 144.15 2,397.15 0.00 2,397. Shank rod N0 6,849.00 342.45 7,181.45 0.00 7,191. Cross it,36am N0 1,828.00 91.30 1,917.30 0.00 1,917. Taper rod,22am N0 2,283.00 114.15 2,397.15 0.00 2,277. Metal form,300x1500 N0 653.00 92.655 65 0.00 633. PVC waterstop,200m s2 422.00 21.10 443.10 0.00 443. PVC waterstop,200m s2 422.00 21.10 443.10 0.00 343. PVC waterstop,200m s2 422.00 21.10 443.10 0.00 443. PVC waterstop,200m s2 422.00 33.14 65.94 0.00 32.95 Cabion box,2xximxim box 421.20 33.76 660.96 1.123. Mater reduce gent Ng 62.80 3.14 65.94 0.00 65. Pipo support N0 666.00 3.3.00 699.30 0.00 699. Scaffolding,pipe No 161.00 8.05 169.05 0.00 169. Gabion box,2xximxim box 421.20 233.76 660.96 115.60 1.134 75. Metal form of 22x1mxim box 421.20 233.76 660.96 116.64 177. Mattres,6xxXmXim box 41.127.233.76 660.96 116.64 177. Mattres,6xxXmXim box 41.10 0.00 44.00 84.00 14.40 98. Channel intake block 1125x250.905m pc 10.00 44.00 84.00 14.40 98. Channel intake block 11.157.00 136.00 26.76 39. Flush kerb,150x100x915 pc 25.20 27.72 52.92 9.07 61. Plusi kerb,150x100x915 pc 25.20 27.72 52.92 9.07 61. Plusi kerb,150x100x915 pc 25.00 60.50 115.50 19.80 135. T50x4355x10m pc 16.00 17.60 33.60 5.76 39. Flush kerb,150x100x915 pc 25.00 60.50 115.50 19.80 135. T50x4355x10m pc 16.00 17.60 33.60 5.76 39. Flush kerb,150x100x915 pc 25.20 27.72 52.92 9.07 61. Plusi kerb,150x100x915 pc 25.20 27.72 52.92 9.07 61. Plusi kerb,150x100x915 pc 25.00 60.50 115.50 19.80 13	:			N ~				
Concrete aggregate a3 342.00 92.41 434.41 29.71 464. Sand a 300.00 60.48 336. Graded crushed stone a3 342.00 92.41 434.41 29.71 464. Chipping,sealing a3 353.79 95.60 449.33 30.74 480. Stone dust ton 235.86 63.73 299.59 20.49 320. Rubble,cobble a3 256.50 69.31 325.81 22.28 348. Gabion rock a3 256.50 69.31 325.81 22.28 348. Stone pitching a3 256.50 69.31 325.81 22.28 348. Stone pitching a3 256.50 69.31 325.81 22.28 348. Stone pitching a5 256.50 69.31 325.81 22.28 348. Store pitching a5 256.50 69.31 325.81 22.28 348. Steve No 6,249.00 342.45 7,191.45 0.00 7,191. Cross bit,36m No 1,282.00 141.15 2,397.15 0.00 2,397. Shank rod No 6,249.00 342.45 7,191.45 0.00 7,191. Cross bit,36m No 1,282.00 108.45 2,277.45 0.00 2,277. Wetal form,300x1500 No 653.00 32.65 656.56 0.00 685. Joint filler,20m #2 422.00 21.10 443.10 0.00 443. PVC vaterstop,200m # 314.00 5.70 329.70 0.00 329. Portal frame No 1,070.00 53.50 1,123.50 0.00 1,123. Water reduce igent Ng 62.80 3.14 65.34 0.00 65. Pipe support No 666.00 3.30 699.30 0.00 699. Scaffolding,pipe No 161.00 8.05 169.05 0.00 169. Gabion box,2xx1xx1m box 421.20 233.76 660.96 116.64 777. Mattress,Gav2a0.3a box 1,157.00 658.60 1,815.60 320.40 2,136. Reinforce fabrie,A-193 a2 40.95 23.316 42.26 11.34 75. Kerb inlet,125x250,900m pc 40.00 44.00 84.00 14.40 98. 136x305x915m pc 16.00 17.60 33.60 57.67 339. Plush kerb,150x100x915 pc 25.20 27.72 52.92 9.07 61. Plush kerb,150x10x915 pc 25.00 60.50 115.50 19.80 135. 736x735x5010m pc 24.00 136.40 226.40 44.60 34.00 14.40 98. Build stone,150x20x450 pc 40.00 44.00 84.00 14.40 98. Build stone,150x20x450 pc 40.00 44.00 84.00 14.40 98. Build stone,150x20x450 pc 40.00 33.00 128.90 40.00 880.40 44.60 98. Build stone,150x20x450 pc 40.00 33.00 128.91 764 120. Grass m2 0		Description	Unit	F.C.				
Sand         m3         201.60         134.40         336.09         60.48         395.           Graded crushed stone         m3         342.00         92.41         434.41         29.71         464.           Chipping,sealing         m3         353.79         95.60         449.38         30.74         480.           Stone dust         ton         235.86         63.73         299.59         20.49         320.           Rubble,cobble         m3         256.50         69.31         325.81         22.28         348.           Stone pitching         m3         256.50         69.31         325.81         22.28         348.           Stone pitching         m3         256.50         69.31         325.81         22.28         348.           Store         No         6,449.00         342.45         7,191.45         0.00         9.588.50         0.00         9.588.50         0.00         1,191.75         0.00         1,191.75         0.00         1,217.75         0.00         2,277.           Ketal fore,300x1500         No         63.20         32.6.50         685.55         0.00         632.977.         0.00         329.70         0.00         329.70         0.00         329.	PV	C pipe,200mm,perforate	5	326.00	16.30	342.30	0.00	342.30
Graded crushed stone       n3       342.00       92.41       434.41       29.71       664.         Chipping, sealing       n3       333.79       95.60       449.39       30.74       480.         Stone dust       ton       255.65       69.31       325.81       22.28       348.         Gabion rock       m3       256.50       69.31       325.81       22.28       348.         Stone pitching       m3       256.50       69.31       325.81       22.28       348.         Stone pitching       m3       256.50       69.31       325.81       22.28       348.         Stone pitching       m3       256.50       69.31       325.81       20.28       348.         Stone pitching       m3       256.50       69.31       325.81       2.283       348.         Stone pitching       m3       242.00       24.45       7,191.45       0.00       7,191.         Cross it;36sm       No       1,828.00       342.57       7,191.45       0.00       1,917.         Taper rod,22m       No       2,169.00       108.45       2,774.5       0.00       2,971.         Joint filer,20m       m2       242.00       21.10       443.1	Co	ncrete aggregate	m3	342.00	92.41	434.41	29.71	464.12
Graded crushed stone       n3       342.00       92.41       434.41       29.71       464.         Chipping,sealing       n3       353.79       95.60       449.38       30.74       480.         Stone dust       ton       235.86       63.73       299.59       20.49       320.         Rubble,cobble       m3       256.50       69.31       325.81       22.28       348.         Stone pitching       m3       256.50       60.31       325.81       22.28       348.         Bit,65m       No       6,849.00       342.45       7,191.45       0.00       7,191.         Rod,3m       No       6,849.00       342.45       7,191.45       0.00       2,397.         Shank rod       No       6,849.00       342.45       7,191.45       0.00       2,397.         Shank rod       No       6,849.00       342.45       7,191.45       0.00       2,397.         Taper rod,22ma       No       1,850.00       32.68       0.00       1,917.30       0.00       2,977.45       0.00       2,977.45       0.00       32.970       0.00       2,970       0.00       329.70       0.00       329.70       0.00       329.70       0.00       6	Sa	ind a secolar transformer	<b>n</b> 3	201.60	134.40	336.00	60.48	396.48
Chipping.sealing a3 353.79 95.60 449.39 30.74 480. Stone dust ton 235.86 63.73 299.59 20.49 320. Rubble, cobble a3 256.50 69.31 325.81 22.28 348. Stone pitching a3 256.50 69.31 325.81 22.28 348. Stone pitching a3 256.50 69.31 325.81 22.28 348. Stone pitching a5 256.50 69.31 325.81 22.28 348. Store No 2,283.00 114.15 2,397.15 0.00 7,191. Cross 5it,36ma No 1,828.00 91.30 1,917.30 0.00 1,917. Taper rod,22ma No 2,169.00 130.45 2,277.45 0.00 2,277. Wetal form,3001500 No 653.00 32.65 685.65 0.000 685. Joint filler,20ma m2 422.00 21.10 443.10 0.00 443. PVC waterstop,200ma m 314.00 55.70 329.70 0.00 32. Portal frame No 1,070.00 55.50 1,122.50 0.00 1,123. Water reduce igent kg 62.80 3.14 65.94 0.00 65. Pipo support No 666.00 33.30 699.30 0.00 699. Scaffolding,pipe No 161.00 8.05 168.05 0.00 169. Gabion box,2mixls box 421.20 233.76 660.96 116.64 777. Mattress,6m2m30.3.a box 1,157.00 658.60 1,815.60 320.40 2,136. Reinforce fabric,A-193 m2 40.00 44.00 84.00 14.40 98. 150x2350x915m pc 40.00 44.00 84.00 14.40 98. 150x2350x915m pc 124.00 136.40 280.40 44.64 305. Side siab,610x235x75mm pc 16.00 17.60 33.60 5.75 39. Flush kerb,1250x250x915 pc 25.20 77.72 52.92 9.7 61. Hush kerb,1250x250x915 pc 40.00 44.00 84.00 14.40 98. 3aised kerb,1250x250 pc 40.00 44.00 84.00 14.40 98. 3aised kerb,1250x250 pc 40.00 44.00 84.00 14.40 98. Saised kerb,1250x250 pc 40.00 70.0 70.0 12.0 8. Shrub kush pc 0.00 31.50 31.50 5.4	Gr	aded crushed stone	<b>m</b> 3	342.00	92.41	434.41	29.71	464.12
Stone dust         ton         235.86         63.73         299.59         20.49         320.           Rubble,oobble         m3         256.50         69.31         325.81         22.28         348.           Stone pitching         m3         256.50         69.31         325.81         22.28         348.           Bit,65mm         No         6,849.00         342.45         7,191.45         0.00         7,131.           Rod,3m         No         6,849.00         342.45         7,191.45         0.00         7,191.           Cross Sit,36mm         No         6,849.00         342.45         7,191.45         0.00         7,191.           Cross Sit,36mm         No         6,849.00         342.45         7,191.45         0.00         7,277.           Taper rod,22mm         No         2,168.00         103.31         917.30         0.00         4.33.           PV tadrerstop,200mm         ma         314.00         15.70         329.70         0.00         3.25.           Portal frame         No         1,070.00         53.50         1,123.50         0.00         169.           Gabion box,2xximxim         box         421.20         235.76         660.96         166.44 </td <td>Ch</td> <td>ipping, sealing</td> <td><b>a</b>3</td> <td>353.79</td> <td>95.60</td> <td>449.39</td> <td>30.74</td> <td>480.13</td>	Ch	ipping, sealing	<b>a</b> 3	353.79	95.60	449.39	30.74	480.13
Rubble, cobble         m3         256.50         69.31         325.81         22.28         348.           Gabion rock         m3         256.50         69.31         325.81         22.28         348.           Stone pitching         m3         255.50         69.31         325.81         22.28         348.           Bit,65m         No         6,249.00         342.45         7,191.45         0.00         7,191.           Rod,3m         No         2,283.00         114.15         2,397.15         0.00         2,397.           Shank rod         No         6,243.00         342.45         7,191.45         0.00         7,191.           Cross bit,36m         No         1,826.00         91.30         1,917.30         0.00         1,917.           Taper rod,22m         No         2,169.00         108.45         2,277.45         0.00         2,277.           Notal frame         No         1,070.00         53.50         1,123.50         0.00         1,23.30           Portal frame         No         1,070.00         53.50         1,23.50         0.00         1,93.30           Scaffolding,pipe         No         161.00         8.05         169.05         0.00         <	St	ione dust	ton	235.86	63,73	299.59	20.49	
Gabion rock       m3       256.50       69.31       325.81       22.28       348.         Stone pitching       m3       256.50       69.31       325.81       22.28       348.         Bit, 65mm       No       6,249.00       342.45       7,191.45       0.00       9,588.         Sleeve       No       2,283.00       114.15       2,397.15       0.00       2,397.         Shank rod       No       6,649.00       342.45       7,191.45       0.00       2,377.         Mata rod       No       6,649.00       312.65       685.65       0.00       2,377.         Metal form,300x1500       No       653.00       32.65       685.65       0.00       422.77.45       0.00       2,277.         Metal form,300x1500       No       653.00       32.65       685.65       0.00       433.         PVC waterstop,200ms       ma       314.00       15.70       329.70       0.00       329.70         Portal frame       No       1666.00       33.30       699.30       0.00       699.80         Gabion box,2mx1ms       box       421.20       239.76       660.96       116.64       777.         Mattersi,6ux2mx1.3a       box	Ru	ibble,cobble	<b>m</b> 3	256.50	69.31	325.81		348.09
Stone pitching         m3         256.50         69.31         325.81         22.28         348.           Bit,65mm         No         6,849.00         342.45         7,191.45         0.00         7,191.           Rod,3m         No         9,132.00         456.60         9,588.60         0.00         2,397.           Shank rod         No         6,849.00         342.45         7,191.45         0.00         7,191.           Cross bit,36mm         No         1,628.00         108.45         2,277.45         0.00         2,277.           Metal form,300x1500         No         653.00         32.65         685.65         0.00         685.           Joint filler,20mm         m2         142.00         15.70         329.70         0.00         329.           Portal frame         No         1,070.00         55.50         1,123.50         0.00         685.           Pipe support         No         666.00         33.30         699.30         0.00         689.           Gabion box,2mixisi         box         1,157.00         658.60         1,815.60         320.40         2,136.           Reinforce fabric,A-133         m2         40.95         23.31         64.26         11	Ga	bion rock	<b>a</b> 3	256.50	69.31	325.81		348.09
Bit,65mm         No         6,849.00         342.45         7,191.45         0.00         7,191.           Rod,3m         No         9,132.00         456.60         9,588.60         0.00         9,588.           Sleeve         No         2,283.00         114.15         2,397.15         0.00         7,191.           Cross bit,36mm         No         6,649.00         342.45         7,191.45         0.00         7,191.           Cross bit,36mm         No         1,626.00         91.30         1,917.30         0.00         1,917.           Taper rod,22mm         No         2,163.00         32.65         685.65         0.00         2,277.           Wetal frame         No         1,070.00         53.50         1,123.50         0.00         329.           Portal frame         No         1,070.00         53.50         1,123.50         0.00         699.           Schfolding,pipe         No         666.00         33.30         699.30         0.00         699.           Gabion box,2missis         box         421.20         239.76         660.96         116.64         777.           Mattres,6max2m3.3m         box         1,157.00         658.50         1,815.50         32	St	one pitching	<b>B</b> 3	256.50	69,31	325.81	22.28	348.09
<ul> <li>Rod, 3m</li> <li>Ho</li> <li>9,132.00</li> <li>456.60</li> <li>9,588.60</li> <li>0.00</li> <li>9,588.</li> <li>Sleeve</li> <li>No</li> <li>2,283.00</li> <li>114.15</li> <li>2,397.15</li> <li>0.00</li> <li>2,397.</li> <li>Shank rod</li> <li>No</li> <li>6,649.00</li> <li>342.45</li> <li>7,191.45</li> <li>0.00</li> <li>7,191.</li> <li>Gross sit, 36m</li> <li>No</li> <li>2,169.00</li> <li>108.45</li> <li>2,277.45</li> <li>0.00</li> <li>2,277.</li> <li>Metal form, 300x1500</li> <li>No</li> <li>653.00</li> <li>108.45</li> <li>2,277.45</li> <li>0.00</li> <li>2,277.</li> <li>Metal form, 300x1500</li> <li>No</li> <li>653.00</li> <li>126.5</li> <li>685.65</li> <li>0.00</li> <li>685.</li> <li>0.00</li> <li>41.00</li> <li>15.70</li> <li>329.70</li> <li>0.00</li> <li>329.</li> <li>Portal frame</li> <li>No</li> <li>1,070.00</li> <li>53.50</li> <li>1,23.50</li> <li>0.00</li> <li>61.00</li> <li>3.05</li> <li>169.05</li> <li>0.00</li> <li>169.</li> <li>62.60</li> <li>3.31.60</li> <li>3.30</li> <li>699.30</li> <li>0.00</li> <li>699.</li> <li>Scaffolding, pipe</li> <li>No</li> <li>161.00</li> <li>8.05</li> <li>169.05</li> <li>0.00</li> <li>169.</li> <li>62.03</li> <li>164.64</li> <li>777.</li> <li>Mattress, 6mx2m0.3m</li> <li>box</li> <li>1,157.00</li> <li>658.60</li> <li>1,815.60</li> <li>320.40</li> <li>2,134</li> <li>75.</li> <li>Kerb inlet, 125x250,800mm pc</li> <li>40.00</li> <li>44.00</li> <li>84.00</li> <li>14.40</li> <li>98.</li> <li>163x305x915m</li> <li>pc</li> <li>60.03</li> <li>60.50</li> <li>115.50</li> <li>19.80</li> <li>135.</li> <li>760x355x610mm</li> <li>pc</li> <li>25.00</li> <li>60.50</li> <li>15.50</li></ul>			No	6,849.00	342.45	7,191.45	0.00	7,191.45
Sleeve         No         2,283.00         114.15         2,397.15         0.00         2,397.           Shank rod         No         6,849.00         342.45         7,191.45         0.00         7,191.           Cross jit;36m         No         1,826.00         91.30         1,917.30         0.00         1,917.           Taper rod,22m         No         2,168.00         108.45         2,277.45         0.00         2,277.           Metal form,300x1500         No         653.00         32.65         685.65         0.00         443.10         0.00         443.10         0.00         443.10         0.00         329.70         0.00         329.70         0.00         329.70         0.00         329.70         0.00         329.70         0.00         329.70         0.00         685.71         666.00         33.30         669.30         0.00         689.30         0.00         689.30         0.00         689.30         0.00         689.30         0.00         689.30         0.00         689.73         7.134.60         1.44.77         Nattress,6m2m20.30         2.136.77         Kater reduce igent kg         62.80         3.14         65.86         1.815.60         320.40         2.136.7         7.134.75         Kethi inttr	Ro	od, 3m	No	9,132.00	456.60	9,588.60	0.00	9,588.60
Shank rod         No         6,849.00         342.45         7,191.45         0.00         7,191.           Cross itf,36m         No         1,828.00         91.30         1,917.30         0.00         1,917.           Taper rod,22m         No         2,169.00         108.45         2,277.45         0.00         2,277.           Wetal form,300x1500         No         653.00         32.65         685.65         0.00         685.           Joint filler,20mm         m2         422.00         21.10         443.10         0.00         443.           PVC materstop,200mm         m         314.00         15.70         329.70         0.00         329.70           Not filler,200m         No         666.00         33.30         699.30         0.00         699.           Scaffolding,pipe         No         161.00         8.05         169.05         0.00         169.           Gabion box,2mximxim         box         1,157.00         658.60         1,815.60         320.40         2,136.           Reinforce fabric,A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb inlet,125x250,600m         pc         55.00         60.03         126.90	<b>S</b> 1	eeve	No	2,283.00	114.15	2,397.15	0.00	2,397.15
Cross bit;36ms         No         1,628.00         91.30         1,917.30         0.00         1,917.           Taper rod;22ms         No         2,169.00         108.45         2,277.45         0.00         2,277.           Metal form,300x1500         No         653.00         32.65         685.65         0.00         643.           Joint filler,20ma         m2         422.00         21.10         443.10         0.00         443.           PVC waterstop,200ms         m         314.00         15.70         329.70         0.00         329.           Portal frame         No         1,070.00         53.50         1,123.50         0.00         65.           Pips support         No         666.00         33.30         699.30         0.00         699.           Gabion box,2mximin         box         421.20         239.76         660.96         116.64         777.           Mattress,6mx2mx0.3m         box         1,157.00         658.60         1,815.60         320.40         2,138.           Reinforce fabric,A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb nick,125x250,600mm         pc         60.00         66.00         126	Sh	ank rod				•		7,191.45
Taper rod, 22mm       No       2,169.00       108.45       2,277.45       0.00       2,277.         Metal form, 300x1500       No       633.00       32.65       685.65       0.00       685.         Joint filler, 20mm       m2       422.00       21.10       443.10       0.00       443.         PVC waterstop, 200ms       m       314.00       5.70       329.70       0.00       329.         Portal frame       No       1,070.00       53.50       1,22.50       0.00       i,123.         Water reduce kgent       kg       62.80       3.14       65.94       0.00       65.         Pipe support       No       666.00       33.30       699.30       0.00       699.         Gabion box, 2mximxim       box       1,157.00       658.60       1,815.60       320.40       2,136.         Reinforce fabric, A-193       m2       40.95       23.31       64.26       11.34       75.         Kerb inlet, 12X250,600m pc       40.00       44.00       84.00       14.40       98.       150x305x915m       pc       60.03       66.03       126.90       21.60       147.         Invert-block drain       -       -       -       -       60.0								1,917.30
Netal form, 300x1500         No         653.00         32.65         685.65         0.00         685. Joint filler, 20mm         m2         422.00         21.10         443.10         0.00         443. 443.10           PVC waterstop, 200ms         m         314.00         15.70         329.70         0.00         329.           Portal frame         No         1,070.00         53.50         1,123.50         0.00         1,123.           Water reduce agent         kg         62.80         33.40         659.30         0.00         699.           Scaffolding, pipe         No         161.00         8.05         169.05         0.00         169.           Gabion box, 2mximsim         box         421.20         239.76         660.96         186.60         2,136.           Reinforce fabric, A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb inlet, 125x250,600mm pc         40.00         44.00         84.00         14.40         98.           Channel intake block         125x250x915sm         pc         60.03         66.03         126.09         21.60         147.           Invert block drain		-	No		108.45			2,277.45
Joint filler,20mm         m2         422.00         21.10         443.10         0.00         443.           PVC waterstop,200mm         m         314.00         15.70         329.70         0.00         329.           Portal frame         No         1,070.00         53.50         1,123.50         0.00         1,123.           Water reduce tegent         kg         62.80         3.14         65.94         0.00         685.           Pipe support         No         666.00         33.30         699.30         0.00         699.           Gabion box,2mximis         box         421.20         239.76         660.96         116.64         777.           Nattress,6mx2mx0.3m         box         1,157.00         658.60         1,815.60         320.40         2,136.           Reinforce fabric,A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb inlet,125x250,600mm         pc         40.00         44.00         84.00         14.40         98.           Channel intake block         125x250x915m         pc         55.00         60.50         115.50         19.80         135.           750x*355x610mm         pc         55.00         60.5		The second se	No			685.65		
PVC waterstop,200ma       u       314.00       15.70       329.70       0.00       329.         Portal frame       No       1,070.00       53.50       1,123.50       0.00       i,123.         Water reduce tigent       kg       62.80       3.14       65.94       0.00       65.         Pipe support       No       666.00       33.30       69.930       0.00       699.         Scaffolding,pipe       No       161.00       8.05       169.05       0.00       169.         Gabion box,2mximxim       box       421.20       239.76       660.96       116.64       777.         Mattress,6mx2mx0.3m       box       1,157.00       658.60       1,815.60       320.40       2,136.         Reinforce fabric,A-193       m2       40.95       23.31       64.26       11.34       75.         Kerb inlet,125x250,600mm       pc       40.00       44.00       84.00       14.40       98.         125x250x915mm       pc       60.03       126.90       21.60       147.         Invert block drain       -       -       450x225x610mm       pc       55.00       60.50       115.50       19.80       135.         750x4355x610am       pc			#2	422.00		443.10		443.10
Portal frame         No         1,070.00         53.50         1,123.50         0.00         1,123.           Water reduce gent         kg         62.80         3.14         65.94         0.00         65.           Pipe support         No         666.00         33.30         699.30         0.00         699.           Gabion box, 2mxims in         box         421.20         239.76         660.96         116.64         777.           Nattress, 6mx2ax0.3m         box         1,157.00         658.60         1,815.60         320.40         2,136.           Reinforce fabric, A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb inlet, 125x250,600mm pc         40.00         44.00         84.00         14.40         98.           Channel intake block         125x250x915xm         pc         60.00         66.00         126.90         21.60         147.           Invert block drain         -         -         55.00         60.50         115.50         19.80         135.           750x355x610mm         pc         124.00         136.40         280.40         44.64         305.           Side slab,610x235x75mm         pc         16.00								329.70
Water reduce tgent         kg         62.80         3.14         65.94         0.00         65.           Pipe support         No         666.00         33.30         699.30         0.00         699.           Scaffolding,pipe         No         161.00         8.05         169.05         0.00         169.           Gabion box,2mximxim         box         421.20         239.76         660.96         116.64         777.           Mattress,6mx2mx0.3m         box         1,157.00         658.60         1,815.60         320.40         2,136.           Reinforce fabric,A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb inlet,125x250,600zm         pc         40.00         44.00         84.00         14.40         98.           150x305x915mm         pc         60.03         66.03         126.99         21.60         147.           Invert block drain         pc         55.00         60.50         115.50         19.80         135.           750x355x610mm         pc         16.00         17.60         33.60         5.76         39.           Flush kerb,150x100x915         pc         25.20         27.72         52.92 <t< td=""><td></td><td></td><td></td><td>1,070.00</td><td></td><td></td><td></td><td>1,123.50</td></t<>				1,070.00				1,123.50
Pipe support         No         6666.00         33.30         699.30         0.00         699. Scaffolding,pipe           Gabion box, 2mximxim         box         421.20         239.76         660.96         116.64         777. Mattress, 6mx2mx0.3m         box         1,157.00         658.60         1,815.60         320.40         2,136.           Reinforce fabric, A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb inlet, 125x250,600mm pc         40.00         44.00         84.00         14.40         98.           150x305x915mm         pc         60.03         66.03         126.90         21.60         147.           Invert block drain								65.94
Scaffolding,pipe         No         161.00         8.05         169.05         0.00         169.           Gabion box,2mximxim         box         421.20         239.76         660.96         116.64         777.           Mattress,6mx2mx0.3m         box         1,157.00         658.60         1,815.60         320.40         2,136.           Reinforce fabrie,A-193         m2         40.95         23.31         64.26         11.34         75.           Kerb inlet,125x250,600mm         pc         40.00         44.00         84.00         14.40         98.           125x250x915xm         pc         40.00         44.00         84.00         14.40         98.           125x250x915xm         pc         60.03         66.03         126.90         21.60         147.           Invert block drain			-					699.30
Gabion box, 2xx1xx1s       box       421.20       239.76       660.96       116.64       777.         Mattress, 6ux2xx0.3z       box       1,157.00       658.60       1,815.60       320.40       2,136.         Reinforce fabric, A-193       m2       40.95       23.31       64.26       11.34       75.         Kerb inlet, 125x250,600zm pc       40.00       44.00       84.00       14.40       98.         125x250x915xx       pc       40.00       44.00       84.00       14.40       98.         125x250x915xx       pc       60.09       66.09       126.90       21.60       147.         Invert block drain								169.0
Mattress; 6mx2mx0.3m       box       1,157.00       658.60       1,815.60       320.40       2,136.         Reinforce fabric, A-193       m2       40.95       23.31       64.26       11.34       75.         Kerb inlet, 125x250, 600am       pc       40.00       44.00       84.00       14.40       98.         125x250x915m       pc       60.00       66.00       126.90       21.60       147.         Invert block drain			· · · · ·					777.60
Reinforce fabric, A-193       m2       40.95       23.31       64.26       11.34       75.         Kerb inlet, 125x250, 600zm pc       40.00       44.00       84.00       14.40       98.         125x250x915zm       pc       40.00       44.00       84.00       14.40       98.         150x305x915zm       pc       60.00       66.00       126.90       21.60       147.         Invert block drain								
Kerb inlet, 125x250, 600xm pc40.0044.0084.0014.4098.Channel intake block125x250x915xmpc40.0044.0084.0014.4098.150x305x915xmpc60.0066.00126.0021.60147.Invert block drain450x225x610xmpc55.0060.50115.5019.80135.750x*355x610xmpc124.00136.40260.4044.64305.Side slab, 610x235x75xmpc16.0017.6033.605.7639.Flush kerb, 150x100x915pc25.2027.7252.929.0761.Flush kerb, 150x20x915pc20.1622.1842.347.2649.Flush kerb, 125x250x915pc40.0044.0084.0014.4098.Raised kerb, 125x250x915pc40.0044.0084.0014.4098.Build stone, 150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb, radius, 150x100x915pc26.0028.6054.609.3663.Kerb, radius, 150x80x915pc26.0028.6054.609.3663.Kerb, radius, 125x250x915pc49.0053.90102.9017.64120.Grassn20.0031.5031.505.4036.Treepc0.0031.5031.505.4036.Treep				-				75.60
Channel intake block       125x250x915xm       pc       40.00       44.00       84.00       14.40       98.         150x305x915xm       pc       60.03       66.03       126.00       21.60       147.         Invert block drain       450x225x610mm       pc       55.00       60.50       115.50       19.80       135.         750x*355x610mm       pc       124.00       136.40       260.40       44.64       305.         Side slab,610x235x75mm       pc       16.00       17.60       33.60       5.76       39.         Flush kerb,150x100x915       pc       25.20       27.72       52.92       9.07       61.         Flush kerb,125x250x915       pc       40.00       44.00       84.00       14.40       98.         Raised kerb,125x250       pc       40.00       44.00       84.00       14.40       98.         Build stene,150x230x450       pc       0.00       44.00       84.00       14.40       98.         Raised kerb,125x250x915       pc       40.00       44.00       84.00       14.40       98.         Build stene,150x230x450       pc       0.00       10.50       1.80       12.         Plexbeam guardrail       m								98.40
125x250x915xm         pc         40.00         44.00         84.00         14.40         98.           150x305x915xm         pc         60.09         66.00         126.90         21.60         147.           Invert block drain				10100	11.00	01100		00110
150x305x915mmpc60.0366.03126.9921.60147.Invert block drain450x225x610mmpc55.0060.50115.5019.80135.750x*355x610mmpc124.00136.40260.4044.64305.Side slab,610x235x75mmpc16.0017.6033.605.7639.Flush kerb,150x100x915pc25.2027.7252.929.0761.Flush kerb,150x20x915pc20.1622.1842.347.2649.Flush kerb,125x250x915pc40.0044.0084.0014.4098.Raised kerb,125x250pc40.0044.0084.0014.4098.Build stone,150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb,radius,150x100x915pc26.0028.6054.609.3663.Kerb,radius,150x80x915pc20.007.0017.64120.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain,375x250x600mmpc70.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.			DC.	40.00	44.00	84.00	14,40	98.40
Invert block drain450x225x610mmpc55.0060.50115.5019.80135.750x*355x610mmpc124.00136.40260.4044.64305.Side slab,610x235x75mmpc16.0017.6033.605.7639.Flush kerb,150x100x915pc25.2027.7252.929.0761.Flush kerb,150x80x915pc20.1622.1842.347.2649.Flush kerb,125x250x915pc40.0044.0084.0014.4098.Raised kerb,125x250pc40.0044.0084.0014.4098.Build stone,150x230x450pc0.0010.5010.501.8012.Plexbeam guardrailm848.0042.40890.400.00890.Kerb,radius,150x100x915pc26.0028.6054.609.3663.Kerb,radius,150x80x915pc0.0070.07.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain,375x250x600mmpc70.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.	:.		-					147.60
450x225x610mm         pc         55.00         60.50         115.50         19.80         135.           750x*355x610mm         pc         124.00         136.40         260.40         44.64         305.           Side slab,610x235x75mm         pc         16.00         17.60         33.60         5.76         39.           Flush kerb,150x100x915         pc         25.20         27.72         52.92         9.07         61.           Flush kerb,150x80x915         pc         20.16         22.18         42.34         7.26         49.           Flush kerb,125x250x915         pc         40.00         44.00         84.00         14.40         98.           Raised kerb,125x250         pc         40.00         44.00         84.00         14.40         98.           Build stene,150x230x450         pc         0.00         10.50         10.50         1.80         12.           Flexbeam guardrail         m         848.00         42.40         890.40         0.00         890.           Kerb,radius,150x100x915         pc         26.00         28.60         54.60         9.36         63.           Kerb,radius,125x250x915         pc         49.00         53.90         102.90			-	00100		100100	51100	
750x*355x610mmpc124.00136.40260.4044.64305.Side slab,610x235x75mmpc16.0017.6033.605.7639.Flush kerb,150x100x915pc25.2027.7252.929.0761.Flush kerb,150x80x915pc20.1622.1842.347.2649.Flush kerb,125x250x915pc40.0044.0084.0014.4098.Raised kerb,125x250pc40.0044.0084.0014.4098.Build stone,150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb,radius,150x100x915pc32.5035.7568.2511.7079.Kerb,radius,125x250x915pc49.0053.90102.9017.64120.Grassbag0.0063.0063.0010.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain,375x250x600mmpc70.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.				55.00	60.50	115.50	19.80	135.30
Side slab, 610x235x75mmpc16.0017.6033.605.7639.Flush kerb, 150x100x915pc25.2027.7252.929.0761.Flush kerb, 150x80x915pc20.1622.1842.347.2649.Flush kerb, 125x250x915pc40.0044.0084.0014.4098.Raised kerb, 125x250pc40.0044.0084.0014.4098.Build stone, 150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb, radius, 150x100x915pc26.0028.6054.609.3663.Kerb, radius, 150x80x915pc26.0028.6054.609.3663.Kerb, radius, 125x250x915pc49.0053.90102.9017.64120.Grassbag0.0063.0063.0010.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain, 375x250x600mmpc70.0077.00147.0025.20172.Fence post, 100x130mmft21.5023.6545.157.7452.			-					305.04
Flush kerb,150x100x915pc25.2027.7252.929.0761.Flush kerb,150x80x915pc20.1622.1842.347.2649.Flush kerb,125x250x915pc40.0044.0084.0014.4098.Raised kerb,125x250pc40.0044.0084.0014.4098.Build stene,150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb,radius,150x100x915pc32.5035.7568.2511.7079.Kerb,radius,150x80x915pc26.0028.6054.609.3663.Kerb,radius,125x250x915pc49.0053.90102.9017.64120.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.	Si		•					39.30
Flush kerb, 150x80x915pc20.1622.1842.347.2649.Flush kerb, 125x250x915pc40.0044.0084.0014.4098.Raised kerb, 125x250pc40.0044.0084.0014.4098.Build stone, 150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb, radius, 150x100x915pc32.5035.7568.2511.7079.Kerb, radius, 150x80x915pc26.0028.6054.609.3663.Kerb, radius, 125x250x915pc49.0053.90102.9017.64120.Grassbag0.0063.0063.0010.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0077.00147.0025.20172.Fence post, 100x130mmft21.5023.6545.157.7452.								61.99
Flush kerb,125x250x915pc40.0044.0084.0014.4098.Raised kerb,125x250pc40.0044.0084.0014.4098.Build stone,150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb,radius,150x100x915pc32.5035.7568.2511.7079.Kerb,radius,150x80x915pc26.0028.6054.609.3663.Kerb,radius,125x250x915pc49.0053.90102.9017.64120.Grassbag0.0063.0063.0010.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.			•					49.60
Raised kerb, 125x250pc40.0044.0084.0014.4098.Build stone, 150x230x450pc0.0010.5010.501.8012.Plexbeam guardrailm848.0042.40890.400.00890.Kerb, radius, 150x100x915pc32.5035.7568.2511.7079.Kerb, radius, 150x80x915pc26.0028.6054.609.3663.Kerb, radius, 125x250x915pc49.0053.90102.9017.64120.Grassbag0.0063.0063.0010.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain, 375x250x600mmpc70.0077.00147.0025.20172.Fence post, 100x130mmft21.5023.6545.157.7452.		· · · · · · · · · · · · · · · · · · ·	•					98.40
Build stone, 150x230x450pc0.0010.5010.501.8012.Flexbeam guardrailm848.0042.40890.400.00890.Kerb, radius, 150x100x915pc32.5035.7568.2511.7079.Kerb, radius, 150x100x915pc26.0028.6054.609.3663.Kerb, radius, 125x250x915pc49.0053.90102.9017.64120.Grassbag0.0063.0063.0013.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain, 375x250x600mmpc70.0077.00147.0025.20172.Fence post, 100x130mmft21.5023.6545.157.7452.								98.40
Flexbeam guardrall       m       848.00       42.40       890.40       0.00       890.         Kerb, radius, 150x100x915       pc       32.50       35.75       68.25       11.70       79.         Kerb, radius, 150x80x915       pc       26.00       28.60       54.60       9.36       63.         Kerb, radius, 125x250x915       pc       49.00       53.90       102.90       17.64       120.         Grass       bag       0.00       63.00       63.00       10.80       73.         Grass       m2       0.00       7.00       7.00       1.20       8.         Shrub & bush       pc       0.00       31.50       5.40       36.         Tree       pc       0.00       31.50       5.40       36.         U-drain, 375x250x600mm       pc       70.00       77.00       147.00       25.20       172.         Fence post, 100x130mm       ft       21.50       23.65       45.15       7.74       52.			• •					12.30
Kerb, radius, 150x100x915       pc       32.50       35.75       68.25       11.70       79.         Kerb, radius, 150x80x915       pc       26.00       28.60       54.60       9.36       63.         Kerb, radius, 125x250x915       pc       49.00       53.90       102.90       17.64       120.         Grass       bag       0.00       63.00       63.00       10.80       73.         Grass       m2       0.00       7.00       7.00       1.20       8.         Shrub & bush       pc       0.00       31.50       5.40       36.         Tree       pc       0.00       31.50       5.40       36.         U-drain, 375x250x600mm       pc       70.00       77.00       147.00       25.20       172.         Fence post, 100x130mm       ft       21.50       23.65       45.15       7.74       52.			•					890.40
Kerb, radius, 150x80x915       pc       26.00       28.60       54.60       9.36       63.         Kerb, radius, 125x250x915       pc       49.00       53.90       102.90       17.64       120.         Grass       bag       0.00       63.00       63.00       10.80       73.         Grass       m2       0.00       7.00       7.00       1.20       8.         Shrub & bush       pc       0.00       31.50       31.50       5.40       36.         Tree       pc       0.00       31.50       31.50       5.40       36.         U-drain, 375x250x600mm       pc       70.00       77.00       147.00       25.20       172.         Fence post, 100x130mm       ft       21.50       23.65       45.15       7.74       52.								79.9
Kerb, radius, 125x250x915pc49.0053.90102.9017.64120.Grassbag0.0063.0063.0010.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain, 375x250x600mmpc70.0077.00147.0025.20172.Fence post, 100x130mmft21.5023.6545.157.7452.			•					63.9
Grassbag0.0063.0063.0010.8073.Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain,375x250x600mmpc70.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.			•					120.54
Grassm20.007.007.001.208.Shrub & bushpc0.0031.5031.505.4036.Treepc0.0031.5031.505.4036.U-drain,375x250x600mmpc70.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.								73.80
Shrub & bushpc $0.00$ $31.50$ $31.50$ $5.40$ $36.$ Treepc $0.00$ $31.50$ $31.50$ $5.40$ $36.$ U-drain, $375x250x600mm$ pc $70.00$ $77.00$ $147.00$ $25.20$ $172.$ Fence post, $100x130mm$ ft $21.50$ $23.65$ $45.15$ $7.74$ $52.$			-					8.20
Treepc0.0031.5031.505.4036.U-drain,375x250x600mmpc70.0077.00147.0025.20172.Fence post,100x130mmft21.5023.6545.157.7452.		-						36.90
U-drain,375x250x600mm pc 70.00 77.00 147.00 25.20 172. Fence post,100x130mm ft 21.50 23.65 45.15 7.74 52.								
Fence post, 100x130mm ft 21.50 23.65 45.15 7.74 52.			-					
			-					
Fence supp.post,100x130 ft 24.50 26.95 51.45 8.82 60.							7.74	52.89 60.21

Table 4.2 Material Cost (3/3)

(Unit:Kshs.)

	Description	Unit	F.C.	L.C. (Excl.VAT)	Totai (Excl.VAT)	Valu Added Tax	Total (Incl.VAT)
	Concrete pipe,535mm	0	328.50	361.35	689.85	118.26	808.11
	Concrete pipe,225mm	孤	97.00	106.70	203.70	34.92	238.62
	Galv. steel pipe,4"	0	513.00	25.65	538.65	0.00	538.65
	8"UPVC	ei Ei	695.00	34.75	729.75	0.00	729.75
	10"UPVC	ß	1,079.00	53.95	1,132.95	0.00	1,132.95
	6"UPVC	R	463.00	23.15	486.15	0.00	486.15
	6"cast iron pipe	Ð	492.00	24.60	516.60	0.00	516.60
	2"cast iron pipe	m	125.00	6.25	131.25	0.00	131.25
	1"cast iron pipe	2	60.50	3.03	63.53	0.00	63.53
	3/4"cast iron pipe	D	42.70	2.14	44.84	0.00	44.84
	1/2"cast iron pipe	8	34.25	1.71	35.96	0.00	35.96
an a	Steel pipe pile	ton	28,881.00	2,888.10	31,769.10	0.00	31,769.10
· · ·	Air-entrain agent	kg	45.20	2,000.10	47.46	0.00	47.48
	Bolt & nut	No	7.50	0.38	7.88	0.00	7.88
	Clamp	No	75,30	3.77	79.07	0.00	79.0
	Clip	No	8.90	0.44	9.34	0.00	9.34
· · · · · ·	· · · · · · · · · · · · · · · · · · ·	No	37.70				
1000	Anchor bolt,22am,0.4m			1.88	39.58	0.00	39.5
$(\cdot,\cdot) = (\cdot,\cdot)$	Netal form,200x1500	No	653.00	32.65		0.00	685.6
1.00	Cone	No	5.00	0.25	5.25	0.00	5.2
	Separator,8-10mm	3	20.10			0.00	21.10
	Form oil	lit	50.20	2.51	52.71	0.00	52.71
	Metal form,150x1500	No	490.00	24.50	514.50	0.00	514.50
1.1	Metal form,100x1500	No	452.00	22.60	474.60	0.00	474.60
	Hunch form, 200x1500	No	917.00	45.85	962.85	0.00	962.8
. • .	Adhesive agent	kg	125.00	6.25	131.25	0.00	131.2
	Steel pipe pile	ton	28,881.00	2,888.10	31,769.10	0.00	31,769.1
the second	Filter fabric	<b>a</b> 2	75.30	3.77	79.07	0.00	79.0
	Waterproof primer	lit	138.00	6.90	144.30	0.00	144.9
	Dowel bar, stainless	kg	100.00	5.00	105.00	0.00	105.00
	Joint filler,30mm	a2	633.00	31.65	664.65	0.00	664.6
an a	Joint filler,25mm	<b>a</b> 2	527.00	26.35	553.35	0.00	553.3
n na santa A	Sealant, 30x50mm	5	377.00	18.85	395.85	0.00	,395.8
	Sealant, 25x50mm	風	314.00	15.70	329.70	0.00	329.70
	Elastomeric bearing,20mm		15,847.00	792.35	16,639.35	0.00	16,639.3
	Elastoperic bearing, 18an		14,262.00	713.10	14,975.10	0,00	14,975.1
a da parte	Elastomeric bearing, 56mm		44,372.00	2,218.60	46,590.60	0.00	46,590.6
	Elastomeric bearing, 37mm		29,317.00	1,465.85	30,782.85	0.00	30,782.8
	Elastomeric bearing, 46mm		36,448.00	1,822.40		0.00	38,270.40
1.1.1	Elastomeric bearing, 65mm		36,443.00 51,503.00	2,575.15	54,078.15	0.00	54,078.1
n se Light det			21 2014 100	4.3/3.13	34.070.10	0.00	04.0(0.1)

## Table 4.3 Equipment Cost (1/3)

	i.	na di n N	Uni	t:Kshs.
Equipment		FC KSHS	LC KSHS	Total kshs
Bulldozer ripper,32t	H	1,617.0	387.2	2,004.
Bulldozer ripper,21t	H	1,282.6	316.3	1,599.0
Bulldozer,21t	H	1,149.0	275.1	1,424.
Bulldozer,11t	H	553.1	132.4	685.
Backhoe, 0.2 m3	H	481.7	111.6	593.3
Backhoe,0.6 m3		757,7	181.4	939.
Tractor shovel,2.3 m3	H	891.6	213.5	1,105.
Tractor shovel,1.6 m3	H	749.3	173.6	923.
Wheel loader,2.7 m3	H	757.7	181,4	939.
Wheel loader,2.1 m3	H	668.6	160.1	828.
Dump truck,11t	H	364.0	84.3	.448.
Dump truck,8t	H	278.3	64.5	342.
Cargo truck,8 ton	H	214.1	49.6	263.
Cargo truck,6 ton	H	171.4	39.7	211.
Truck crane,20t	ÌH	922.1	192.9	1,115.
Crawler drill,7 m3/min	H .	450.1	96.3	546.
Crawler drill,10 m3/min	H	600.3	128.5	728.
Jack hamuer,20kg	Ð	211.4	28,6	240.0
Pick hammer,7kg	D	34.8		
Noter grader,3.7m	H	642.3	148.8	791.
Macadan roller,10-12t	H	384.2	80.4	464.0
Tandem roller,8-10t	H		70.3	406.
Tire roller,8-20t	H	384.2	80.4	
Vibrating roller,10t	H	867.3		
Vibrating roller,4t		333.7		409.1
Vibrating roller,0.5t	H	105.1	20.9	126.0
Tamping roller,CA	ł	825.2	172.6	997.8
Ranner, 60-100kg	٦D	191.5		226.3
Concrete plant,20 m3/hr		1,369.6		1,662.8
Agitator truck, 3.2 m3	H	321.2	74.4	395.6
Truck crane,10t	H	576.4		
Diesel pile hanner,2.5t	H.	866.3	156.6	1,022.9
Crawler pile driver,2.5t	H		400.0	
Asphalt plant,100t/h		7,304.9	1,563.7	
Asphalt finisher,2.4-5m	H	1,536.9	321.4	
Asphalt kettle,6000 l		798.3	108.1	
Distributor,4000 1		576.3	120.5	696.8
Chip spreader, hang, 0.4m3	H	44.5	7.4	52,0
Engin sprayer,600 l	D	950.8	152.1	1,102.9
Engin sprayer,200 1	D	189.4	30.3	219.7
Line marker,15cm	U H	109.4 48.5	8.1	56.6
	.H B	256.9	59.5	316.5
Kater sprinkler, 5.5kl		40019 1 076 0	0.00 0.00	
Air compressor, 13.5 m3	D	4,075.8	852.4	
Air compressor,5 m3/min	D	1,323.9		
Belt conveyor,10m	D	335.9	62.8	
Bulldozer,3t	H	286.7	58.5	
Deasel generater,300KVA	D	4,362.1		5,150.8
Deasel generater,200KVA	D	3,331.9	60Z.4	3,934.4

hs.				Uni	t:Kshs.
otal ishs	Equipment		FC KSHS	LC KSHS	Total kshs
104.2	Leg drill	 D	255.4	34.6	290.0
99.0	Truck,2t	H	81.7	18.9	100.6
24.1	Concrete mixer,0.2 m3	Ð	1,113.8	238.4	1,352.2
85.5	Concrete bucket,0.75 m3	D	417.1	82.9	500.0
93.3		D	121.5	19.4	141.0
39.2		H.	1,438.2	307.9	1,746.1
05.1	Water pump,50mm,20m,2.2kw		73.1	18.3	91.4
23.0	Water pump,100mm,20m,7.5k		195.8	49.0	244.8
39.2		H	950.4	231.9	1,181.5
28.7		H	180.8	37.8	218.7
48.4		H	855.4	207.9	1,063.4
42.7		K	1,093.1	265.7	1,358.8
63.8	Screen,40/20mm	H	182.4	47.3	229.8
11.1		H	156.4	40.6	197.0
15.0	Belt conveyor,450mm,500mm H	H	1,398.8	176.4	1,575.3
46.4		H.	228.5	53.8	282.3
28.8		Ð	175.5	34.9	210.4
40.0		H	302.6	63.3	365.8
39.5		H	130.5	30.8	161.3
91.1		H	145.6	34.3	179.9
e1 e	•				

2,004.2 1,599.0 211.1 1,115.0 546.4 728.8 240.0 39.5 685.5 593.3 939.2 1,424.1 1,105.1 923.0 939.2 828.7 448.4 342.7 263.8 464.6 464.6 126.0 696.9 1,022.9 **SUS** 406.5 409.7 791.1 957.8 1,662.8 8.868.6 Total 1,064.6 226.1 395.6 2,612.0 387.2 316.3 132.4 111.6 181.4 213.5 213.5 173.6 181.4 160.1 84.3 64.5 49.5 39.7 192.9 96.3 128.5 28.6 400.0 ,563.7 293.2 156.6 275.1 20.9 34.6 120.5 4.7 148.8 80.4 70.3 80.4 197.3 75.9 72.6 74.4 LC. KSHS 1,617.0 ,282.6 1,149.0 481 7 757.7 891.6 749.3 757.7 668.6 553.1 34.8 642.3 334.2 336.2 384.2 191.5 1,369.6 2,212.0 364.0 278.3 171.4 450.1 600.3 211.4 867.3 333.7 825.2 214.1 922.1 105.1 321.2 576.4866.3 7.304.9 FC Port/Land 45.6 34.8 22.4 15.6 41 22.0 18.8 10.7 8.2 6.3 233.4 25.1 19.2 81.6 12.6 11.0 12.6 26.0 9.2 18.843.8 9.4 14.4 1.5 18.8 32.0 10.0 3.6 27.0 kshs. 5. 8... 38.0 772.2 452.0 395.6 452.0 1,038.7 1,958.7 1,564.2 1,079.9 669.9 1,084.9532.1 1,619.0 809.9 437.7 334.6 257.5 206.0 2,530.4 8,635.2 917.8 901.0 917.8 709.7 230.8 399.7 122.4 970.9 386.2 991.0 1,391.7 579.1 219.1 678.1 Total Sub-341.6 242.7 116.9 (,330.3 281.6 97.5 188.4 151.6 160.1 73.7 56.3 162.7 318.3 43.3 34.7 82.0 109.3 19.4 3.2 130.0 145.6 27.6 65.0 160.1 67.3 59.3 67.8 171.4 65.9 17.3 249.4 101.7 LC kshs Total Rate Equipment Cost 7,304.9 1,149.0 1,617.0 1,282.6 481.7 553.1 757.7 891.6 749-3 757.7 668.6 364.0 600.3 211.4 34.8 642.3 384.2 336.2 384.2 867.3 333.7 825.2 191.5 369.6 321.2 866.3 2,212.0 278.3 171.4 450.1 105.1 214.1 922.1 576.4 kshs 37.5 10.-6 40 5 37.5 37.5 37.5 34 5 34.5 34.5 34 5 27 0 57.0 57.0 34.5 33 8 33 8 33 8 39.6 32.5 37.5 37.5 37.5 4,403.8 403.8 4,403.8 403.8 55.0 60.0 33 8 3,613.3 520.0 43.1 65.0 43.1 13 1 2 217.4 177.5 177.5 177.5 177:5 177.5 170.5 170.5 170.5 170.5 153.0 313:0 313.0 170.5 278.3 365.0 191.3 173.9 177.5 177.5 191.3 278.3 10.-6 184.5 191.3 153.0 451.7 225.8 213.1 191.3 213.1 213.1 ç. . Repir % Depr.Maint Mana 5.1,200 61,200 51,600 52,000 5 2,000 5 2,000 5 2,000 5 2,000 5 2,000 5 2,000 5 2,000 5 2,000 5 2,000 5 1,000 5 1,000 2 130 5 2,000 5 1,600 5 1,600 5 1,600 5.1,200 800 5 1,600 600 1,000 1,500 Year Hour 1,600 5 2,000  $\begin{array}{c}
2,000\\
2,000\\
2,000\\
2,000\\
\end{array}$ 130 125 6,000 4,000 7,200 8,000 10,000 8,000 8,000 8,000 6,000 8,000 10,000 3,000 6,000 9,000 10,000 10,000 10,000 5,000 5,000 375 10,000 8,000 10,000 10,000 8,000 10,000 10,000 10,000 260 260 Econo 10,000 Life Hrs Initial Cost 3,116,000 2,260,000 1,269,000 3,516,000 1,767,000 1,438,000 3,116,000 288,000 6,301,000 ,269,000 ,256,000 1,918,000 48,000 7,900 1,758,000 2,009,000 53,000 (,199,000 4,315,000 1,507,000 5,473,000 6,023,000 3,767,000 2,009,000 3,767,000 1,918,000 9,795,000 9,110,600 5,952,000 ,135,000 ,632,000 ,005,000 6,027,000 12,009,000 **KShS** Crawler drill,10 m3/min Concrete plant,20 m3/hr Diesel pile hammer,2.5t rawler drill, 7 m3/min gitator truck, 3.2 m3 Pile driver,2.5t,boom ractor shovel, 2.3 m3 ractor shovel,1.6 m3 Macadam roller,10-12t /ibrating roller,0.5t isphalt plant,100t/h Vibrating roller,10t Sulldozer ripper, 32t Bulldozer ripper,21t Vibrating roller,4t landem roller,8-10t theel loader, 2.7 n3 lheel loader, 2.1 m3 Moter grader,3.7m Tire roller,8-20t Tamping roller,CA largo truck, 8 ton Equipment largo truck, 6 ton lack hagner, 20kg Truck crane,10t Truck crane,20t Pick hammer, 7kg tammer, 60-100kg Sackhoe, 0.2 m3 Sackhoe, 0.6 m3 ump truck;11t Sulldozer,21t Bulldozer,11t )ump\_truck,8t Item 2 13  $\infty$ 33

Equipment Cost (2/3)

Table 4.3

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Total	kshs	1.858.3	906.4	696.8	52.0	1,102.9	219.7	56.6	316.5	4,928.2	1,600.8	398.8	345.2	5,150.8	3,934.4	290.0	100.6	1,352.2	500.0	141.0	1,746.1	91.4	244.8	1,181.5	218.7	1,063.4	1,358.8	229.8	197.0	1,575.3	282.3	210.4	365.8	161.3	179.9
	LC XSHS	321.4	108.1	120.5	7.4	152.1	30.3	8.1	59.5	852.4	276.9	62.8	58.5	783.7	602 4	34.6	18.9	238.4	82.9	19.4	307.9	18.3	49.0	231.0	37.8	207.9	265.7	47.3	40.6	176.4	53.8	34.9	63.3	30.8	34.3
	FC KSHS	1.536.9	798.3	576.3	44.5	950.8	189.4	48.5	256.9	4,075.8	1,323.9	335.9	286.7	4,362.1	3, 331, 9	255.4	81.7	1,113.8	417.1	121.5	1,438.2	73.1	195.8	950.4	180.8	855.4	1,093.1	182.4	156.4	1,393.8	228.5	175.5	302.6	130.5	145.6
	Port/Land kshs	50.2	34.9	18.8	1.1	38.0	7.6	1.9	7.5	133.2	43.3	12.1	9.6	161.0	122.9	11.2	2.4	35.6	14.3	4,9	45.0	1.9	5.2	26.3	ი ი	23.6	30.2	4.6	3.9 9	63.0	6.6	6.0	0 0	3.8	4.2
	Sub- Pa Total	1,808.1	871.5	678.0	50.2	1,064.8	212.1	54.7	308.9	4,795.0	1,557.5	386.7	335.7	4,989.8	3,811.4	278.8	98.2	1,316.6	485.7	136.1	1,700.2	89.4	239.6	1,155.2	212.8	1,039.7	1,328.0	225.2	193.1	I,512.2	275.7	204.4	356.0	157.5	175.7
 Cost	LC kshs	2	1.1	1,71	· · · · · ·	1.	· · · ·						1			23.4														· • •			· ·		
lquipment	FC Kshs	i i	798.3	576.3	44.5	950.8	189.4	48.5	256.9	4,075.8	1,323.9	335.9	286.7	4.362.1	3, 331.9	255.4	81.7	1,113.8	417.1	121.5	1,438.2	73.1	195.8	950.4	180.8	805.4	1,050.1	182.4	156.4	1,398.8	228.5	175.5	302.6	130.5	145.6
l Rate	LC 106															8 403.8																			
Mana Tota	106	5. 255.	5 3,180.	5 255	5 839.	5 3 787	5 3, 787.	5 321.	5 170.	5 2,125.	5 2,125.	5 5,791.	5 299.	5 1,737.	5 1,737.	5 4,403.8	5 170.	5 2,608.	5 4,171.	5 3,472.	5 280.	5 2,611.	5 2,611.	5 181.	5 E53.	5 101.	101.	5 198.	5 138	5 222.	5 174.	5 1,738.	5 191.	10 290.	10 Z9U.
aint Ma	Repir	65	15	65	40	35	35	35	06	60	60	60	60	35	35	25	60	70	55	33	65	[]0		6	26	5	5 L			10	80	45	<u>.</u>	្រួ	90
Depr.Ma	**	06	80	06	<u> 8</u>	60	80	8	60	8	90	90 90	6	60	96	06	60	66	80	60	06	8	 ନ	6	8	B 6	200	B :	 6	06	06	60	00	6	90
Year Hour	1	5 1,200 H	4 90 D	5 1,200 H	3 510 H.	3 110 D	3 110 D	4 1,000 H	2		•	2 120 D	51,000 H	6 130 D	6 130 D	2 130 D	\$	5 120 D	5 70 D	3 120 D	61,000 H	6 120 D	6 120 D	- 1	8 1,250 H	A U62,1 8	U 027 T 0	8 1,250 H	8 1,250 H	4 1,250 H	8 1,250 H		51,600 H	6 1,000 H	6 1,000 н
Econo Y	Life Hrs	6,000	360	6,000	1,530	330	330	4,000	10,000	720	720	240	5,000	780	780	260	10,000	600	350	360	6,000	720	720	10,000	10,000	10,000	10,000	10, UUU	10,000	5,000	10,000	840	8,000	000'9	6,000
Initial Cost	kshs	6,027,000	251,000	2,260,000	53,000	251,000	50,000	151,000	1,507,000	1,918,000	623,000	58,000	959,000	2,511,000	1,918,000	58,000	479,000	427,000	100,000	35,000	5,514,000	28,000	75,000	5,251,000	1,182,000	4,720,UUU e nao noo	0,023,000	900'ATA	788,000	6,301,000	1,313,000	101,000	1,582,000	450,000	50Z,000
Equipment		Asphalt finisher, 2.4-5m	Asphalt kettle,6000 l	Distributor,4000 l	Chip spreader, hang, 0.4m3	Engin sprayer, 600 l	Engin sprayer,200 l	Line marker, 15cm	Water sprinkler, 5.5kl	Air compressor,13.5 m3	Air compressor,5 m3/min	Belt conveyor, 10m	Bulldozer,3t	Deasel generater, 300KVA	Deasel generater, 200KVA	Leg drill	Truck, 2t	Concrete mixer,0.2 m3	Concrete bucket,0.75 m3	Concrete vibrator, 50mm	Soil plant, 150t	Water pump,50mm,20m,2.2kw	Water pump,100mm,20m,7.5k	Jaw crusher,100t/hr	Grizzly feeder, 100t/hr	Impact crusher, luut/hr	come crusher, auchir	Screen,40/20mm	Screen, 5mm	Selt conveyor, 450mm, 500mm	Apron feeder,100t/hr	Welder,400A	Tire roller, 6-10t	Land rover	Pick up car
Item	No.	35		37	80	39	07	41	42	43	44	45	46	47	48	49	50	51	52	53	54	22	20	21	80 S	80 C	23	19	62	<u> </u>	64	65	66	67	55

Table 4.3 Equipment Cost (3/3)

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## Table 6.1 Summary of Construction Cost (1) (Including VAT)

				Unit:1	,000 Kshs.
Description	Foreign Currency	Local Currency	Yalu Added Tax	Total Local	Total
1. Direct Construction Cost	5. e				~~~~~
General	10,409	54,418	0	54 410	Č. 4 007
Site Clearance and Topsoil Stripping	5,420	1,989	425	54,418 2,424	64,827 7,844
Earthworks	179,249	65,665	15,694	81,359	200 000
Excavation and Filling for Structures	5,904	2,897	645	3,542	260,608 9,446
Culverts and Drainage Works	19,897	17,445	3,368	20,813	40,710
Passage to Traffic	9,973	4,413	1,669	6,082	16,055
Gravel Wearing Course	1,473	407	134	541	2,014
Graded Crushed Stone Subbase and Base	92,167	30,338	8,994	39, 332	131,499
Lean Concrete	77,910	30,960	8,413	39,373	117,283
Bituminous Surface Treatment and Surface Dressing	28,363	1,244	4,262	5,506	33,869
Bituminous Binder Course Wearing Course	133,463	27,443	27,067	54,510	187,973
Concrete Works	62,429	48,174	10,975	59,149	121,578
Road Furniture	23,863	16,466	1,968	18,434	42,297
Niscellaneous	7,788	1,004	177	1,181	8,969
Daywork	2,813	3,648	309	3,957	6,770
Piling	3,477	416	. 8	424	3,901
Sub Total (1)	664,599	306,937	84,108	391,045	1,055,644
2. Land Acquisition and Compensation	. 0	132,400	0	132,400	132,400
3. Engineering Services	79,062	8,370	0	8,370	87,432
4. Physical Contingency	66,460	30,694	8,411	39,105	105,565
Sub Total (1 to 4)	810,121	478,401	92,519	570,920	1,381,041
5. Price Escalation	58,296	157,196	37,911	195,107	253,403
Total	868,417	635,597	130,430	766,027	1,634,444

	(Including VAT)		•	
- استر سی کار است کار است کار است کار است کار است کار این کار است کار است کار است کار است کار است کار است کار ا				Unit: Kshs.
Description	Foreign Currency	Local Currency	Valu Added Tax	Iotal
Direct Construction Cost				
General	10,408,772.00	54,418,500.00	0.00	64,827,272.00
Site Clearance and Topsoil Stripping	5,420,270.78	.1,998,604.46	425,593.76	7,844,469.00
Earthworks	179,249,421,70	65,664,780.50	15,694,224.10	260,608,426.30
Excavation and Filling for Structures	5,904,449.70	2,896,789.70	645,355.15	9,446,594.55
Culverts and Drainage Works	19,897,191.68	17,444,630.39	3,367,573.66	40,709,395.73
Passage of Traffic	9,972,780.26	4, 413, 355, 94	1,669,026.73	16,055,162.93
Gravel Wearing Course	1,473,607.80	406,678.90	133,952,70	2,014,239.40
Graded Crushed Stone	92,167,301.00	30, 337, 555. 90	8,994,526.20	131,499,383.10
Culless and Dura				

30,960,367.50

27,443,005.80

48,174,481.52

16,465,692.51

1,004,065.21

3,648,443.80

306,937,029.38

132,400,000.00

8,370,600.00

30,693,700.00

478,401,329.38

157,196,000.00

635, 597, 329.38

416,364.64

.

1,243,712.61

8,412,572.80

4,262,107.42

27,066,537.80

10,974,725.50

1,968,524.89

84,108,044.90

8,410,800.00

92,518,844.90

37,911,000.00

130,429,844.90

177,435.23

308,556.00

7,332.96

0.00

0.00

117,282,590.50

33,868,886.32

187,972,624.80

121,578,182.52

42, 297, 249, 16

8,969,620.00

6,769,429.80

3,901,039.84

1,055,644,565.95

132,400,000.00

87, 432, 200, 00

105,564,400.00

253,403,000.00

1,634,444,165.95

1,381,041,165.95

77,909,650.20

28,363,066.29

133, 463, 081, 20

62,428,975.50

23,863,031.76

7,788,119.56

2,812,430.00

3,477,342.24

664,599,491.67

79,061,600.00

66,459,900.00

810,120,991.67

58,296,000.00

868,416,991.67

0.00

# Table 6.2 Summary of Construction Cost (2) (Including VAT)

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1.

Subbase and Base Lean Concrete

Bituminous Surface Treatment

and Surface Dressing Bituminous Binder Course

and Wearing Course

Concrete Works

Road Furniture

**Miscellaneous** 

Sub Total (1)

Compensation

2. Land Acquisition and

3. Engineering Service

4. Physical Contingency

Sub Total (1 to 4)

6. Price Escalation

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Total

Daywork

Piling

	• • •	. · · ·						·							•
	•				Table 7.1	Annual		Disbursement Schedule	hedule			· ·	.*		
			-9 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7		, , , , , , , , , , , , , , , , , , ,	4 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(Including VAT)	( VAT)						Unit:	Unit: 1,000 Kshs.
Doscription	F. C.	Total L.C.	Total	F. C.	-1±t Yoar(1003)	Total	F.C.	1st Yoar(1994) L.C.	Total	5.C. 2.	2nd Toar(1905) L.C.	) Totel	F.C.	Jrd Tear(1096) L.C.	Totel
1. Diract Construction Cost			2 1 4 -		• • •	· .									
Gonaral Site Clearance and Topseil	10, 409 5, 420	54.418 2.424	54, 827 7, 814	••	00	00	10.409	54,418 2,060	64,827 6,667	0 813	364	0,177	00	00	00
Barthworks Earthworks	179, 249	81,350	250, 508	0	0	Ö	53, 775	24.408	78, 183	107,549	48,815	156.364	17_925	8 135	76 0SI
EXCAVALION AND FILLING LOT Structuros	5 100 °C	3,542	3,445	O	0	0,	1 181	708	1, 835	4, 133	2, 479	6, 512	280	355	345
Cuiverts and Drainage Works Passage of Traffic	19, 897	20, 313 6, 062	40, 710	00	00	60	5,969	6,244	12,213	12,933	13,528	26, 461	385	1,041	2, 036
Gravel Mearing Course Graded Crushed Stone	1,474	541	2,015			900	0	10	0,224.0	0 0 0	1. 648	8, 533 0	0	541	2,014
Subbase and Base		477.77		>	>		3	<b>D</b>	0	64,517	27, 532	52,049	27,550	11,800	39,450
Loan Concrete Bituminous Surface Treatment and Surface Desting	77,910 28,353	39, 373 5, 506	117, 283 33, 869	00	00	00	00	00	00	38,955 11,345	19, 687 2, 202	58, 612 13, 517	32,955 17,018	19,686	58,641 20,322
Bituainous Binder Course and Wearing Course	133, 463	54,510	187.973	•	D	0	0	o	0	53, 385	21,804	75, 189	80,072	32,706	112.784
Concrete Vorks Road Furniture	62, 129 23, 863	59,149 18,434	121.578	00	00	00	18,729	17,745	36,474	31,215	29.575	60, 790	12.485	11.829	24.314
Miscal lancous	7.788	1,181	8,969	• •	0		2, 336	1354	2.630	1,894	501	8, 160 1, 185	19,090	214,747	33,837
Daywork Piling	2. 813	3.957 424	3. 301	<b>~ ~</b>	00	00	253	1, 187 0	1,440	1,125	1,583	2,708	1,435	1,187	2,622
Sub Total (1) (Subtotal/advance)	664,599	391,045	1.055.644	00	00	00	101,248 185,751	109.557 151,780	210.805 337,531	344,098 292,483	175.920 149,532	520,018 442,015	219,252 186,365	105,568 89,733	324,820 276,098
2. Land Acquisition and Compen€ation	0	132.400	132, 400.	o	66,200	65,200	0	66,200	66,200	<b>o</b>	o	0	0	0	6
<ol> <li>Engineering Service</li> </ol>	79, 062	8.370	87.432	0	0	Ö	23,719	2,511	26, 230	31,625	3, 348	34,973	23,718	2,511	26, 225
4. Physical Contingency	66, 160	39,105	105,565	a	0	0	18,575	15,178	33,753	29, 248	14,953	44,201	18,637	8,974	27,611
Sub Total (  to 4)	810,121	570,920	1,381,041	o	66, 200	56,200	228,045	235,669	463,714	353,356	167,833	521,189	228,720	101,218	329, 538
6. Prico Escalation	58, 296	195,107	253, 403	<b>0</b>	10,261	10, 261	11,585	63,748	75,333	25,371	66,714	92,085	21,340	54,384	75,724
Total	868 417	766 077	1 624 646	c	76 461		000 000	200 412							

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		- , , , , , , , , , , , , , , , , , , ,	Unit:1	,000 Kshs.
	Description	Foreign Currency	Local Currency	Total
	1. Direct Construction Cost	ten Mak and and ten and pro Mak and ten and ten ten		
	General	10,409	54,418	64,827
	Site Clearance and Topsoil	5,420	1,999	7,419
	Stripping		·	
	Earthworks	179,249	65,665	244,914
al de la composición de la composición Composición de la composición de la comp	Excavation and Filling for	5,904	2,897	8,801
	Structures			
	Culverts and Drainage Works	19,897	17,445	37,342
the second	Passage to Traffic	9,973	4,413	14,386
	Gravel Wearing Course	1,473	407	1,880
	Graded Crushed Stone	92,167	30,338	122,505
	Subbase and Base		4	
atter ander State	Lean Concrete	77,910	30,960	108,870
	Bituminous Surface Treatment	28,363	1,244	29,607
	and Surface Dressing	100.000		
	Bituminous Binder Course	133,463	27,443	160,906
	Wearing Course	00 400	4	110 000
	Concrete Works	62,429	48,174	110,603
	Road Furniture	23,863	16,466	40,329
	Miscellaneous	7,788	1,004	8,792
	Daywork	2,813	3,648	6,461
	Piling	3,477	416	3,893
	Sub Total (1)	664,599	306,937	971,536
	2. Land Acquisition and Compensation	0	132,400	132,400
a Stephena	3. Engineering Services	79,062	8,370	87,432
	4. Physical Contingency	66,460	30,694	97,154
	Sub Total (1 to 4)	810,121	478,401	1,288,522
	5. Price Escalation	58,296	157,196	215,492
	Total	868,417	635,597	1,504,014

#### Table 8.1 Summary of Construction Cost (1) (VAT Exemption) · . .

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Table 8.2	Summary of	Construction	Cost	(2)
	(VAT Exemp	otion)		<b>\</b> = <b>J</b>

	- 2 - 2 - 2	an a		Unit: Kshs.
	Description	Foreign Currency	Local Currency	Total
1.	Direct Construction Cost			
	General	10,408,772.00	54,418,500.00	64,827,272.00
	Site Clearance and Topsoil Stripping	5,420,270.78	1,998,604.46	7,418,875.24
	Earthworks	179,249,421.70	65,664,780.50	244,914,202.20
	Excavation and Filling for Structures	5,904,449.70	2,896,789.70	8,801,239.40
· . ·	Culverts and Drainage Works	19,897,191.68	17,444,630.39	37,341,822.07
	Passage of Traffic	9,972,780.26	4,413,355.94	14,386,136.20
	Gravel Wearing Course	1,473,607.80	406,678.90	1,880,286.70
	Graded Crushed Stone Subbase and Base	92,167,301.00	30, 337, 555.90	122,504,856.90
	Lean Concrete	77,909,650.20	30,960,367.50	108,870,017.70
	Bituminous Surface Treatment and Surface Dressing	28,363,066.29	1,243,712.61	29,606,778.90
	Bituminous Binder Course and Wearing Course	133,463,081.20	27,443,005.80	160,906,087.00
	Concrete Works	62,428,975.50	48,174,481.52	110,603,457.02
	Road Furniture	23,863,031.76	16,465,692.51	40,328,724.27
	Miscellaneous	7,788,119.56	1,004,065.21	8,792,184.77
	Daywork	2,812,430.00	3,648,443.80	6,460,873.80
	Piling	3,477,342.24	416, 364.64	3,893,706.88
	Sub Total (1)	664,599,491.67	306,937,029.38	971,536,521.05
2.	Land Acquisition and Compensation	0.00	132,400,000.00	132,400,000.00
3.	Engineering Service	79,061,600.00	8,370,600.00	87, 432, 200.00
4.	Physical Contingency	66,459,900.00	30,693,700.00	97,153,600.00
	Sub Total (1 to 4)	810,120,991.67	478,401,329.38	1,288,522,321.05
6.	Price Escalation	58,296,000.00	157,196,000.00	215,492,000.00
	Total	868,416,991.67	635,597,329.38	1,504,014,321.05

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Tuble 8.3 Annual Disbursement Schedule (VAT Exemption) Unit: 1,000 Xsis. 24,431. 1, 867 1,880 54, 435 17, 764 36,544 22,120 32,253 1,759 2,530 0 293, 285 249, 292 26,229 24,930 360,332 300,451 59,881 Total 3rd Year(1335) 6. 566 200 872 9,101 15,480 745 16.466 9,635 13,173 201 1,085 74,132 62,927 407 2, 511 6, 293 71,731 38,541 110,272 ວ 1 ¢ 17.325 27,650 17,018 12,485 19,090 1,558 1,435 395 1,473 38,955 80,078 219, 252 186, 365 a 228,720 18,637 21,340 250,060 23, 718 ں ب 0 145.948 6.151 54,435 24;272 8, 632 11,843 55,302 8,066 4,396 2,584 3,893 **35, 75**4 61,362 477,761 34, 573 40,609 481,679 76,379 558,058 1013 2nd Year(1995) 11.335 2.648 o 300 39, 339 2, 028 21,237 15.480 24,087 3,293 502 1,459 1,459 198 10.377 133,663 3, 318 28,323 51,008 11,361 179, 331 ن ر 107.549 813 12,933 38,955 11,345 31,215 4,773 3,894 1,125 3,477 64,517 344,098 292,483 \$3,385 31,625 353,356 29,248 25,371 378, 727 ບ ເມ 64,827 5,206 11,203 31,615 73,475 1,760 2,637 140,192 33,181 200,490 316,147 66,200 26,230 68,971 509,183 Total 1st (car(1004) 54,418 1,603 19.700 579 5, 234 14,452 301 99,242 [30,396 2.511 13,040 212,147 57,386 269,533 66,200 ن : 10,409 181.1 5,969 3,989 18,729 2, 336 253 101,248 23, 719 18,575 228,045 239,630 11,585 56,200 10,261 66,200 76, 451 Total -1st Tear(1993) 0 0 0 o 66, 200 66, 200 10,261 76, 451 ن \_ с Ц 64.827 7,419 40, 329 40, 329 8, 792 6, 461 3, 893 , 288, 522 215,492 971,536 97,154 244,914 8,801 37,342 14,386 1,881 1,881 103.870 29,607 87,432 1,504,014 150, 306 132,400 .... Total 4,413 157,196 635,597 8,370 30, 960 1, 244 48, 174 16, 466 1, 004 3, 643 30,694 478.401 54,418 1,999 65, 665 2, 327 30, 335 27, 443 116 306,937 17.445 132,400 407 .... Lotal 62,429 23,863 7,788 2,813 3,477 664,599 79.062 66,450 58,296 868,417 77, 310 28, 363 133, 463 310,121 10, 100 5, 120 179.249 5.004 19,897 9,973 1,474 92,167 ..... ບ 14 Bituminous Surface Treatment Culverts and Drainage Works Site Clearance and Topsoil Excavation and Filling for and Surface Dressing Bituminous Binder Course and Wearing Course Direct Construction Cost Passage of Truffic Gravel Mearing Course Graded Crushed Stone Subbase and Base Land Acquisition and Componsation 4. Physical Contingency (Subtotal/advance) 3. Engineering Service Sub Total (| to 4) Description 6. Price Escalation Concrete Vorks Road Furniture Loan Concrete Wiscellaneous Sub Total (1) SUruccuras Suripping Earchworks Daywork Piling Conoral Tota! į ŝ ...

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### APPENDIX

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### APPENDIX A

### DETAILED DIREST CONSTRUCTION COST

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SUMMARY OF BILLS OF QUANTITIES DESCRIPTION		AMOUNT	FOREIGN CURRENCY	LOCAL		ADFD	XV.
	# 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SHILLINGS CTS		RATE	AMOUNT	RATE	AHOUNT
General		64,827,272.00	10,408,772	00	54,418,500.00		U UU
site Clearance and Jopsoil Stripping		7.844,469.00 260.602 426 30	5,420,270	78	1,998,504.46		25.593.76
xcavation and Filling for Structures	-	9,446,594.55	1/2 243 449	20	02,004,/80,20 7.806,780,70	15,0	94.224.10
s and Drainage Horks		40, 709, 395, 73	19,897,191.68	88	17,444,630.39	3.0	,367,573,66
Viriant Course		2.014.239.40	9,972,780	20 80	4,413,355.94	ц.	69,026.73
Graded Crushed Stone Subbase and Base		131,499,383.10	92,167,301.00	80	30,337,555.90	⊀0, Ω	34,526,20
Leau contracte Processions Surface Treatment and Surface		868	28,363,066.	50	30,960,367,50 1,243,712,61	प्र 8 4	8,412,572.30
Bituminous Binder Course and Mearing	-	187,972,624.80	133, 463, 081.20	20	27,443,005.80	27,00	27,066.537.80
course ncrete Works		121,578,132.52	62.428.375	50	AR 174 AR1 59		
Road Furniture		42, 297, 249.16	23,863,031.76	76	16,465,692.51	10-01 1.96	8 524 89
dreous S		6,369,620,00 5,769,429,80	7,788,119	56	1,004,065,21		7 435 23
Piling		3,901,039.84	3, 477, 342.	24	416,364,64	50	308,556.00 7,332.96
	1,1	1,055,644,565.95	664, 599, 491.67	67	306,937,029.38	84-10	84.108.044.90

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BILL OF QUANTITIES No.1

	GENERAL				
ITEM NO.	DESCRIPTION			RATE	SHILLINGS UIS
1.01	Provide,furnish and maintain the rented accommodation for the Engineer's Representative and his staff:				
	(1) Type I (senior staff house),1No.	Month	30	22000.00	660,000.00
	(2) Type II (senior staff house),5Nos.	Month	130	17000.00	2,210,000.00
	(3) Type III (junior staff house), 3Nos.	Month	90	12000.00	1,080,000.00
	(4) Type IV (junior staff house),5Nos.	Month	150	7500.00	1,125,000.00
1.02	Provide, equip and maintain Main Office for the Engineer's Representative and his staff.	No.	1	1134000.00	1,134,000.00
1.03	Provide and maintain laboratory for the Engineer's Representative and his staff.	No.	1	694000.00	694,000.00
1.04	Provide and maintain furniture and office equipment for the Engineer's office and Laboratory as listed in the Special Specification, all to the satisfaction of the Engineer.	Lump Sum			1,006,800.00
1.05	Provide survey and laboratory equipment as listed in the Special Specification.	Lump Sum			8,747,472.00
1.06	Provide with driver and maintain one (1) new 504 Peugeot or equivalent with a minimum engine capacity of 1800 cc.approved by the Resident Engineer, inclusive of the first 3000 km travelled in any one month.	Veh. Month	30	40000.00	1,200,000.00
1.07	E.O.Item 1.06 for distance in excess of 3000 km travelled in any one month, inclusive of fuels, lubricants, tyres and additional servicing.		100,000	6.00	600,000.00
1.08	As for Item 1.06 but three (3) new LWB 4WD Land Rovers or equivalent with a minimum engine capacity of 2300 cc., inclusive of the first 3000 km	Veh. Month	90	44000.00	3,960,000.00
1.09	travelled in any one month. E.O.Item 1.08 for distance in excess of 3000 km travelled in any one month, inclusive of fuels, lubricants, tyres and additional servicing.		400,000	11.50	4,600,000.00
1.10	As for Item 1.06 but three (3) new Subaru or equivalent with a minimum engine capacity of 1800 cc., inclusive of the first 3000 km travelled in any one month.	Veh. Month	90	38000.00	3,420,000.00
1.11	E.O.Item 1.10 for distance in excess of 3000 km travelled in any one month, inclusive of fuels lubricants tyres and		300,000	7.00	2,100,000.00

inclusive of fuels, lubricants, tyres and additional servicing.

BILL OF QUANTITIES No.1 GENERAL

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	GENERAL				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
1.12	Prime Cost Sum of Shs.22,100,000 for removals and alterations to following existing services;				
•	(1) Telecommunication line	P.C. Sum			1,600,000.00
۰.	(2) Electric line	P.Ĉ. Sum			8,900,000.00
e e ji	(3) Water pipe line	P.C. Sum			4,600,000.00
	(4) Railway	P.C. Sum			4,500,000.00
	(5) Sewerage pipe line	P.C. Sum		· .	1,600,000.00
	(6) Existing street lighting	P.C. Sum			100,000.00
	(7) Electric fence of National Park	P.C. Sum			500,000.00
	(8) Fence of Kenya Rifles	P.C. Sum			300,000.00
1.13	Include percentage of P.C.Sum in Item 1.12 for Contractor's cost and profit.	% of Item 1.12	20		4,420,000.00
1.14	Prime Cost Sum of Shs.3,000,000 for the compensation and aquisition of land	P.C. . Sum			3,000,000.00
1.15	Include percentage of P.C.Sum in Item 1.14 for Contractor's cost and profit.	% of Item 1.14	40		1,200,000.00
1.16	Prime Cost Sum of Shs.600,000 for the Engineer's Miscellaneous Account.	P.C. Sum			600,000.00
1.17	Include percentage of P.C.Sum in Item 1.16 for Contractor's cost and profit.	% of Item 1.16	20		120,000.00
1.18	Provide and erect publicity signs as directed by the Engineer,all in accordance with MOW DRG.NO.SS/234.	No.	10	25000.00	250,000.00
1.19	Prime cost sum of K.Shs. 500,000 for the rectification of title deeds of acquired lands.	P.C. Sum			500,000.00
1.20	Include percentage of P.C Sum in Item 1.19 for Contractor's cost and profit.	% of Item	20		100,000.00
	Sub total (1)	1.19			64,827,272.00

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BILL OF QUANTITIES No.4 SITE CLEARANCE AND TOPSOIL STRIPPING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
4.01	Clear site in Open Country, including removal of trees, hedges, bushes and other vegetation and objectionable organic material grub up roots and backfill to	ha	126.2	5449.80	687,764.76
	material,grub up roots and backfill to 95% MDD AASHTO T.99 with approved material all in accordance with the Specification.		: *		•
4.02	As for Item 4.01 but to clear site in forest area.	ha	45.3	11842.80	536,478.84
4.03	Removal topsoil to a depth as directed by the Engineer and dispose of to spoil dump or stockpile for re-use as directed by the Engineer.	m3	106,700	52,57	5,609,219.00
4.04	Scarify and remove to stockpile existing pavement material as directed by the Engineer.	m3	2,720	137.87	375,006.40
4.05	Demolish existing railway bridge and remove debris to spoil over any distance ,backfill voids and compact to 105% NDD as necessary.	Lump Sum			136,000.00
4.06	Allow a Provisional Sum to be expended P on a daywork basis for the removal of existing structures, fences and other obstructions.	rov. Sum			500,000.00
:	Sub total (4)				7,844,469.00

A- 4

BILL OF QUANTITIES No.5

TEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
410 s	DESCRIPTION				SHILLINGS CTS
5.01	Fill in soft material for main road and service road, and compact to at least 95% MDD AASHTO T.99.	m3	1,234,300	98.25	121,269,975.00
.02	As for Item 5.01 but for slip roads and approach roads.	m3	196,400	98.25	19,296,300.00
i.03	As for Item 5.01 but hauling from drainage pond excavation works as shown on the Drawings.	m3	7,720	97.68	754,089.60
.04	As for Item 5.01 but for new railway embankment.	m3_	5,480	97.68	535,286.40
.05	Fill in hard material for main road.	m3	104,900	257.47	27,008,603.00
.06	Fill in soft material for central reserves as shown on the Drawings.	m3	11,400	164.23	1,872,222.00
.07	Fill in soft material adjacent to shoulders as shown on the Drawings.	тЗ	3,310	164.23	543,601.30
.08	Spoil in unsuitable material such as black cotton and rubbish.	m3	189,500	99.24	18,805,980.0
.09	Spoil in soft material.	m3	5,000	99.24	496,200.0
.10	Spoil in hard material.	m3	1,000	315.59	315,590.0
.11	Overhaul earthworks in excess of 1.0 km free haul.	m3.km	3,432,300	10.49	36,004,827.0
.12	Excavation in swamps.	m3	1,000	120.90	120,900.0
.13	Provide and place rockfill in accordance with the Specification.	m3	1,000	256.05	256,050.0
.14	Compact original ground below fills to at least 95% MDD AASHTO T.99 including all necessary scarifying and watering as directed by the Engineer, to a depth of 150mm below ground level.	m3	62,600	18.14	1,135,564.00
.15	E.O.Item 5.01 to 5.05 for compaction of 300mm subgrade material to at least 100% MDD AASHTO T.99 in Fill area.	m3	121,700	9.07	1,103,819.0
.16	Compact in-situ subgrade in Cut area to a depth of 300mm below formation level to at least 100% MDD AASHTO T.99.	m3	100,200	18.14	1,817,628.0
.17	Compact in-situ subgrade material in Cut area between 150mm and 300mm below underside of imported subgrade material to at least 95% MOD AASHTO T.99.	m3	1,000	18.14	18,140.0
.18	Compact in-situ subgrade material in Cut area between Omm and 150mm below underside of imported subgrade material to at least 100% MDD AASHTO T.99.	m3	1,000	9.07	9,070.0
.19	Provide,place and compact improved subgrade material in locations where directed by the Engineer.	· m3	1,000	117.22	117,220.0

BILL OF QUANTITIES No.5 EARTHWORKS

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ARTHWORKS	-
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ITEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
5.20	Rock formation levelling in Cut area below lean concrete base level or as directed by the Engineer.	m2	72,100	26.56	1,914,976.00
5.21	Haul from stockpile and spread on side- slopes and central reserves, lightly roll and compact 75mm thickness of topsoil.		335,700	10.56	3,544,992.00
5.22	Haul from stockpile and spread on black cotton spoil area, lightly roll and compact 200mm thickness of topsoil in locations as directed by the Engineer.	m2	69,100	21.22	1,466,302.00
5.23	Haul from stockpile and spread on rubbish spoil area and side borrow area, and compact topsoil or as directed by the Engineer.	m3	15,400	103.16	1,588,664.00
5.24	Plant fillslopes and cutslopes with selected grass in accordance with the Specification, including the establish- ment of plant nurseries where required.	m2	773,000	18.91	14,617,430.00
5.25	Provide place and compact filter material for drainage layer and sand mat in locations where directed by the Engineer.	m3	1,000	565.74	565,740.00
5.26	Fill for new national park boundary dike including demolishing existing dike.	m3	58,300	89.59	5,223,097.00
5.27	Filter fabric for rockfill.	m2	1,000	206.16	206,160.00
•					200 600 426 20

Sub total (5)

260,608,426.30

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BILL OF QUANTITIES No.7 EXCAVATION AND FILLING FOR STRUCTURES

ITEM NO.		UNIT	•		AMOUNT SHILLINGS CTS
	BRIDGES				
7.01	Excavation, compaction at foundation levels, backfilling and removal of excavated material to spoil for struct- ures foundations in soft materials.	m3	5,330	114.63	610,977.90
7.02	E.O.Item 7.01 at any location for excavation in hard materials.	m3	1,230	335.12	412,197.60
7.03	Backfilling with selected material behind bridge abutment,wing walls and around structures.	m3	4,980	149.21	743,065.80
7.04	Provide and place porous filter material behind bridge abutments and wing walls.	m3	300	565.74	169,722.00
7.05	Provide and place selected granular fill material.	m3	200	457.54	91,508.00
	BOX CULVERTS				· · · · ·
7.05	Excavation, compaction at foundation levels, backfilling and removal of excavated material to spoil for struct- ures foundations in soft materials.	m3	15,680	114.63	1,797,398.40
.07	E.O.Item 7.06 at any location for excavation in hard materials.	m3	300	335.12	100,536.00
.08	Backfilling with selected material behind box culvert walls and around structures.	m3	22,670	149.21	3,382,590.70
.09	Provide and place porous filter material behind box culvert walls.	m3	1,990	565.74	1,125,822.60
.10	Provide and place selected granular fill material.	m3	1,420	457.54	649,706.80
.11	Excavation and backfilling for gabions in soft material.	m3	275	90.95	25,011.25
.12	Provide and place gabion mesh,0.5m thick as shown Drawings or directed by the Engineer.	m2	550	397.59	218,674.50
.13	Provide and place rockfill to gabions.	mЗ	275	434.12	119,383.00
	Sub total (7)				9,446,594.55

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BILL OF QUANTITIES No.8 CULVERTS AND DRAINAGE WORKS

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ITEM NO.			QUANTITY		AMOUNT SHILLINGS CTS
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	NOTE:				
	No separate payment shall be made the haulage of surplus or unsuitable excavated material and the cost of such haulage shall be included in the rates and prices.	·			•
3.01	Excavate in soft material for pipe culverts below existing ground level or road formation level including support of trench sides, backfilling and compact- ion at least 95% MDD AASHTO T.99 up to new road formation level or ground level whichever is the lower, dewatering, and carting surplus material to spoil dump.	m3	3,970	143.35	569,099.50
3.02	As for Item 8.01 but for inlets and outlets of culverts.	m3	2,970	143.35	425,749.50
3.03	Excavate in soft material for earth channel, drain type I,	mЗ	5,650	114.63	647,659.50
3.04	Excavate in soft material for stone pitching channel,drain type II.	m3	3,900	114.63	447,057.00
3.05	Excavate in soft material for concrete channel,drain type III.	m3	3,690	114.63	422,984.70
8.06	Excavate in soft material for concrete channel with cascade,drain type VII.	m3	5,600	114.63	641,928.00
8.07	Excavate and backfill for gulley pots in soft material.	m3	180	143.35	25,803.00
3.08	Excavate and backfill for concrete ditch type VI, in soft material.	m3	540	143.35	77,409.00
.09	Excavate and backfill for gabions in soft material.	m3	580	90.95	52,751.00
.10	Excavate for subsoil drains in soft material.	m3	460	90.95	41,837.00
1 <b>.11</b>	E.O.Item 8.01 to 8.10 at any location for excavation in hard materials.	m3	500	335.12	167,560.00
.12	Provide and place filter fabric to subsoil drains.	m2	3,040	103.08	313,363.20
.13	Provide and place crushed rock backfill to subsoil drains.	m3	420	457.54	192,166.80
.14	Provide and place perforated 200mm dia. PVC pipe to subsoil drains.	រោ	1,265	425.11	537,764.15
.15	Provide, lay and joint 300mm I.D. concrete pipes ogee jointed.	m	155	471.07	73,015.85
.16	As for Item 8.15 but 600mm I.D.	m	1,031	1580.88	1,629,887,28
.17	As for Item 8.15 but 750mm I.D.	m	90	2159.53	194,357.70
.18	As for Item 8.15 but 900mm I.D.	m	1,067	2973.52	3,172,745.84

BILL OF QUANTITIES No.8 CULVERTS AND DRAINAGE WORKS

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
8.19	As for Item 8.15 but 1200mm I.D.	កា	294	4645.74	
8.20	Provide, place and compact class 15/20, concrete bed and surround to concrete pipes, including formwork.	m3	2,520	2818.67	7,103,048.40
8.21	As for Item 8.20 but concrete facing for drain ditch on berm, drain type VIII.	m2	1,280	105.68	135,270.40
8.22	Provide, place and compact class 25/20 concrete for headwalls, wingwalls, aprons and toewalls to pipe culverts including all formwork and provision and placing of fabric mesh reinforcement as shown in the Drawings.	m3	924	4254.82	3,931,453.68
8.23	As for Item 8.22 but class 15/20 for concrete channel.drain type III and VII.	m3	1,330	2610.93	3,472,536.90
8.24	Provide,place and compact class 20/20 concrete for concrete ditch,drain type VI including all formwork and placing of reinforcement as shown in the Drawings.	m3	94	9441.32	887,484.08
8.25	Provide place and compact class 20/20 concrete for gulley pot including all formwork.	m3	63	6580.04	414,542.52
8.26	As for Item 8.24 but concrete cover of gulley pot.	No.	168	516.07	86,699.76
8.27	Provide and place 50mm dia.PVC weep holes.	No.	45	18.42	828.90
8.28	Excavate as necessary, provide all materials and construct 150mm thick grouting stone pitching to bed and side- slopes of drains, ditches, channels, ground faces, inlets and outlets of culverts, including carting of excavated material to spoil, as directed by the Engineer.	m2	26,090	264.98	6,913,328.20
8.29	As for Item 8.28 but 250mm building stone at concrete channel with cascade.	m2	1,730	262.29	453,761.70
8.30	Cement screen on building stone.	m2	1,730	58.44	101,101.20
8.31	Provide and place gabion mesh.1m thick, as shown on Drawings or directed by the Engineer.	m2	430	483.67	207,978.10
8.32	Provide and place mattresses,0.3m thick, as shown on Drawings or directed by the Engineer.	m2	467	247.44	115,554.48
8.33	Provide and place rockfill to gabions and mattresses.	m3	570	434.12	247,448.40
8.34	Provide and place filter fabric under and/or behind gabions.	m2	335	103.08	34,531.80
8.35	Excavate trench,provide,lay and joint 450 x 225mm P.C.C. invert block drains (I.B.D.)having 300mm dia.channel.	m	507	309.93	157,134.51

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## BILL OF QUANTITIES No.8 CULVERTS AND DRAINAGE WORKS

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
8.36	Provide and lay 75mm thick P.C.C. side slabs to I.B.D.Channel.		477		
8.37	Excavate trench,provide,lay and joint 375 x 250mm P.C.C.invert block drain, drain type IV.	M	15,440	305.04	4,709,817.60
8.38	As for Item 8.37 but for on berm,drain type VIII.	m	740	305.04	225,729.60
8.39	Excavate, provide all materials and construct kerb inlet at busbays as detailed on the Drawings.	No	32	120.03	3,840.96
8.40	Excavate,provide all materials and construct intake block channel at busbays as detailed on the Drawings.	No	32	129.06	4,129.92
8.41	Provide and place concrete class 15 for 250 x 150mm in-situ gutters.	រា	48	680.77	32,676.96
8.42	Provide and place selected granular fill material for gravell bedding.	m3	79	457.54	36,145.66
8.43	Plant channel slopes with selected grass in accordance with the Specification.	<b>m2</b>	11,330	18.91	214,250.30
8.44	Earth dike of drainage pond.	m3	710	97.68	69,352.80
$\leq \frac{1}{2}$	Sub total (8)	•	•		40,709,395.73

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BILL OF QUANTITIES No.9 PASSAGE OF TRAFFIC

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
9.01		km	19.0	35000.00	
9.02	where we concerned a long a concernent,	km	1.0	3301790.00	3,301,790.00
9.03	As for Item 9.02 but pavement type Deviation-1(Uhuru Monument Junction).	km	0.3	3301790.00	990,537.00
9.04	As for Item 9.02 but pavement type Deviation-2(Ngong Road Junction and Dagoretti Forest Junction).	km	1.3	652430.00	848,159.00
9.05	Construct and maintain 6.0m wide deviations including drainage,pavement type Deviation-3.	km	0.9	310910.00	279,819.00
9.06	Construct and maintain 3.0m wide deviations including drainage,pavement type Deviation-4.	Łm	2.5	156940.00	392,350.00
9.07	Reinstatement of deviations and existing drainages.	Lump Sum			563,100.00
9.08	Reinstatement of existing road after the completion of cross drainge works, Mombasa Road Junction.	: m2	70	787.92	55,154.40
9.09	Reinstatement of existing road after the completion of cross drainge works, Kikuyu Junction.	m2	35	244.21	8,547.35
9.10	Maintenance of the project road (main road,slip road,approach road and service road) used for the deviation purpose as specified.	Lump Sum			824,300.00
9.11	Improvement of the existing road as instructed and approved by the Engineer.				
	(1) Improved subgraded material.	m3	100	117.22	11,722.00
	(2) Gravel wearing course.	m3	600	348.78	209,268.00
	(3) Graded crushed stone base.	mЗ	50	908.82	45,441.00
	(4) MC3000 first seal coat.	litre	150	25.81	3,871.50
	(5) Chippings, 3/6mm.	m3	2	880.84	1,761.68
9.12	Maintenance of Existing Roads used for heavy construction traffic as specified when and where directed by the Engineer.	km	30	50000.00	1,500,000.00
9.13	Re-carpeting of Existing Roads 6m wide or pro rata as specified when and where directed by the Engineer.	m3	1,800	3530.19	6,354,342.00
	Sub total (9)				16.055.162.93

Sub total (9)

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16,055,162.93

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BILL OF QUANTITIES No.10 GRAVEL WEARING COURSE

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
10.01	Clear site of the material site.	ha	1.0	5449.80	5,449.80
10.02	Construct access road to the material site in excess of 200m in length.	km	1.0	291780.00	291,780.00
10.03	Excavate and spoil topsoil and over- burden in the material site.	m3	4,000	52.57	210,280.00
10.04	Excavate gravel wearing course material, transport,spread and compact to at least 95% MDD AASHIO T.180 for service roads.	<b>m3</b> .	4,320	348.78	1,506,729.60
~	Sub total $(10)$				

Sub total (10)

2,014,239.40

BILL OF QUANTITIES No.13

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
13.01	Provide,spread and compact graded crushed stone to subbase for main road.	m3	84,490	848.31	71,673,711.90
13.02	As for Item 13.01 but for slip road.	m3	14,020	848.31	11,893,306.20
13.03	As for Item 13.01 but for approach road and service road.	m3	3,030	848.31	2,570,379.30
13.04	Provide, spread and compact graded crushed stone to base for slip road, approach road and service roads.	m3	2,150	908.82	1,953,963.00
13.05	Provide,spread and compact graded crushed stone to shoulder for main road.	m3	43,810	848.31	37,164,461.10
13.06	As for Item 13.05 but for slip road.	m3	6,360	848.31	5,395,251.60
13.07	As for Item 13.05 but for approach road and service road.	m3	1,000	848.31	848,310.00
	Sub total (13)				131,499,383.10

BILL OF QUANTITIES NO.14A LEAN CONCRETE FOR BASE

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
14.01	Provide, process, mix, transport, spread and compact lean concrete base material for main road at 4% nominal cement content by weight of total mix.	m3	90,340	1126.95	101,808,663.00
14.02	As for Item 14.01 but for slip road.	m3	11,150	1126.95	12,565,492.50
14.03	As for Item 14.01 but for approach road.	m3	1,020	1126.95	1,149,489.00
14.04	Protecting and curing lean concrete base.	m2	515,500	2.00	1,031,000.00
14.05	Variation in cement content (Provisional).	tonne	200	3639.73	727,946.00
· .	Sub total (14A)				117,282,590.50

BILL OF	QUANTITIES	No.15

BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING

ITEM NO.	DESCRIPTION				
	NOTE:				
	No haulage will be paid for bitumen or chippings and this shall be included in the following rates and prices.				
	PRIME COAT				
15.01	Preprare surface of base, provide, transport, heat as specified and spray MC 30 prime coat at at a nominal spray rate of 1.0 litre/m2 for main road.	litre	411,550	22.53	9,272,221.50
15.02	As for Item 15.01 but for slip road.	litre	55,740	22.53	1,255,822.20
15.03	As for Item 15.01 but for approach road.	litre	4,600	22.53	103,638.00
et. 1.	TACK COAT				
15.04	Prepare surface of binder course, provide, transport, heat as specified and spray MC 3000 cut-back bitumen tack coat at nominal spray rate of 0.6 litre/m2 for main road.	litre :	493,860	25.81	12,746,526.60
16 05	As for Item 15.04 but for slip road.	1.+	44 220	25 01	1 141 210 20
	As for Item 15.04 but for approach		5,520		
	road.	iiiie	01020	20101	112,171120
	SURFACE DRESSING				÷.,
	(Double Surface Dressing) Provide,heat and spray MC3000 cut-back	litro	209,610	25.81	5,410,034.10
(,,,,,	bitumen at a nominal spray rate of 1.3 litres/m2 as first seal coat.	THE	209,010	23.01	3,710,034.10
15.08	As for Item 15.07 but at a nominal rate of 0.3 litre/m2 as second seal coat.	litre	48,370	25.81	1,248,429.70
15.09	Provide, transport, lay and roll 10/14mm chippings at a rate of 69 m2/m3.	m3	2,340	800.77	1,873,801.80
15.10	As for Item 15.09 but 3/6mm chippings at a rate of 250 m2/m3.	m3	645	880.84	568,141.80
	(Single Surface Dressing)				
15.11	Provide,heat and spray MC3000 cut-back bitumen at a nominal spray rate of 0.6 litres/m2.	litre	3,170	25.81	81,817.70
5.12	Provide,transport,lay and roll 3/6mm chippings at a rate of 189 m2/m3.	m3	28	880.84	24,663.52
	Sub total (15)				33,868,886.32

BILL OF	QUANTITIES	No.16

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ITEM NO.	DESCRIPTION		QUANTITY		AMOUNT SHILLINGS CTS
	NOTE:				
	No haulage shall be paid for in respect of any of the items or materials contained in this Bill of Quantities and the cost of such haulage shall be deemed to be included in the rates entered below.				
16.01	Provide, lay and compact Asphalt Concrete Binder Course using 5.5% nominal bitumen content by weight of total mix for main road.	m3	32,930	3280.85	108,038,390.50
16.02	As for Item 16.01 but for slip road.	m3	3,430	3280.85	11,253,315.50
16.03	As for Item 16.01 but for approach road.	m3	460	3280.85	1,509,191.00
	Provide, lay and compact Asphalt Concrete Wearing Course using 6.5% nominal bitumen content by weight of total mix for main road.	m3	16,460	3530.19	58,106,927.40
16.05	As for Item 16.04 but for slip road.	m3	2,230	3530.19	7,872,323.70
16.06	As for Item 16.04 but for approach road.	m3	230	3530.19	811,943.70
16.07	variation.	litre	Rate only	10.80	
16.08	Supply and mix in mineral filler for invariation as directed by the Engineer.	tonne	100	3639.73	363,973.00
16.09	As for Item 16.08 but to sand.	tonne	50	331.20	16,560.00
	Sub total (16)				187,972,624.80

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## BILL OF QUANTITIES No.17 CONCRETE WORKS

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ITEN NO,	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
	BRIDGES				
	Concrete:				
	Provide,place and compact the following classes of concrete for insitu works as specified.				
17.01	Class 15/40 for blinding concrete on all structures.	m3	180	2099.03	377,825.40
17.02	Class 25/20 for structural concrete in:				
	<ol> <li>Bridges for Hombasa Road Junction, Uhuru Honument Junction and Railway.</li> </ol>	m3	2,880	2453.62	7,066,425.60
	(2) Vehicle bridges.	m3	1,090	2453.62	2,674,445.80
i t	(3) Pedestrian bridges.	m3	90	2453.62	220,825.80
17.03	Class 30/20 for structural concrete.	. m3	2,120	2514.88	5,331,545.60
17.04	Provide UF2 finish to concrete surface.	m2	5,830	42.70	248,941.00
	Fornwork :				
	Provide, erect and afterwards dismantle and remove the Items specified below:		· .		
17.05	Formwork to achieve class F1 finish:				
	(1) Sloping	m2	86	374.61	32,216.46
·	(2) Vertical	m2	2,660	352 43	937,463.80
17.06	Formwork to achieve class F2 finish:				
	(1) Horizontal	m2	3,450	505.29	1,743,250.50
: .	(2) Sloping	m2	218	404.24	88,124.32
	(3) Vertical	m2	9,050	427.08	3,865,074.00
17.07	Provide and fix in position high tensile steel reinforcement bars to BS 4461 of diameter equal to or less	tonne	202.0	24337.40	4,916,154.80
	than 16mm.	<b>.</b>	409 0	12220 00	11 401 011 00
17.08	As for Item 17.07 but of diameter greater than 16mm.	tonne	482.0	23779.90	11,461,911.80
17.09	Provide and place 200nm wide waterstops as specified in the Drawings.	m	57	426.83	24,329.31
17.10	Provide and place 20mm thick joint filler	m2	36	573.60	20,649.60

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ITEM NO.	DESCRIPTION	UNIT			AMOUNT SHILLINGS CTS
	BOX CULVERTS			*********	a bad ad na na an ta ta ta ta ba ba an an an ta ta da an an ta
	Concrete:				
	Provide, place and compact the following classes of concrete for insitu works as specified.	1			
17.11	Class 15/40 for blinding concrete on all structures.	m3	588	2099.03	1,234,229.64
17.12	Class 25/20 for structural concrete.		Ξ.		
• . •	(1) Box culverts for road.	m3	7.820	2453.62	19,187,308.40
	(2) Box culverts for drainage.	m3	6,320	2453.62	15,506,878.40
	(3) Box culverts for footpath.	m3	646	2453.62	1,585,038.52
17.13	Provide UF2 finish to concrete surface.	m2	9,880	42.70	421,876.00
	Formvork:				
n Stantos	Provide, erect and afterwards dismantle and remove the Items specified below:				
17.14	Fornwork to achieve class F1 finish:				
	(1) Vertical	m2	12,120	352.43	4,271,451.60
7.15	Fornwork to achieve class F2 finish:	e - 192			
	(1) Horizontal	.m2	4,000	505.29	2,021,160.00
	(2) Vertical	m2	7,450	427.08	3,181,746.00
7.16	Provide and fix in position high tensile steel reinforcement bars to BS 4461 of diameter equal to or less than 16mm.	tonne	215.0	24337.40	5,232,541.00
7.17	As for Item 17.16 but of diameter greater than 16mm.	tonne	1,225.0	23779.90	29,130,377.50
7.18	Provide and place 200mm wide waterstops as specified in the Drawings.	m	909	426.83	387,988.47
7.19	Provide and place 20mm thick joint filler	m2	712	573.60	408,403.20
	Sub total (17)				121,578,182.52

## BILL OF QUANTITIES No.17 CONCRETE WORKS

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BILL	OF QUANTITIES	No.20

ROAD FURNITURE

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
20.01				- 4 4 4 1 4 5 4 5 4 5 2 4 4	
	<ol> <li>(1) Type W28,1200mn</li> <li>(2) Type W29,1200mm</li> <li>(3) Type W36,1200mm</li> <li>(4) Type W37,1200mm</li> </ol>	No. No. No.	30 22 3 22	7000.00 7000.00 7000.00 7000.00	210,000.00 154,000.00 21,000.00 154,000.00
20.02	Provide and erect standard priority signs:			. 1	
1	(1) Type R1,1200mm	No.	10	7000.00	70,000.00
20.03	Provide and erect standard prohibitory signs:			· :	
	(1) Type P1,1000mm (2) Type P25,1000mm	No. No.	1 30	6000.00 6000.00	6,000.00 180,000.00
20.04	Provide and erect standard mandatory signs:				
ally a	(1) Type M3,1000mm (2) Type M4,1000mm	No. No.	1 1	6000.00 6000.00	6,000.00 6,000.00
20.05	Provide and erect non-standard informatory signs (advance direction signs,direction signs,route confirmatory signs):				
	<ol> <li>less than 1m2</li> <li>3m2-4m2</li> <li>4m2-5m2</li> <li>5m2-6m2</li> <li>6m2-7m2</li> <li>7m2-8m2</li> <li>8m2-9m2</li> <li>9m2-10m2</li> </ol>	No. No. No. No. No. No.	55 1 8 10 1 12 7 1	7000.00 18000.00 19000.00 23000.00 25000.00 27000.00 30000.00 40000.00	385,000.00 18,000.00 152,000.00 230,000.00 25,000.00 324,000.00 210,000.00 40,000.00
20.06	Road marking in yellow or white paint.	m2	3,430	175.10	600,593.00
20.07	Provide and fix flex beam guardrails, all in accordance with the Drawings.	តា	8,590	1362.59	11,704,648.10
20.08	Provide and erect road edge marker post.	No.	87	799.85	69,586.95
20.09	Provide and erect road reserve boundary post where directed by the Engineer.	No.	230	799.85	183,965.50
20.10	Plant selected grasses in the central reserves, including the establishment of plant nurseries where required.	m2	32,000	18.91	605,120.00
20.11	Plant selected shrubs and bushes approved by the Engineer at locations in the central reserve and road reserve boundary,including the establishment of plant nurseries where required.	No.	8,120	83.21	675,665.20
20.12	As for Item 20.11 but to selected trees.	No.	226	124.82	28,209.32

## BILL OF QUANTITIES No.20 ROAD FURNITURE

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	RUAD FURNITURE				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
20,13	<b>•</b> • • • • • • • • •	No.	58	1252.00	72,616.00
20.14	Provide and lay flush kerb,150 x 100mm, Type A	m	119,160	124.29	14,810,396.40
20.15	Provide and lay flush kerb,150mm x 80mm, Type B.	m	6,380	104.85	668,943.00
20.16	Provide and lay flush kerb,150mm x 80mm, Type C.	m	3,300	136.35	449,955.00
20.17	Provide and lay flush kerb,150mm x 80mm, Type D.	m	3,900	94.37	368,043.00
20.18	Provide and lay flush kerb,150mm x 80mm, Type E.	m	1,300	134.24	174,512.00
20.19	Quardrant for flush kerb,main road and slip road: (1) in-situ 0.5m radius,Type A. (2) in-situ 0.5m radius,Type B.	No. No.	25 4	117.35 108.95	2,933.75 435.80
20.20	Provide and lay raised kerb,125mm x 250mm,slip road.				· · · ·
	<ol> <li>straight.</li> <li>radius 5m to 1m.</li> </ol>	m M	1,530 72	278.00 305.23	425,340.00 21,976.56
20.21	Provide and lay raised kerb,125mm x 250mm,main road.				
	(1) straight. (2) radius 5m to 1m.	m m	256 114	296.90 324.12	76,006.40 36,949.68
20.22	Provide and lay ramped kerb.	No.	64	305.97	19,582.08
20.23	Provide and erect permanent five strand wire fencing including intermediate and straining posts in areas specifically directed by the Engineer.	m	1,500	149.88	224,820.00
20.24	Provide and erect gates as directed and approved by the Engineer.	No.	8	2447.54	19,580.32
20.25	Provide and erect double headed guardrail,all in accordance with the Drawings.	m	3,660	2397.91	8,776,350.60
20.26	Provide stairways for bus stops as specified in the Drawings.	m	53	1698.50	90,020.50
	Sub total (20)				42,297,249.16

A- 20

BILL OF QUANTITIES NO.21 MISCELLANEOUS

	MI SUCLEAREOUS				
I TEH NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
21.01					5,653,899.50
21.02	Supply and install in position elastomeric bearings including mortar mortar plinth,fixed.				
	(1) 406 x 279 x 18mm (2) 432 x 203 x 18mm	No. No.		2563.58 2147.60	30.762.96 79,461.20
21.03	Supply and install in position elastomeric bearings including mortar plinth,movable:				
. :	(1) 229 x 152 x 56mm (2) 279 x 229 x 37mm (3) 279 x 229 x 46mm (4) 279 x 229 x 65mm (5) 432 x 203 x 65mm	No. No. No. No.	8 16 22 18 12	2339.34 2753.79 3332.44 4554.06 5851.93	18,714.72 44,060.64 73,313.68 81,973.08 70,223.16
21.04	Supply and install joint filler for expansion joint:				
	(1) 30mm thick. (2) 25mm thick. (3) 20mm thick.	m2 m2 m2	69 82 23	849.15 710.72 573.60	58,279.04
21.05	Supply and install sealant for expansion joint:				
	(1) 30 x 50mm deep. (2) 25 x 50mm deep.	TA M	66 75	473.56 395.19	31,254.96 29,639.25
21.06	Provide, lay and compact Asphalt Concrete Wearing Course for bridge decks.	m3	134	3530.19	473,045.46
21.07	Supply and install flex beam guardrails including post for vehicle bridge as detailed on the Drawings.	M	244	1319.43	321,940.92
21.08	Provide and erect in position parapet handrails to railway bridge as detailed on the Drawings.	m	114	664.58	75,762.12
21.09	Provide and erect in position pedestrian parapets to footbridges as detailed on the Drawings.	ជា	282	811.39	228,811.98
21.10	Provide and install 100mm dia.drain pipe through deck slabs.	No.	36	155.90	5,612.40
21.11	Provide and place 75mm dia.PVC weep holes.	No.	62	75.37	4,672.94
21.12	Provide and place 200mm dia.perforated PVC pipes.	m	1,770	425.11	752,444.70
21.13	Provide and install 20mm dia. dowel bars with caps as specified on the Drawings.	No.	152	540.64	82,177.28
21.14	As for Item 21.13 but 40mm dia.	No.	98	1455.43	142,632.14

# BILL OF QUANTITIES No.21 MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
21.15	Provide, spread and compact graded crushed stone to base for box culverts.	m3	132	908.82	119,964.24
21.16	Provide, lay and compact Asphalt Concrete Wearing Course for box culverts.	m3	142	3530.19	501,286.98
21.17	Provide and place 200mm dia.PVC weep holes.	No.	30	596.75	17,902.50
	Sub total (21)				8,969,620.00

### BILL OF QUANTITIES No.22 DAYWORKS

ITEM DESCRIPTION UNIT QUANTITY RATE AMOUNT NO. SHILLINGS CTS ----------NOTE: PLANT The rate inserted herein are to include The rate inserted herein are to include all operational and maintenance cost, fuel,oil,grease,drivers and turnboys, wages,supervision,overheads and profits. Only time actually employed upon the works will be paid for and the rates should include for idle time,travelling and overtime.All items of plant must be priced. Items of Major Plant Employed on Dayworks. Where items of major plant listed in the Schedule of Dayworks are specified by type (e.g. D-6, D-8, CAT. 14, ets.) the power ratings shall not be lower than the power ratings of such plant manufactured within the two years prior to the date of tender. Any items of major plant employed upon Dayworks which has a power rating lower than that specified above, shall be paid for at rates lower than those in the Schedule of Dayworks. The reduction in the rate payable shall be in proportion to the reduction in power rating below that specified above. D6 tractor or equivalent, including brade 200 1591.22 318,244.00 22.01 hr and ripper. 22.02 D7 tractor or equivalent, including brade 200 2261.61 452,322.00 hr and ripper. D8 tractor or equivalent, including brade hr 100 2828.01 282,801.00 22.03 and ripper. Motor grader CAT140G or equivalent (complete with scarifier). 22.04 hr 300 1132.71 339,813.00 100 1189.17 118.917.00 22.05 Heavy grid or sheeps foot roller. hr 100 1514.93 151,493.00 hr 22.06 Vibrating roller,10 ton. 67,642.00 15 ton pneumatic self-propelled roller. 100 676.42 22.07 hr 100 680.02 68.002.00 hr 22.08 16-18 ton smooth wheel roller. 100 538.49 53,849.00 22.09 As for Item 22.08 but 6-8 ton. hr 200 203.23 40,646.00 22.10 Small hand-propelled vibrating roller. hr 300 72.28 21,684.00 22.11 Rammer and/or compactor. hr 200 263,382.00 1316.91 1.6 m3 class tractor shovel or hr 22.12 equivalent. 100 22.13 2.3 m3 tractor shovel or equivalent. hr 1571.52 157,152.00 0.7 m3 class mechanical excavator hr 100 1339.54 133,954.00 22.14

(backhoe) or equivalent.

	BILL OF	QUANTITIES	No.22
÷	DAYWORK	\$	

	DATHORKS				
ITEM KO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
22.15	0.3 m3 class mechanical excavator (backhoe) or eguivalent.	hr	200	856.29	171,258.00
22.16	2.3 m3 class wheel loader or equivalent.	hr	200	1571.52	314,304.00
22.17	3 m3 class wheel loader or equivalent.	hr	100	1957.66	195,766.00
22.18	6 ton tipper lorry.	hr	300	506.21	151,863.00
22.19	10 ton tipper lorry.	hr	300	653.64	196,092.00
22.20	6 ton lorry.	hr	300	322.16	96,648.00
22.21	10 ton lorry.	hr	300	395.66	118,698.00
22.22	0.7 to 1 ton pick up car.	hr	200	278.55	55,710.00
22.23	Land Rover.	hr	200	252.57	50,514.00
22.24	6 m3/min air compressor.	hr	100	346.73	34,673.00
22.25	10 m3/min air compressor.	hr	100	568.34	56,834.00
22.26	50mm delivery water pump and moter.	hr	200	45.39	9,078.00
22.27	As for item 22.26 but 75mm.	hr	200	76.02	15,204.00
22.28	Concrete mixer 14/10.	hr	100	297.10	29,710.00
22.29	Concrete vibrator,poker type.	hr	100	55.27	5,527.00
22.30	Self-propelled water tanker 9500 litre.	hr	200	662.79	132,558.00
22.31	Pressure bitumen distributor 4500 litre.	hr	100	1000.92	100,092.00
22.32	Lorry for Benkelman beam & plate bearing Tests.	hr	300	506.21	151,863.00

# LABOR

The rates inserted herein are to include all costs of labor such as insurance, accommodation, travelling time, use and maintenance of small tools of the trade, supervision, overheads and profit. Only the actual time engaged upon the works will be paid for.

22.33	Unskilled labor	hr	50,000	19.00	950,000.00
22.34	Working ganger	hr	10,000	25.00	250,000.00
22.35	Artisans	hr	10,000	29.00	290,000.00

DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
MATERIALS				
All materials are to comply with the Specifications. The rates inserted herein are to include for delivery to the site,storage,handling,overheads and profit.	I			
Ordinary Portland Cement.	tonne	40	3639.73	145,589.20
Hild steel (any diameter).	tonne	3	20498.40	61,495.20
High yield steel (any diameter).	tonne	3	21340.80	64,022.40
Fine aggregate for concrete.	m3	200	463.68	92,736.00
Coarse aggregate for concrete,maximum size 20mm.	m3	100	539.64	53,964.00
Coarse aggregate for concrete,maximum size 40mm.	m3	100	539.64	53,964.00
Graded crushed stone for subbase and base.	m3	100	578.20	57,820.00
Wrought shuttering timber.	m2	100	249.02	24,902.00
Unwrought shuttering timber.	m2	100	249.02	24,902.00
Timbering for trenches.	m2	100	249.02	24,902.00
Cut back bitumen,Grade MC 30.	litre	1,000	21.76	21,760.00
Cut back bitumen,Grade MC 3000.	litre	1,000	24.99	24,990.00
Emulsion,Kl-60	litre	1,000	15.37	15,370.00
Straight-run bitumen,Grade 80/100.	litre	1,000	10.80	10,800.00
10/14mm nominal size chippings.	m3	200	614.80	122,960.00
3/6mm nominal size chippings.	m3	200	614.80	122,960.00
Sub total (22)				6,769,429.80
	All materials are to comply with the Specifications. The rates inserted herein are to include for delivery to the site, storage, handling, overheads and profit. Ordinary Portland Cement. Hild steel (any diameter). High yield steel (any diameter). Fine aggregate for concrete. Coarse aggregate for concrete, maximum size 20mm. Coarse aggregate for concrete, maximum size 40mm. Graded crushed stone for subbase and base. Wrought shuttering timber. Unwrought shuttering timber. Timbering for trenches. Cut back bitumen, Grade MC 30. Cut back bitumen, Grade MC 3000. Emulsion, K1-60 Straight-run bitumen, Grade 80/100. 10/14mm nominal size chippings.	MAYERIALSAll materials are to comply with the Specifications. The rates inserted herein are to include for delivery to the site, storage, handling, overheads and profit.Ordinary Portland Cement.tonneHild steel (any diameter).tonneHigh yield steel (any diameter).tonneFine aggregate for concrete.m3Coarse aggregate for concrete, maximum size 20mm.m3Coarse aggregate for concrete, maximum size 40mm.m3Graded crushed stone for subbase and base.m3Wrought shuttering timber.m2Unwrought shuttering timber.m2Cut back bitumen, Grade MC 30.litreEmulsion, K1-60litreStraight-run bitumen, Grade 80/100.litre10/14mm nominal size chippings.m33/6mm nominal size chippings.m3	MATERIALSAll materials are to comply with the Specifications. The rates inserted herein are to include for delivery to the site, storage, handling, overheads and profit.Ordinary Portland Cement.tonneOrdinary Portland Cement.tonneHigh yield steel (any diameter).tonne3High yield steel (any diameter).Fine aggregate for concrete.m3Coarse aggregate for concrete, maximumm3Size 20mm.100Coarse aggregate for concrete, maximumm3Size 40mm.100Graded crushed stone for subbase and base.m3Wrought shuttering timber.m2Unwrought shuttering timber.m2Cut back bitumen, Grade MC 30.litreCut back bitumen, Grade MC 3000.litreEmulsion, K1-60litre10/14mm nominal size chippings.m32003/6mm nominal size chippings.m3200	MATERIALSAll materials are to comply with the Specifications. The rates inserted herein are to include for delivery to the site, storage, handling, overheads and profit.Ordinary Portland Cement.tonneOrdinary Portland Cement.tonneHild steel (any diameter).tonneHigh yield steel (any diameter).tonneBagregate for concrete.m3200463.68Coarse aggregate for concrete, maximumm3100539.64size 20mm.539.64Coarse aggregate for concrete, maximumm3100539.64size 40mm.539.64Graded crushed stone for subbase and base.m3Wrought shuttering timber.m2100249.02Unwrought shuttering timber.m2100249.02Cut back bitumen, Grade MC 30.litre1,00021.76Cut back bitumen, Grade MC 3000.litre1,00015.37Straight-run bitumen, Grade 80/100.litre10/14mm nominal size chippings.m3200614.803/6mm nominal size chippings.m3200614.80

# BILL OF QUANTITIES No.22

A- 25

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BILL OF QUANTITIES No.23

	PILING				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
23.01	Mobilization of all the necessary plant for the piling operation, setting up on the position of the first pile and removal on completion of the last pile.	L.S.			106,000.00
23.02	Move and set up each pile position.	No.	96	1108.52	106,417.92
23.03	Supply of steel pipe piles 500 mm dia., 9 mm thick.	m	816	4181.37	3,411,997.92
23.04	Driving piles of 500 mm dia.including positioning and pitching.Include for cutting pile heads to correct level.	m	816	339.00	276,624.00
	Sub total (23)				3,901,039.84

# APPENDIX B

# DETAILED DIRECT CONSTRUCTION COST (VAT EXEMPTION)

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	LOCAL CURRENCY RATE AMOUNT	J (04) 1	1,598,604.	65,664	. / 0 . 58 . 58 . 58 . 58 . 7 . 444 . 55 . 3	413	406	20 25 25 20 20 25 20 25 25 25 25 25 25 25 25 25 25 25 25 25		.20 27,443,005.80			.56 1.004,055.21		27 37 37 39
	FOREIGN CURRENCY SATE ANOUNT	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-		5,202,449,70 19,857,191,58			÷.,	28,363,056	133,465,081.20			7,758,115,55		224 500 401 87
	SHILLINGS CTS		7,413,875.24	244,914,202.20	6, dUL, 239, 40 37, 341, 822, 07	14,356,135.20	1, 380, 286, 70	166,304,500,30	29,506,778.50	160,506,037.00	110,603,457.02	40,328,724.27	8,792,184,77	3, 893, 706.88	01 E38 E31 AE
SUMMARY OF BILLS OF QUANTITIES	0ESCRIPTION		semeral Site Clearance and Topsoil Stripping		Excevation and Fiiling for Structures Culverts and Drainade Morks	of Traffic	caring Course	usaed stone subbase and pase rete	Bituminous Surface Treatment and Surface	Uressing Bituminous Binder Course and Mearing	Horks	iture	Sucors		
SUMMARY	 		Site Clea	Earthworks	Excevatio Culverts	Passage 0	Gravel He	-	15 Bituminou	Uressing 15 Bituminous	Concrete	Road Furniture	Miscellaneous	piling	

B-1

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BILL OF QUANTITIES No.1 GENERAL

÷	GENERAL.				
ITEM NO.	DESCRIPTION	UNIT		RATE	AMOUNT SHILLINGS CTS
1.01	Provide,furnish and maintain the rented accommodation for the Engineer's Representative and his staff:				
	(1) Type I (senior staff house),1No.	Month	30	22000.00	660,000.00
	(2) Type II (senior staff house),5Nos.	Month	130	17000.00	2,210,000.00
	(3) Type III (junior staff house), 3Nos.	Month	90	12000.00	1,080,000.00
:	(4) Type IV (junior staff house),5Nos.	Month	150	7500.00	1,125,000.00
1.02	Provide, equip and maintain Main Office for the Engineer's Representative and his staff.	No.	1	1134000.00	1,134,000.00
1.03	Provide and maintain laboratory for the Engineer's Representative and his staff.	No.	1	694000.00	694,000.00
1.04	Provide and maintain furniture and office equipment for the Engineer's office and Laboratory as listed in the Special Specification,all to the satisfaction of the Engineer.	Lump Sum			1,006,800.00
1.05	Provide survey and laboratory equipment as listed in the Special Specification.	Lump Sum			8,747,472.00
1.06	Provide with driver and maintain one (1) new 504 Peugeot or equivalent with a minimum engine capacity of 1800 cc.approved by the Resident Engineer, inclusive of the first 3000 km travelled in any one month.	Veh. Month	30	40000.00	1,200,000.00
1.07	E.O.Item 1.06 for distance in excess of 3000 km travelled in any one month, inclusive of fuels,lubricants,tyres and additional servicing.		100,000	6.00	600,000.00
1.08	As for Item 1.06 but three (3) new LWB AWD Land Rovers or equivalent with a minimum engine capacity of 2300 cc., inclusive of the first 3000 km travelled in any one month.	Veh. Month	90	44000.00	3,960,000.00
1.09	E.O.Item 1.08 for distance in excess of 3000 km travelled in any one month, inclusive of fuels, lubricants, tyres and additional servicing.		400,000	11.50	4,600,000.00
1.10	As for Item 1.06 but three (3) new Subaru or equivalent with a minimum engine capacity of 1800 cc.,inclusive of the first 3000 km travelled in any one month.	Veh. Month	90	38000.00	3,420,000.00
1.11	E.O.Item 1.10 for distance in excess of 3000 km travelled in any one month, inclusive of fuels,lubricants,tyres and additional servicing.		300,000	7.00	2,100,000.00

BILL OF QUANTITIES No.1 GENERAL

		OCACKAL				
· .	ITEM NO.	DESCRIPTION		QUANTITY		AMOUNT SHILLINGS CTS
	1.12	Prime Cost Sum of Shs.22,100,000 for removals and alterations to following existing services;	1			
	-	(1) Telecommunication line	P.C. Sum			1,600,000.00
		(2) Electric line	P.C. Sum		· .	8,900,000.00
	·	(3) Water pipe line	P.C. Sum			4,600,000.00
		(4) Railway	P.C. Sum			4,500,000.00
	:	(5) Sewerage pipe line	P.C. Sum			1,600,000.00
•	• •	(6) Existing street lighting	P.C. Sum			100,000.00
		(7) Electric fence of National Park	P.C. Sum			500,000.00
		(8) Fence of Kenya Rifles	P.C. Sum			300,000.00
	1.13	Include percentage of P.C.Sum in Item 1.12 for Contractor's cost and profit.	% of Item 1.12	20		4,420,000.00
	1.14	Prime Cost Sum of Shs.3,000,000 for the compensation and aquisition of land	P.C. 1. Sum			3,000,000.00
	1.15	Include percentage of P.C.Sum in Item 1.14 for Contractor's cost and profit.	% of Item 1.14	40		1,200,000.00
	1.16	Prime Cost Sum of Shs.600,000 for the Engineer's Miscellaneous Account.	P.C. Sum			600,000.00
	1.17	Include percentage of P.C.Sum in Item 1.16 for Contractor's cost and profit.	% of Item 1.16	20		120,000.00
	1.18	Provide and erect publicity signs as directed by the Engineer,all in accordance with MOW DRG.NO.SS/234.	No.	10	25000.00	250,000.00
	1.19	Prime cost sum of K.Shs. 500,000 for the rectification of title deeds of acquired lands.	P.C. Sum			500,000.00
	1.20	Include percentage of P.C Sum in Item 1.19 for Contractor's cost and profit.	% of Item	20		100,000.00
	•	Sub total (1)	1.19			64,827,272.00

BILL OF QUANTITIES No.4

1	STIF	CLEARANCE	AND	TOPSOIL	STRIPPING	
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ITEM NO.	DESCRIPTION	UNIT	•		AMOUNT SHILLINGS CTS
4.01	Clear site in Open Country, including removal of trees, hedges, bushes and other vegetation and objectionable organic material, grub up roots and backfill to	ha			662,234.50
	95% MDD AASHTO T.99 with approved material all in accordance with the Specification.				
4.02	As for Item 4.01 but to clear site in forest area.	ha	45.3	11235.80	508,981.74
4.03	Removal topsoil to a depth as directed by the Engineer and dispose of to spoil dump or stockpile for re-use as directed by the Engineer.	m3	106,700	49.37	5,267,779.00
4.04	Scarify and remove to stockpile existing pavement material as directed by the Engineer.	m3	2,720	129.00	350,880.00
4.05	Demolish existing railway bridge and remove debris to spoil over any distance ,backfill voids and compact to 105% MDD as necessary.	Lump Sum	. :		129,000.00
4.06		rov. Sum		·	500,000.00
	Sub total (4)			4 - 1 	7,418,875.24

BILL OF QUANTITIES No.5

LARTHWURKS
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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS	
5.01					113,827,146.00	
5.02	As for Item 5.01 but for slip roads and approach roads.	m3	196,400	92.22	18,112,008.00	
5.03	As for Item 5.01 but hauling from drainage pond excavation works as shown on the Drawings.	m3	7,720	91.65	707,538.00	
5.04	As for Item 5.01 but for new railway embankment.	m3	5,480	91.65	502,242.00	
5.05	Fill in hard material for main road.	m3	104,900	246.40	25,847,360.00	
5.06	Fill in soft material for central reserves as shown on the Drawings.	m3		156.62	1,785,468.00	
5.07	Fill in soft material adjacent to shoulders as shown on the Drawings.	mЗ	3,310	156.62	518,412.20	
5.08	Spoil in unsuitable material such as black cotton and rubbish.	m3	189,500	92.73	17,572,335.00	
5.09	Spoil in soft material.	m3	5,000	92.73	463,650.00	
5.10	Spoil in hard material.	m3	1,000	300.62	300,620.00	
5.11	Overhaul earthworks in excess of 1.0 km free haul.	m3.km	3,432,300	9.63	33,053,049.00	
5.12	Excavation in swamps.	m3	1,000	114.76	114,760.00	
5.13	Provide and place rockfill in accordance with the Specification.	m3	1,000	245.15	245,150.00	
5.14	Compact original ground below fills to at least 95% HDD AASHTO T.99 including all necessary scarifying and watering as directed by the Engineer, to a depth of 150mm below ground level.	m3	62,600	17.58	1,100,508.00	
5.15	E.O.Item 5.01 to 5.05 for compaction of 300mm subgrade material to at least 100% MDD AASHTO T.99 in Fill area.	m3	121,700	8.79	1,069,743.00	
5.16	Compact in-situ subgrade in Cut area to a depth of 300mm below formation level to at least 100% MDD AASHTO T.99.	m3	100,200	17.58	1,761,516.00	
5.17	Compact in-situ subgrade material in Cut area between 150mm and 300mm below underside of imported subgrade material to at least 95% MDD AASHTO T.99.	m3	1,000	17.58	17,580.00	
5.18	Compact in-situ subgrade material in Cut area between Omm and 150mm below underside of imported subgrade material to at least 100% MDD AASHTO T.99.	m3	1,000	8.79	8,790.00	
5.19	Provide,place and compact improved subgrade material in locations where directed by the Engineer.	m3	1,000	109.62	109,620.00	

# BILL OF QUANTITIES No.5 EARTHWORKS

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS	
5,20	Rock formation levelling in Cut area below lean concrete base level or as directed by the Engineer.		72,100	25.00	1,802,500.00	
5.21	Haul from stockpile and spread on side- slopes and central reserves, lightly roll and compact 75mm thickness of topsoil.	m2	335,700	10.06	3,377,142.00	
5.22	Haul from stockpile and spread on black cotton spoil area, lightly roll and compact 200mm thickness of topsoil in locations as directed by the Engineer.	m2	69,100	20.05	1,385,455.00	
5,23	Haul from stockpile and spread on rubbish spoil area and side borrow area, and compact topsoil or as directed by the Engineer.	m3	15,400	96.99	1,493,646.00	
5.24	Plant fillslopes and cutslopes with selected grass in accordance with the Specification,including the establish- ment of plant nurseries where required.	m2	773,000	18.29	14,138,170.00	
5.25	Provide, place and compact filter material for drainage layer and sand mat in locations where directed by the Engineer.	m3	1,000	485.94	485,940.00	
.26	Fill for new national park boundary dike including demolishing existing dike.	m3	58,300	84.18	4,907,694.00	
.27	Filter fabric for rockfill.	m2	1,000	206.16	206,160.00	
	Sub total (5)	·			244,914,202.20	

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BILL OF QUANTITIES No.7 EXCAVATION AND FILLING FOR STRUCTURES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
	BRIDGES				
7.01	Excavation, compaction at foundation levels, backfilling and removal of excavated material to spoil for struct- ures foundations in soft materials.	m3	5,330	108.05	575,906.50
7.02	E.O.Item 7.01 at any location for excavation in hard materials.	m3	1,230	320.53	394,251.90
7.03	Backfilling with selected material behind bridge abutment,wing walls and around structures.	m3	4,980	141.08	702,578.40
7.04	Provide and place porous filter material behind bridge abutments and wing walls.	m3	300	485.94	145,782.00
7.05	Provide and place selected granular fill material.	m3	200	429.67	85,934.00
· ·	BOX CULVERTS				-
7.06	Excavation, compaction at foundation levels, backfilling and removal of excavated material to spoil for struct- ures foundations in soft materials.	m3	15,680	108.05	1,694,224.00
7.07	E.O.Item 7.06 at any location for excavation in hard materials.	m3	300	320.53	96,159.00
7.08	Backfilling with selected material behind box culvert walls and around structures.	m3	22,670	141.08	3,198,283.60
7.09	Provide and place porous filter material behind box culvert walls.	т3	1,990	485.94	967,020.60
7.10	Provide and place selected granular fill material.	m3	1,420	429.67	610,131.40
7.11	Excavation and backfilling for gabions in soft material.	m3	275	90.95	25,011.25
7.12	Provide and place gabion mesh,0.5m thick as shown Drawings or directed by the Engineer.	m2	550	350.70	192,885.00
7.13	Provide and place rockfill to gabions.	m3	275	411.17	113,071.75
5	Sub total (7)			· .	8,801,239.40

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BILL OF QUANTITIES No.8 CULVERTS AND DRAINAGE WORKS

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	CULVERTS AND DRAINAGE WORKS				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
	NOTE:	****	₩ 10 M M A= 40 42 54 44 76 76 96 96 96		,
	No separate payment shall be made the haulage of surplus or unsuitable excavated material and the cost of such haulage shall be included in the rates and prices.		·		
8.01	Excavate in soft material for pipe culverts below existing ground level or road formation level including support of trench sides,backfilling and compact- ion at least 95% MDD AASHTO T.99 up to new road formation level or ground level whichever is the lower,dewatering,and carting surplus material to spoil dump.		3,970	135.64	538,490.80
8.02	As for Item 8.01 but for inlets and outlets of culverts.	m <b>3</b>	2,970	135.64	402,850.80
8.03	Excavate in soft material for earth channel,drain type I.	m <b>3</b>	5,650	108.05	610,482.50
8.04	Excavate in soft material for stone pitching channel,drain type II.	m3	3,900	108.05	421,395.00
8.05	Excavate in soft material for concrete channel,drain type III.	m3	3,690	108.05	398,704.50
8.06	Excavate in soft material for concrete channel with cascade,drain type VII.	m3	5,600	108.05	605,080.00
8,07	Excavate and backfill for gulley pots in soft material.	m3	180	135.64	24,415.20
8.08	Excavate and backfill for concrete ditch type VI, in soft material.	m3	540	135.64	73,245.60
8.09	Excavate and backfill for gabions in soft material.	m3	580	90.95	52,751.00
8.10	Excavate for subsoil drains in soft material.	m3	460	90.95	41,837.00
8.11	E.O.Item 8.01 to 8.10 at any location for excavation in hard materials.	m3	500	320.53	160,265.00
8.12	Provide and place filter fabric to subsoil drains.	m2	3,040	103.08	313,363.20
8.13	Provide and place crushed rock backfill to subsoil drains.	m3	420	429.67	180,461.40
8.14	Provide and place perforated 200mm dia. PVC pipe to subsoil drains.	m	1,265	425.11	537,764.15
8.15	Provide, lay and joint 300mm I.D. concrete pipes ogee jointed.	m	155	413.07	64,025.85
8.16	As for Item 8.15 but 600mm I.D.	m	1,031	1402.00	1,445,462.00
8.17	As for Item 8.15 but 750mm I.D.	m	90	1885.54	169,698.60
8.18	As for Item 8.15 but 900mm I.D.	m	1,067	2630.01	2,806,220.67

BILL OF QUANTITIES No.8 CULVERTS AND DRAINAGE WORKS

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	CULVERTS AND DRAINAGE WORKS				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
8.19	An fair that the state of a		294		1,201,113.48
8.20	Provide,place and compact class 15/20, concrete bed and surround to concrete pipes, including formwork.	m3	2,520	2620.18	6,602,853.60
8.21	As for Item 8.20 but concrete facing for drain ditch on berm,drain type VIII.	m2	1,280	96.59	123,635.20
8.22	Provide, place and compact class 25/20 concrete for headwalls, wingwalls, aprons and toewalls to pipe culverts including all formwork and provision and placing of fabric mesh reinforcement as shown in the Drawings.	m3	924	3982.94	3,680,236.56
8.23	As for Item 8.22 but class 15/20 for concrete channel,drain type III and VII.	m3	1,330	2406.59	3,200,764.70
8.24	Provide, place and compact class 20/20 concrete for concrete ditch, drain type VI including all formwork and placing of reinforcement as shown in the Drawings.	in3	94	8926.96	839,134.24
8.25	Provide,place and compact class 20/20 concrete for gulley pot including all formwork.	m3	63	6267.55	394,855.65
8.26	As for Item 8.24 but concrete cover of gulley pot.	No.	168	485,77	81,609.36
8.27	Provide and place 50mm dia.PVC weep holes.	No.	45	18.42	828.90
8.28	Excavate as necessary, provide all materials and construct 150mm thick grouting stone pitching to bed and side- slopes of drains, ditches, channels, ground faces, inlets and outlets of culverts, including carting of excavated material to spoil, as directed by the Engineer.	m2	26,090	248.27	6,477,364.30
8.29	As for Item 8.28 but 250mm building stone at concrete channel with cascade.	m2	1,730	235.29	407,051.70
8.30	Cement screen on building stone.	m2	1,730	53.07	91,811.10
8.31	Provide and place gabion mesh.1m thick, as shown on Drawings or directed by the Engineer.	- m2	430	425.19	182,831.70
8.32	Provide and place mattresses,0.3m thick, as shown on Drawings or directed by the Engineer.	m2	467	220,53	102,987.51
8.33	Provide and place rockfill to gabions and mattresses.	m3	570	411.17	234,366.90
8.34	Provide and place filter fabric under and/or behind gabions.	m2	335	103.08	34,531.80
8.35	Excavate trench, provide, lay and joint 450 x 225mm P.C.C. invert block drains (I.B.D.)having 300mm dia.channel.	m	507	274.27	139,054.89

BILL OF QUANTITIES No.8 CULVERTS AND DRAINAGE WORKS

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	CULVERTS AND DRAINAGE WORKS				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
8.36	Provide and lay 75mm thick P.C.C. side slabs to I.B.D.Channel.	m2	477	277.68	132,453.36
8.37	Excavate trench,provide,lay and joint 375 x 250mm P.C.C.invert block drain, drain type IV.	m	15,440	261.04	4,030,457.60
8.38	As for Item 8.37 but for on berm,drain type VIII.	m	740	261.04	193,169.60
8.39	Excavate,provide all materials and construct kerb inlet at busbays as detailed on the Drawings.	No	32	105.63	3,380.16
8.40	Excavate,provide all materials and construct intake block channel at busbays as detailed on the Drawings.	No	32	114.66	3,669.12
8.41	Provide and place concrete class 15 for 250 x 150mm in-situ gutters.	m	48	643.88	30,906.24
8.42	Provide and place selected granular fill material for gravell bedding.	m3	79	429.67	33,943.93
8.43	Plant channel slopes with selected grass in accordance with the Specification.	m2	11,330	18.29	207,225.70
8.44	Earth dike of drainage pond.	m3	710	91.65	65,071.50
4 t f	Sub total (8)				37,341,822.07

BILL OF QUANTITIES No.9 PASSAGE OF TRAFFIC

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	PASSAGE OF TRAFFIC				
ITEM NO.	DESCRIPTION	UNIT		RATE	AMOUNT SHILLINGS CTS
9.01	Provide and maintain signs and barriers in locations as directed by the Engineer	· km	19.0	35000.00	665,000.00
9.02	Construct and maintain 7.0m wide deviations including drainage,pavement type Deviation-1(Mombasa Road Junction).	km	1.0	2974940.00	2,974,940.00
9.03	As for Item 9.02 but pavement type Deviation-1(Uhuru Monument Junction).	km	0.3	2974940.00	892,482.00
 9.04	As for Item 9.02 but pavement type Deviation-2(Ngong Road Junction and Dagoretti Forest Junction).	km	1.3	598640.00	778,232.00
9.05	Construct and maintain 6.0m wide deviations including drainage,pavement type Deviation-3.	km	0.9	289560.00	260,604.00
9.06	Construct and maintain 3.0m wide deviations including drainage,pavement type Deviation-4.	km	2.5	146270.00	365,675.00
9.07	Reinstatement of deviations and existing drainages.	Lump Sum			510,800.00
9.08	Reinstatement of existing road after the completion of cross drainge works, Mombasa Road Junction.	m2	70	701.72	49,120.40
9.09	Reinstatement of existing road after the completion of cross drainge works, Kikuyu Junction.	m2	35	226.60	7,931.00
9.10	Maintenance of the project road (main road,slip road,approach road and service road) used for the deviation purpose as specified.	Lump Sum			711,300.00
9.11	Improvement of the existing road as instructed and approved by the Engineer.				
	(1) Improved subgraded material.	m3	100	109.62	10,962.00
	(2) Gravel wearing course.	m3	600	325.06	195,036.00
	(3) Graded crushed stone base.	m3	50	849.91	42,495.50
•	(4) MC3000 first seal coat.	litre	150	22.41	3,361.50
	(5) Chippings,3/6nm.	m3	2	836.40	1,672.80
9.12	Maintenance of Existing Roads used for heavy construction traffic as specified when and where directed by the Engineer.	km	30	50000.00	1,500,000.00
 9.13	Re-carpeting of Existing Roads 6m wide or pro rata as specified when and where directed by the Engineer.	m3	1,800	3009.18	5,416,524.00
	Sub total (9)				14,386,136.20

BILL OF QUANTITIES No.10 GRAVEL WEARING COURSE

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
10.01	Clear site of the material site.	ha	1.0	5247.50	5,247.50
10.02	Construct access road to the material site in excess of 200m in length.	km	1.0	273300.00	273,300.00
10.03	Excavate and spoil topsoil and over- burden in the material site.	m3	4,000	49.37	197,480.00
10.04	Excavate gravel wearing course material, transport,spread and compact to at least 95% MDD AASHTO T.180 for service roads.	m3	4,320	325.06	1,404,259.20
	C++ ++++ 1 (10)				

Sub total (10)

1,880,286.70

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BILL OF QUANTITIES No.13

	GRADED CRUSHED STONE FOR SUBBASE AND BAS	E			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
13.01	Provide,spread and compact graded crushed stone to subbase for main road.	m3	84,490	790.24	66,767,377.60
13.02	As for Item 13.01 but for slip road.	m3	14,020	790.24	11,079,164.80
13.03	As for Item 13.01 but for approach road and service road.	m3	3,030	790.24	2,394,427.20
13.04	Provide,spread and compact graded crushed stone to base for slip road, approach road and service roads.	m3	2,150	849.91	1,827,306.50
13.05	Provide, spread and compact graded crushed stone to shoulder for main road.	m3	43,810	790.24	34,620,414.40
13.06	As for Item 13.05 but for slip road.	m3	6,360	790.24	5,025,926.40
13.07	As for Item 13.05 but for approach road and service road.	m3	1,000	790.24	790,240.00
	Sub total (13)				122,504,856.90

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BILL OF QUANTITIES NO.14A

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
14.01	Provide, process, mix, transport, spread and compact lean concrete base material for main road at 4% nominal cement content by weight of total mix.	di m3	90,340	1045.67	94,465,827.80
14.02	As for Item 14.01 but for slip road.	m3	11,150	1045.67	11,659,220.50
14.03	As for Item 14.01 but for approach road.	m3	1,020	1045.67	1,066,583.40
14.04	Protecting and curing lean concrete base.	m2	515,500	2.00	1,031,000.00
14.05	Variation in cement content (Provisional).	tonne	200	3236.93	647,386.00
	Sub total (14A)				108,870,017.70

BILL O	F QUANI	ITIES	No.15
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BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING

	DESCRIPTION		QUANTITY	NAIL	SHILLINGS CTS
	NOTE:			*********	4 AL PL 10 IL
	No haulage will be paid for bitumen or chippings and this shall be included in the following rates and prices.				
•	PRIME COAT				, ,
15.01	Preprare surface of base, provide, transport, heat as specified and spray MC 30 prime coat at at a nominal spray rate of 1.0 litre/m2 for main road.	litre	411,550	19.56	8,049,918.00
15.02	As for Item 15.01 but for slip road.	litre	55,740	19.56	1,090,274.40
	As for Item 15.01 but for approach road.	litre	4,600	19.56	89,976.00
	TACK COAT				
15.04	Prepare surface of binder course, provide,transport,heat as specified and spray MC 3000 cut-back bitumen tack coat at nominal spray rate of 0.6 litre/m2 for main road.		493,860	22.41	11,067,402.60
15.05	As for Item 15.04 but for slip road.	litre	44,220	22.41	990,970.20
15.06	As for Item 15.04 but for approach road.	litre	5,520	22.41	123,703.20
·	SURFACE DRESSING				
÷	(Double Surface Dressing)	1			
15.07	Provide, heat and spray MC3000 cut-back bitumen at a nominal spray rate of 1.3 litres/m2 as first seal coat.	Htre	209,610	22.41	4,697,360.10
15.08	As for Item 15.07 but at a nominal rate of 0.3 litre/m2 as second seal coat.	litre	48,370	22.41	1,083,971.70
15.09	Provide,transport,lay and roll 10/14mn chippings at a rate of 69 m2/m3.	m3	2,340	760.37	1,779,265.80
15.10	As for Item 15.09 but 3/6mm chippings at a rate of 250 m2/m3.	mЗ	645	836.40	539,478.00
	(Single Surface Dressing)				
15.11	Provide,heat and spray MC3000 cut-back bitumen at a nominal spray rate of 0.6 litres/m2.	litre	3,170	22.41	71,039.70
15.12	Provide, transport, lay and roll 3/6mm chippings at a rate of 189 m2/m3.	m3	28	836.40	23,419.20
	Sub total (15)				29,606,778.90

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BILL OF QUANTITIES No.16 BITUMINOUS BINDER COURSE AND WEARING COURSE

ITEM NO.	DESCRIPTION		QUANTITY		AMOUNT SHILLINGS CTS
	NOTE :				
	No haulage shall be paid for in respect of any of the items or materials contained in this Bill of Quantities and the cost of such haulage shall be deemed to be included in the rates entered below.				
	Provide, lay and compact Asphalt Concrete Binder Course using 5.5% nominal bitumen content by weight of total mix for main road.	_m3	32,930	2814.62	92,685,436.60
16.02	As for Item 16.01 but for slip road.	m3	3,430	2814.62	9,654,146.60
16.03	As for Item 16.01 but for approach road.	m3	460	2814.62	1,294,725.20
16.04	Provide, lay and compact Asphalt Concrete Wearing Course using 6.5% nominal bitumen content by weight of total mix for main road.	m3	16,460	3009.18	49,531,102.80
16.05	As for Item 16.04 but for slip road.	m3	2,230	3009.18	6,710,471.40
16.06	As for Item 16.04 but for approach road.	m3	230	3009.18	692,111.40
16.07	80/100 penetration bitumen binder variation.	litre	Rate only	8.45	
16.08	Supply and mix in mineral filler for variation as directed by the Engineer.	tonne	100	3236.93	323,693.00
16.09	As for Item 16.08 but to sand.	tonne	50	288.00	14,400.00
	Sub total (16)			•	160,906,087.00

	BILL OF QUANTITIES No.17 CONCRETE WORKS				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
	BRIDGES				
	Concrete:				
	Provide, place and compact the following classes of concrete for insitu works as specified.				
17.01	Class 15/40 for blinding concrete on all structures.	m3	180	1921.39	345,850.20
17.02	Class 25/20 for structural concrete in:				•
	<ol> <li>Bridges for Mombasa Road Junction, Unuru Monument Junction and Railway.</li> </ol>	m3	2,880	2239.41	6,449,500.80
	(2) Vehicle bridges.	m3	1,090	2239.41	2,440,956.90
1 H 1	(3) Pedestrian bridges.	m3	90	2239,41	201,546.90
17.03	Class 30/20 for structural concrete.	m3	2,120	2291.59	4,858,170.80
17.04	Provide UF2 finish to concrete surface.	m2	5,830	41.56	242,294.80
	Provide, erect and afterwards dismantle and remove the Items specified below:				
17.05	Formwork to achieve class F1 finish:				
	(1) Sloping	m2	86	366.53	31,521.58
-	(2) Vertical	m2	2,660	344.11	915,332.60
17.06	Formwork to achieve class F2 finish:				
	(1) Horizontal	m2	3,450	492.07	1,697,641.50
	(2) Sloping	m2	218	393.66	85,817.88
· · · . :	(3) Vertical	m2	9,050	415.64	3,761,542.00
17.07	Provide and fix in position high tensile steel reinforcement bars to BS 4461 of diameter equal to or less than 16mm.	tonne	202.0	21501.50	4,343,303.00
17.08	As for Item 17.07 but of diameter greater than 16mm.	tonne	482.0	21018.20	10,130,772.40
17.09	Provide and place 200mm wide waterstops as specified in the Drawings.	n	57	426.83	24,329.31
17.10	Provide and place 20mm thick joint filler	m2	36	573.60	20,649.60

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BILL OF QUANTITIES No.17

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
					SHILLINGS CTS
	BOX CULVERTS				
.1	Concrete:				
20 - 12 A	Provide, place and compact the following classes of concrete for insitu works as specified.				
17.11	Class 15/40 for blinding concrete on all structures.	m3	588	1921.39	1,129,777.32
 17.12	Class 25/20 for structural concrete.				
· .	(1) Box culverts for road.	m3	7,820	2239.41	17,512,186.20
	(2) Box culverts for drainage.	tn3	6,320	2239.41	14,153,071.20
	(3) Box culverts for footpath.	61	646	2239.41	1,446,658.86
 17.13	Provide UF2 finish to concrete surface.	In2	9,880	41.56	410,612.80
	Fornwork:				·
	Provide, erect and afterwards dismantle and remove the Items specified below:	r			
17.14	Fornwork to achieve class F1 finish:				
	(1) Vertical	m2	12,120	344.11	4,170,613.20
17.15	Formwork to achieve class F2 finish:				
	(1) Horizontal	m2	4,000	492.07	1,968,280.00
	(2) Vertical	m2	7,450	415.64	3,096,518.00
17.16	Provide and fix in position high tensile steel reinforcement bars to BS 4461 of diameter equal to or less than 16mm.	tonne	215.0	21501.50	4,622,822.50
17.17	As for Item 17.16 but of diameter greater than 16mm.	tonne	1,225.0	21018.20	25,747,295.00
17.18	Provide and place 200nm wide waterstops as specified in the Drawings.	L)	909	426.83	387,988.47
17.19	Frovide and place 20mm thick joint filler	m2	712	573.60	408,403.20
	Sub total (17)				110,603,457.02

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BILL OF QUANTITIES No.20

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	Provide and erect standard warning signs: (1) Type W28,1200mm (2) Type W29,1200mm (3) Type W36,1200mm (4) Type W37,1200mm	No. No.	30		
20.02	(3) Type W36,1200mm (4) Type W37,1200mm	No.			
20.02	Droutdo and one of a tendent with the	No.	22 3 22	7000.00 7000.00 7000.00 7000.00	210,000.00 154,000.00 21,000.00 154,000.00
	Provide and erect standard priority signs:				
1. A.	(1) Type R1,1200mm	No.	10	7000.00	70,000.00
20.03	Provide and erect standard prohibitory signs:				
	(1) Type P1,1000mm (2) Type P25,1000mm	No. No.	1 30	6000.00 6000.00	6,000.00 180,000.00
20.04	Provide and erect standard mandatory signs:				
	(1) Type M3,1000mm (2) Type M4,1000mm	No. No.	1 1	6000.00 6000.00	6,000.00 6,000.00
	Provide and erect non-standard informatory signs (advance direction signs direction signs,route confirmatory signs):			- - -	·
- - 	<pre>(1) less than 1m2 (2) 3m2-4m2 (3) 4m2-5m2 (4) 5m2-6m2 (5) 6m2-7m2 (6) 7m2-8m2 (7) 8m2-9m2 (8) 9m2-10m2</pre>	No. No. No. No. No. No.	55 1 8 10 1 12 7 1	7000.00 18000.00 23000.00 25000.00 27000.00 30000.00 40000.00	385,000.00 18,000.00 152,000.00 230,000.00 324,000.00 210,000.00 40,000.00
20.06	Road marking in yellow or white paint.	m2	3,430	174.32	597,917.60
	Provide and fix flex beam guardrails, all in accordance with the Drawings.	m	8,590	1341.56	11,524,000.40
20.08	Provide and erect road edge marker post.	No.	87	759.95	66,115.65
	Provide and erect road reserve boundary post where directed by the Engineer.	No.	230	759.95	174,788.50
	Plant selected grasses in the central reserves, including the establishment of plant nurseries where required.	m2	32,000	18.29	585,280.00
	Plant selected shrubs and bushes approved by the Engineer at locations in the central reserve and road reserve boundary, including the establishment of plant nurseries where required.	No.	8,120	76.58	621,829.60
20.12	As for Item 20.11 but to selected trees.	No.	226	116.95	26,430.70

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BILL OF QUANTITIES No.20 ROAD FURNITURE

	NOND FORMITURE				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
20.13	Provide and erect kilometer posts as directed by the Engineer.	No.	58	1139.48	
20.14	Provide and lay flush kerb,150 x 100mm, Type A	m	119,160	112.63	13,420,990.80
20.15	Provide and lay flush kerb,150mm x 80mm, Type B.	m	6,380	95.52	609,417.60
20.16	Provide and lay flush kerb,150mm x 80mm, Type C.	M	3,300	124.35	410,355.00
20.17	Provide and lay flush kerb,150mm x 80mm, Type D.	m	3,900	85.92	335,088.00
20.18	Provide and lay flush kerb,150mm x 80mm, Type E.	ħ	1,300	122.42	159,146.00
20.19	Quardrant for flush kerb,main road and slip road: (1) in-situ 0.5m radius,Type A. (2) in-situ 0.5m radius,Type B.	No. No.	25 4	109.71 102.02	2,742.75 408.08
20.20	Provide and lay raised kerb,125mm x 250mm,slip road.				
÷ •.	<pre>(1) straight. (2) radius 5m to 1m.</pre>	m m	1,530 72	253.60 277.30	388,008.00 19,965.60
20.21	Provide and lay raised kerb,125mm x 250mm,main road.			an a	
	<ul><li>(1) straight.</li><li>(2) radius 5m to 1m.</li></ul>	m m	256 114	270.90 294.59	69,350,40 33,583,26
20.22	Provide and lay ramped kerb.	No.	64	270.06	17,283.84
20.23	Provide and erect permanent five strand wire fencing including intermediate and straining posts in areas specifically directed by the Engineer.	n	1,500	141.77	212,655.00
20.24	Provide and erect gates as directed and approved by the Engineer.	No.	8	2213.20	17,705.60
20.25	Provide and erect double headed guardrail,all in accordance with the Drawings.	n	3,660	2375.37	8,693,854.20
20.26	Provide stairways for bus stops as specified in the Drawings.	n	53	1598.45	84,717.85
	Sub total (20)				40,328,724.27
	and the second				

B- 20

BILL OF QUANTITIES No.21 MISCELLANFOUS

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
	Supply and apply, in accordance to manufacturer's instructions waterproof- ing materials to top of bridge decks, approach slabs and all structural concrete surfaces in contact with fill material prior to backfilling.				
21.02	Supply and install in position elastomeric bearings including mortar mortar plinth,fixed.				
	(1) 406 x 279 x 18mm (2) 432 x 203 x 18mm	No. No.	12 37	2561.57 2145.59	30,738.84 79,386.83
21.03	Supply and install in position elastomeric bearings including mortar plinth,movable:	-			
	(1) 229 x 152 x 56mm (2) 279 x 229 x 37mm (3) 279 x 229 x 46mm (4) 279 x 229 x 65mm (5) 432 x 203 x 65mm	No. No. No. No.	8 16 22 18 12	2338.33 2752.28 3330.93 4552.55 5850.42	18,706.64 44,036.48 73,280.46 81,945.90 70,205.04
21.04	Supply and install joint filler for expansion joint:				
	(1) 30mm thick. (2) 25mm thick. (3) 20mm thick.	m2 m2 m2	69 82 23	849.15 710.72 573.60	58,279,04
21.05	Supply and install sealant for expansion joint:				
	(1) 30 x 50mm deep. (2) 25 x 50mm deep.	m m	66 75	473.56 395.19	31,254.96 29,639.25
21.06	Provide, lay and compact Asphalt Concrete Hearing Course for bridge decks.	m3	134	3009.18	403,230.12
1.07	Supply and install flex beam guardrails including post for vehicle bridge as detailed on the Drawings.	m	244	1297.57	316,607.08
1.08	Provide and erect in position parapet handrails to railway bridge as detailed on the Drawings.	m	114	627.21	71,501.94
1.09	Provide and erect in position pedestrian parapets to footbridges as detailed on the Drawings.	m	282	754.45	212,754.90
1.10	Provide and install 100mm dia.drain pipe through deck slabs.	No.	36	155.90	5,612.40
1.11	Provide and place 75mm dia.PVC weep holes.	No.	62	75.37	4,672.94
1.12	Provide and place 200mm dia.perforated PVC pipes.	m	1,770	425.11	752,444.70
1.13	Provide and install 20mm dia. dowel bars with caps as specified on the Drawings.	No.	152	540.64	82,177.28
1.14	As for Item 21.13 but 40mm dia.	No.	98	1455.43	142,632.14

#### BILL OF QUANTITIES No.21 MISCELLANEOUS

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ITEN NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
21.15	Provide,spread and compact graded crushed stone to base for box culverts.	m3	132	849.91	112,188.12
21.16	Provide, lay and compact Asphalt Concrete Wearing Course for box culverts.	m3	142	3009,18	427,303.56
21.17	Provide and place 200mm dia.PVC weep holes.	No.	30	596.75	17,902.50
	Sub total (21)				8,792,184.77

#### BILL OF QUANTITIES No.22 DAYWORKS

-	DATRORKS				
ITEM NO.	DESCRIPTION		QUANTITY	RATE	AMOUNT SHILLINGS CTS
	NOTE:		••••••••••••••••••••••••••••••••••••••	a wa ba Ki wa Ak ya na an ja ja ak y	
	PLANT				·
	The rate inserted herein are to include all operational and maintenance cost, fuel.oil.grease.drivers and turnboys,				
	wages, supervision, overheads and profits. Only time actually employed upon the works will be paid for and the rates should include for idle time, travelling and overtime. All items of plant must be priced.				
	Items of Major Plant Employed on Dayworks.				
: 	Where items of major plant listed in the Schedule of Dayworks are specified by type (e.g. D-6,D-8,CAT.14,ets.)the power ratings shall not be lower than the				
	power ratings of such plant manufactured within the two years prior to the date of tender. Any items of major plant				
an a	employed upon Dayworks which has a power rating lower than that specified above, shall be paid for at rates lower than those in the Schedule of Dayworks.				
·	The reduction in the rate payable shall be in proportion to the reduction in power rating below that specified above.				
22.01	D6 tractor or equivalent, including brade and ripper.	hr	200	1507.28	301,456.00
22.02	D7 tractor or equivalent, including brade and ripper.	hr	200	2141.69	428,338.00
22.03	D8 tractor or equivalent, including brade and ripper.	hr	100	2677.69	267,769.00
22.04	Motor grader CAT140G or equivalent (complete with scarifier).	hr	300	1073.38	322,014.00
22.05	Heavy grid or sheeps foot roller.	hr	100	1126.81	112,681.00
22.06	Vibrating roller,10 ton.	hr	100	1435.08	143,508.00
22.07	15 ton pneumatic self-propelled roller.	hr	100	641.57	64,157.00
22.08	16-18 ton smooth wheel roller.	hr	100	641.57	64,157.00
22.09	As for Item 22.08 but 6-8 ton.	hr	100	511.05	51,105.00
22.10	Small hand-propelled vibrating roller.	hr	200	193.78	38,756.00
22.11	Rammer and/or compactor.	hr	300	69.86	20,958.00
22.12	1.6 m3 class tractor shovel or equivalent.	hr	200	1247.69	249,538.00
22.13	2.3 m3 tractor shovel or equivalent.	hr	100	1488.64	148,864.00
22.14	0.7 m3 class mechanical excavator	hr	100	1269.11	126,911.00

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#### BILL OF QUANTITIES No.22 DAYWORKS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
22.15		hr	200	811.79	162,358.00
22.16	2.3 m3 class wheel loader or equivalent.	hr	200	1488.64	297,728.00
22.17	3 m3 class wheel loader or equivalent.	hr	100	1854.05	185,405.00
22.18	6 ton tipper lorry.	hr	300	480.50	144,150.00
22.19	10 ton tipper lorry.	hr	300	620.02	186,006.00
22.20	6 ton lorry.	hr	300	306.33	91,899.00
22.21	10 ton lorry.	hr	300	375.88	112,764.00
22.22	0.7 to 1 ton pick up car.	hr	200	265.06	53,012.00
22.23	Land Rover.	hr	200	240.47	48,094.00
22.24	6 m3/min air compressor.	hr	100	329.58	32,958.00
22.25	10 m3/min air compressor.	hr	100	543.08	54,308.00
22.26	50mm delivery water pump and moter.	hr	200	44.41	8,882.00
22.27	As for item 22.26 but 75mm.	hr	200	73.40	14,680.00
22.28	Concrete mixer 14/10.	hr	100	282.62	28,262.00
22.29	Concrete vibrator, poker type.	hr	100	53.76	5,376.00
22.30	Self-propelled water tanker 9500 litre.	hr	200	627.19	125,438.00
22.31	Pressure bitumen distributor 4500 litre.	: hr	100	948.66	94,865.00
22.32	Lorry for Benkelman beam & plate bearing Tests.	hr	300	480.50	144,150.00

LABOR

The rates inserted herein are to include all costs of labor such as insurance, accommodation, travelling time, use and maintenance of small tools of the trade, supervision, overheads and profit. Only the actual time engaged upon the works will be paid for.

22.33	Unskilled labor	hr	50,000	19.00	950,000.00
22.34	Work ing ganger	hr	10,000	25.00	250,000.00
22.35	Artisans	hr	10,000	29.00	290,000.00

	DAYWORKS				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
	MATERIALS				
	All materials are to comply with the Specifications. The rates inserted herein are to include for delivery to the site,storage,handling,overheads an profit.	d			
22.36	Ordinary Portland Cement.	tonne	40	3236,93	129,477.20
22.37	Mild steel (any diameter).	tonne	3	17870.40	53,611,20
22.38	High yield steel (any diameter).	tonne	3	18604.80	55,814.40
22.39	Fine aggregate for concrete.	m3	200	403.20	80,640.00
22,40	Coarse aggregate for concrete,maximum size 20mm.	m3	100	515.23	51,523.00
22.41	Coarse aggregate for concrete,maximum size 40mm.	m3	100	515.23	51,523.00
22.42	Graded crushed stone for subbase and base.	m3	100	552.04	55,204.00
22.43	Wrought shuttering timber.	m2	100	217.09	21,709.00
22.44	Unwrought shuttering timber.	m2	100	217.09	21,709.00
22.45	Timbering for trenches.	m2	100	217.09	21,709.00
22.46	Cut back bitumen,Grade MC 30.	litre	1,000	18,97	18,970.00
22.47	Cut back bitumen,Grade MC 3000.	litre	1,000	21.79	21,790.00
22.48	Emulsion,K1-60	litre	1,000	13.40	13,400.00
22.48	Straight-run bitumen,Grade 80/100.	litre	1,000	8.45	8,450.00
22.49	10/14mm nominal size chippings.	m3	200	586.99	117,398.00
22.50	3/6mm nominal size chippings.	m3	200	586.99	117,398.00
	Sub total (22)				6,460,873.80

BILL OF QUANTITIES No.22

B- 25

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BILL OF QUANTITIES No.23

P	L	L	1	h	6

ITEN NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
23.01	Mobilization of all the necessary plant for the piling operation, setting up on the position of the first pile and removal on completion of the last pile.	L.S.			106,000.00
23.02	Move and set up each pile position.	No.	96	1087.30	104,380.80
23.03	Supply of steel pipe piles 500 mm dia., 9 mm thick.	m	816	4181.37	3,411,997.92
23.04	Driving piles of 500 mm dia.including positioning and pitching.Include for cutting pile heads to correct level.	m	816	332.51	271,328.16
	Sub total (23)				3,893,706.88

## APPENDIX C

# DETAILED DIRECT CONSTRUCTION COST

### (FC, LC and VAT)

LL TOUR PROPERTY IN THE REAL PROPERTY INTO THE RE	FOREIGN CURRENCY RATE ANOUNT	LOCAL CURRENCY RATE AMOUNT	VALU ADDED TAX RATE AMOUNT
I General	10,408,772,00	54,418,500,00	0.0
4 Site Clearance and Topsoil Stripping 5 Earthworks	5,420,270,78 179,249,421.70	1,998,604.46 65,664,780.50	425,593.7 15.694,224.1
7 Excavation and Filling for Structures 8 Enlowerts and Drainage Works	5,904,449,70	2,896,789.70	645,355.1 3.367.573.E
9 Passage of Traffic	9,972,780.26	4,413,355.94	1,669,026.7
13 Graded Crushed Stone Subbase and Base	92,167,301.00	30,337,555,90	8,994,526.2
14A Lean Concrete 15 Bituminous Surface Treatment and Surface	77,909,650.20 28,363,066.29	30,960,367.50 1,243,712.51	8,412,572.8 4,262,107.4
16 Bituminous Binder Course and Mearing	133,463,081.20	27,443,005.30	27,066,537.80
Lourse 17 Concrete Horks	62,428,975.50	48,174,481.52	10, 974, 725.5
20 Road Furniture 21 Miscellaneous	23,803,031.76 7,788,119.56	1,004,055.21	1, 356, 544, 69 177, 435, 23
22 Dayworks 23 Piling	2,812,430.00 3,477,342.24	3,648,443.80 416,364.54	308,556.0
Total	664,599,491.67	306, 937, 029.38	84,108,044.90

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	TAX AMOUNT		0.00	0*0	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
Estimated at VAT included.	VALU ADED RATE		0.00	0.00	0.00	0.00	00*0	00.0			0.00	0.0
	CURRENCY AMOUNT		660,000,00	2,210,000.00	1,080,000,00	1,125,000.00	567,000.00	347,000.00	259, 500, 00	0.00	1,200,000.00	CO0,000,00
	LOCAL RATE		22000.00	17000.00	12000.00	7500.00	567000.00	347000.00			40000.00	6.00
	CURRENCY AMOUNT		0.00	0.00	0.00	0.00	567,000.00	347,000.00	747,300.00	8,747,472.00	0.00	0.00
	FOREIGN ( RATE		00.0	0.00	0.00	0.00	567000.00	347000.00			0.00	00.0
	QUANTITY		30	130	05	150	1	<b>H</b>			e e	100,000
	UNIT		Month	Month	Month	Month	No.	No.	Cum Sum Sum	Lump Sum	Veh. Month	ж ж
BILL OF QUANTITIES No.1 GENERAL	DESCRIPTION	Provide furnish and maintain the rented accommodation for the Engineer's Representative and his staff:	(1) Type I (senior staff house).1No.	(2) Type II (senior staff house),5Nos.	(3) Type III (junior staff house), 3Nos.	(4) Type IV (junior staff house), 5Nos.	Provide equip and maintain Main Office for the Engineer's Representative and his staff.	Provide and maintain laboratory for the Engineer's Representative and his staff.	Provide and maintain furniture and office equipment for the Engineer's office and Laboratory as listed in the Special Specification,all to the satisfaction of the Engineer.	Provide survey and laboratory equipment as listed in the Special Specification.	Provide with driver and maintain one (1) new 504 Peugeot or equivalent with a minimum engine capacity of 1800 cc.approved by the Resident Engineer, inclusive of the first 3000 km travelled in any one month.	E.O.Item 1.06 for distance in excess of 3000 km travelled in any one month, inclusive of fuels, lubricants, tyres and additional servicing.
	NO.	1.01					1.02	1.03	1.04	1.05	1.06	1.07

TAX 40UNT	0,00	 	00*0	00°0	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
 VALU ADDED TAX RATE AMOUNT	0.00		0.00	00*0	00.0								
CURRENCY AMOUNT	3,960,000.00		4,600,000.00	3,420,000.00	2,100,000.00		1,600,000.00	8,900,000,00	4,600,000.00	4,500,000.00	1,600,000.00	100,000,00	500,000.00
LOCAL	44000.00		11.50	38000.00	7.00								
 CURRENCY AMOUNT	0.00	- - -	0.00	00.0	0.00		0.00	0.00	0.0	0.00	0.00	0.00	0.00
FOREIGN RATE	0.00		0.00	0.00	0.00				·				
QUANTITY	06		400,000	06	300,000								
UNIT	veh. Month		<b>8</b>	Veh. Month	ц Т Т		P.C. Sum	Sum S	P.C. Sum	P.C. Sum	P.C. Sum	P.C. Sum	P.C. Sum
DESCRIPTION	As for Item 1.06 but three (3) n 4MD Land Rovers or equivalent wi	a minimum snyine capacity of 2300 cm inclusive of the first 3000 cm travelled in any one month.	E.O.Item 1.08 for distance in excess of 3000 km travelled in any one month, inclusive of fuels, lubricants, tyres and additional servicing.	As for Item 1.06 but three (3) new Subaru or equivalent with a minimum engine capacity of 1800 cc. inclusive of the first 3000 km travelled in any one month.	E.O.Item 1.10 for distance in excess of 3000 km travelled in any one month, inclusive of fuels, lubricants, tyres and additional servicing.		(1) Telecommunication line	(2) Electric line	(3) Water pipe line	(4) Railway	(5) Sewerage pipe line	(6) Existing street lighting	(7) Electric fence of National Park
ITEN NO	1.08		1.09	1.10	1.11	1.12							

DESCRIPTION	LINN	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL	CURRENCY AMOUNT	VALU ADDED TAX RATE AMOUNT	AMOUNT	
<pre>(8) Fence of Kenya Rifles</pre>	ۍ د د		1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.00		300,000.00		0.00	
Include percentage of P.C.Sum in Item 1.12 for Contractor's cost and profit.	% of Item 1.12	20	. :	00 0		4,420,000.00		0.00	
Prime Cost Sum of Shs.3,000,000 for the compensation and aquisition of land.	P.C.			0.00	6	3,000,000.00		0.00	
Include percentage of P.C.Sum in Item 1.14 for Contractor's cost and profit.	% of Item 1.14	40		00.0		1,200,000.00	·	0.00	
Prime Cost Sum of Shs.600,000 for the Engineer's Miscellaneous Account.	Sum Sum S	·		0.00		600,000.00		00"0	
Include percentage of P.C.Sum in Item 1.16 for Contractor's cost and profit.	% of Item 1.16	20		0.00		120,000.00		0010	
Provide and erect publicity signs as directed by the Engineer.all in accordance with MOW DRG.NO.SS/234.	No.	10	0.00	0.00	25000.00	250,000-00	00.00	0.00	
Prime cost sum of K.Shs. 500,000 for the rectification of title deeds of acquired lands.	Sun Sun			0.00		500,000.00		0.00	
Include percentage of P.C Sum in Item 1.19 for Contractor's cost and profit.	% of Item	20		0.00		100,000.00		0.00	
	AL I			10,408,772.00		54,418,500.00		0.00	

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· · ·	DTIL OF MINUTATION N	· · · · · · · · · · · · · · · · · · ·							
	SITE CLEARANCE AND TOPSOIL STRIPPING								
NO.	DESCRIPTION	LINU	QUANTITY	FOREIGN	CURRENCY AMOUNT	LOCAL	CURRENCY AMOUNT	VALU ADDED	DED TAX AMOUNT
4.01	Clear site in Open Country, including removal of trees, hedges, bushes and other vegetation and objectionable organic material grup un roots and harkfill to	ha	126.2	4160.60	525,067.72	1086.90	137,166.78	202.30	25,530.26
	95% MDD AASHTO T.99 with approved material all in accordance with the Specification.	- 1. -		·.					
4.02	As for Item 4.01 but to clear site in forest area.	ha	45.3	8736.20	395,749.86	2499,60	113, 231.88	607.00	27,497.10
4.03	Removal topsoil to a depth as directed by the Engineer and dispose of to spoil dump or stockpile for re-use as directed by the Engineer.	m3	106,700	38.62	4,120,754.00	10.75	1,147,025.00	3.20	341,440.00
4.04	Scarify and remove to stockpile existing pavement material as directed by the Engineer.	ш3 Сш	2,720	101.36	275,699.20	27.64	75,180.80	8.87	24,126.40
4.05	Demolish existing railway bridge and remove debris to spoil over any distance ,backfill voids and compact to 105% MDD as necessary.	Lump Sum		. *	103,000.00		26,000.00		7,000.00
4.06	Allow a Provisional Sum to be expended on a daywork basis for the removal of existing structures,fences and other obstructions.	Prov. Sum			00*0		500,000.00		00-00
	Sub total (4)				5,420,270.78		I,998,604.46		425,593.76

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	BILL OF QUANTITIES No.5 EARTHWORKS	· · ·	: 				۲ ۱۹۰۱ - ۱۹۰۱ ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ - ۱۹۰۱ -			
ITEM	N	UNIT	QUANTITY	FOREIGN	FOREIGN CURRENCY RATE AMOUNT	LOCAL	CURRENCY	VALU A	VALU ADDED TAX RATE AMOUNT	
	Fill in soft material for main road and	E E	m3 1,234,300	71.89	88,733,827.00	20.33	25,093,319.00	6.03	7,442,829.00	. *
· · ·	service road, and compact to at least 95% MDD AASHID T.99.						• :			
5.02	As for Item 5.01 but for slip roads and approach roads.	m3	196,400	71.89	14,119,196.00	20.33	3,992,812.00	6.03	1,184,292.00	
5.03	As for Item 5.01 but hauling from drainage pond excavation works as shown on the Drawings.	ŝ	7,720	71.41	551,285.20	20.24	156,252.80	6.03	46,551.60	
5.04	As for Item 5.01 but for new railway embankment.	ŝ	5,480	71.41	391,326.80	20.24	110,915.20	6.03	33,044.40	
5.05	Fill in hard material for main road.	Ш3 СШ	104,900	197.72	20,740,828.00	48.68	5,106,532.00	11.07	1,161,243.00	
5.06	Fill in soft material for central reserves as shown on the Drawings.	а С	11,400	81,17	925,338.00	75.45	860,130.00	1.61	86,754.00	
5.07	Fill in soft material adjacent to shoulders as shown on the Drawings.	ñ	3,310	81.17	268,672.70	75.45	249,739.50	7.61	25,189.10	
5,08	Spoil in unsuitable material such as black cotton and rubbish.	E	189,500	72.50	13,738,750.00	20.23	3,833,585.00	6.51	1,233,645.00	
5,09	Spoil in soft material.	ធ្ល	5,000	72.50	362,500.00	20.23	101,150.00	6.51	32,550-00	
5.10	Spoil in hard material.	ũ	1,000	242.36	242,360.00	58.26	58,260.00	14.97	14,970.00	
5.11	Overhaul earthworks in excess of 1.0 km free haul.	n3. km 3	m3.km 3,432,300	7.74	26,566,002.00	1.89	6,487,047.00	0.86	2,951,778.00	
5.12	Excavation in swamps.	Сп С	1,000	89.16	89,160.00	25.50	25,600.00	6.14	6,140.00	
5,13	Provide and place rockfill in accordance with the Specification.	<u>1</u>	1,000	196.70	196,700.00	48.45	48,450.00	10-90	10°000°01	
5.14	Compact original ground below fills to at least 95% MDD AASHTO T.99 including all necessary scarifying and watering as directed by the Engineer, to a depth of 150mm below ground level.	Еп 2	62,600	13.30	832,580.00	4.28	267,928.00	0.56	35,056.00	

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	ADDED TAX ANOUNT	34,076.00	56,112,00	560.00	280.00	7,600.00	112,476.00	167,850.00	80,847.00	95,018.00	479,260.00
	VALU AD RATE	0.28	0.56	0.56	0.28	7.60	1.56	0.50	1.17	6.17	0.62
	CURRENCY AMOUNT	260,438.00	428,856-00	4,280.00	2.140.00	24,070.00	761,376.00	1,524,078.00	462,970.00	341,726.00	14,138,170.00
•	LOCAL RATE	2.14	4.28	4.28	2.14	24.07	10.56	4.54	6.70	22.19	18.29
	CURRENCY AMOUNT	809,305,00	1,332,660.00	13,300.00	6,650.00	85,550.00	1,041,124.00	1,853,064.00	922,485.00	1,151,920.00	0.00
	FOREIGN RATE	6.65	13.30	13.30	6.65	85.55	14.44	5.52	13.35	74.80	0.00
	QUANTITY	121,700	100,200	1,000	1,000	1,000	72,100	335,700	69,100	15,400	773,000
	UNIT	ß	50 20	β	β	21	щ2	Ĩ	<b>2</b> 6	щ3 1	щ2 С
	DESCRIPTION		Compact in-situ subgrade in Cut area to a depth of 300mm below formation level to at least 100% MDD AASHTO T.99.	Compact in-situ subgrade material in Cut area between 150mm and 300mm below underside of imported subgrade material to at least 95% MDD AASHTO T.99.	Compact in-situ subgrade material in Cut area between Omm and 150mm below underside of imported subgrade material to at least 100% MDD AASHTO 7.99.	Provide.place and compact improved subgrade material in locations where directed by the Engineer.	Rock formation levelling in Cut area below lean concrete base level or as directed by the Engineer.	Haul from stockpile and spread on side- slopes and central reserves, lightly roll and compact 75mm thickness of topsoil.	Haul from stockpile and spread on black cotton spoil area, lightly roll and compact 200mm thickness of topsoil in locations as directed by the Engineer.	Haul from stockpile and spread on rubbish spoil area and side borrow area, and compact topsoil or as directed by the Engineer.	Plant fillslopes and cutslopes with selected grass in accordance with the Specification, including the establish- ment of plant nurseries where required.
	ITEN NO	5.15	5.16	5.17	5.18	5.19	5.20	5.21	5.22	5.23	5.24
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NGN.	ITEM NO.	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL RATE	CURR	VALU A RATE	VALU ADDED TAX RATE AMOUNT
	5.25 Provide, place and compact filter material for drainage layer and sand mat in locations where directed by the Engineer.	ម្ព	1,000	277.05	277.050.00	208.89	208,890.00	79.80	00.008,97
5.26	Fill for new national park boundary dike including demolishing existing dike.	<u>8</u>	58, 300	65.36	3,810,488.00	18.82	1,097,206.00	5.41	315,403.00
- e t	5.27 Filter fabric for rockfill.	22	1,000	187.30	187,300.00	18.85	18,860.00	0.00	0.00
	Sub total (5)				179,249,421.70		65,664,780.50		15,694,224.10

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	BILL OF QUANTITIES No.7 EXCAVATION AND FILLING FOR STRUCTURES								
ITEM NO	DESCRIPTION	UNIT	QUANTITY	FOREIGN	CURRENCY AMOUNT	LOCAL	CURRENCY	VALU ADDED	ODED TAX AMOUNT
	BRIDGES	1 1 1 1	1 9 9 7 7 1 1 1 1 1 1 1 1				•		
7.01	Excavation.compaction at foundation levels.backfilling and removal of excavated material to spoil for struct- ures foundations in soft materials.	ε	5, 330	85.68	456,674.40	22.37	119,232.10	6.58	35,071.40
7.02	E.O.Item 7.01 at any location for excavation in hard materials.	ũ	1,230	259.05	318,631.50	61.48	75,620.40	14.59	17,945.70
7.03	Backfilling with selected material behind bridge abutment, wing walls and around structures.	ш <b>3</b>	4,980	85,90	427,782.00	55.18	274,796.40	8.13	40,487.40
7.04	Provide and place porous filter material behind bridge abutments and wing walls.	m3	300	277.05	83,115.00	208.89	62,667.00	79.80	23,940.00
7.05	Provide and place selected granular fill material.	m3	200	313.42	62,684.00	116.25	23,250.00	27.87	5,574.00
	BOX CULVERTS		·		·				
7.06	Excavation, compaction at foundation levels, backfilling and removal of excavated material to spoil for struct- ures foundations in soft materials.	5m	15,680	85.68	1,343,462.40	22.37	350,751.60	6.58	103,174.40
7.07	E.O.Item 7.06 at any location for excavation in hard materials.	Ê	300	259.05	77,715.00	61.48	18,444.00	14.59	4,377.00
7.08	Backfilling with selected material behind box culvert walls and around structures.	Ê	22,670	85.90	1,947,353.00	55.18	1,250,930.60	8.13	184,307.10
2.09	Provide and place porous filter material behind box culvert walls.	m3	1,990	277.05	551,329.50	208-89	415,691,10	79.80	158,802.00
7.10	Provide and place selected granular fill material.	En:	1,420	313.42	445,056.40	116.25	165,075.00	27.87	39,575.40
7.11	Excavation and backfilling for gabions in soft material.	ШЗ	275	0.00	0.00	90.95	25,011.25	0.00	00-0

	DESCRIPTION	LINU	UNIT QUANTITY	FOREIGN CURRENCY RATE AMOUNT	FOREIGN CURRENCY RATE AMOUNT	LOCAL (	LOCAL CURRENCY RATE AMOUNT	VALU ADDED TAX RATE AMOUNT	D TAX AMOUNT
rov s slign	7.12 Provide and place gabion mesh.0.5m thick m2 as shown Drawings or directed by the Engineer.	۲ ۲	220	194.72	107,096.00	155.98	107,096.00 155.98 85,789.00	45.89	46.89 25,789.50
rov	7.13 Provide and place rockfill to gabions.	E	275	303.82	83,550.50	107.35	29,521.25	22.95	6,311.25
qŋ	Sub total (7)				5,904,449,70		2.896.789.70		645.355.15

	BILL OF QUANTITIES NO.8 CULVERTS AND DRAINAGE WORKS								
NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL	CURRENCY AMOUNT	VALU AD RATE	ADDED TAX AMOUNT
		* 1 1 1 1 1 1	5 5 6 7 7 7		a s a r f f f f f f f f f f f f f f f f f f	P 1 1 1 1 1 1 1 1 1	t 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 	
	No separate payment shall be made the haulage of surplus or unsuitable	· .		* <u>.</u>		•			
	excavated material and the cost of such haulage shall be included in the rates and prices.	1.	•	· · · · ·		- - -			
8.01	Excavate in soft material for pipe culverts below existing ground level or	Ϋ́Ε Έ	3,970	94.98	377,070.60	40.66	161,420.20	7.71	30,608.70
	road formation level including support of trench sides,backfilling and compact- ion at least 95% MDD AASHTO T.99 up to	·	. *						
	new road formation level or ground level whichever is the lower, dewatering, and carting surplus material to spoil dump.						· · ·		·
8.02	As for Item 8.01 but for inlets and outlets of culverts.	m3	2,970	64.98	282,090.60	40.66	120,760.20	1.71	22,898.70
8.03	Excavate in soft material for earth channel, drain type I.	En L	5,650	85.68	484,092.00	22.37	126,390.50	6.58	37,177.00
8.04	Excavate in soft material for stone pitching channel, drain type II.	Ĩ	3,900	85.68	334,152.00	22.37	87,243.00	6.58	25,662.00
8.05	Excavate in soft material for concrete channel, drain type III.	Ĩ	3, 690	85.68	316,159.20	22.37	82,545.30	6.58	24,280.20
8.06	Excavate in soft material for concrete channel with cascade, drain type VII.	50 2	5,600	85.68	479,808.00	22.37	125,272.00	6.58	36,848.00
8.07	Excavate and backfill for gulley pots in soft material.	m3	180	94.98	17,095.40	40.66	7,318.80	1.71	1,387.80
8.08	Excavate and backfill for concrete ditch type VI, in soft material.	50 13	540	94.98	51,289.20	40.66	21,956.40	1.71	4,163.40
8.09	Excavate and backfill for gabions in soft material.	Е СШ	580	0.00	0-00	90.95	52,751.00	0.00	00.0
8.10	Excavate for subsoil drains in soft material.	Ê	460	0*00	0.00	90.95	41,837.00	0.00	0.00

LIEN NGL	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	FOREIGN CURRENCY RATE AMOUNT	LOCAL	CURRENCY AMOUNT	VALU A RATE	ADDED TAX AMOUNT
8.11	E.O.Item 8.01 to 8.10 at any location for excavation in hard materials.	<b>1</b> 3	500	259.05	129,525.00	61.48	30,740.00	14.59	7,295.00
8.12	Provide and place filter fabric to subsoil drains.	2월	3,040	93.65	284,696.00	9.43	28,667.20	0.00	0.00
8.13	Provide and place crushed rock backfill to subsoil drains.	۲ ۲	420	313.42	131,636.40	116.25	48,825.00	27.87	11,705.40
8.14	Provide and place perforated 200mm dia. PVC pipe to subsoil drains.	E	1, 265	389.85	493,160.25	35.26	44,603.90	0°00	00-00
8.15	Provide, lay and joint 300mm I.D. concrete pipes ogee jointed.	æ	155	209.88	32,531.40	203.19	31,494.45	58.00	8,990.00
8.16	As for Item 8.15 but 600mm I.D.	E	1,031	619.81	639,024.11	782.19	805,437.89	178.88	184,425-28
8.17	As for Item 8.15 but 750mm I.D.	E	06	923.63	83,126.70	16.130	86,571.90	273.99	24,659.10
8.18	As for Item 8.15 but 900mm I.D.	E	1,067	1160.37	1,238,114.79	1469.64	1,568,105.88	343.51	366,525.17
8.19	As for Item 8.15 but 1200mm 1.0.	6	294	1866.73	548,818.62	2218.69	652,294.86	560.32	164,734_08
8.20	Provide.place and compact class 15/20. concrete bed and surround to concrete pipes.including formwork.	۳ ۲	2,520	1499.31	3,778,261.20	1120.87	2,824,592,40	198.49	500,194.80
8.21	As for Item 8.20 but concrete facing for drain ditch on berm.drain type VIII.	2	1,280	67.91	86,924.80	28.68	36,710,40	6.09	11,635.20
8.22	Provide, place and compact class 25/20 concrete for headwalls, wingwalls, aprons and toewalls to pipe culverts including all formwork and provision and placing of fabric mesh reinforcement as shown in the Drawings.	т <u>3</u>	924	1901.02	1,756,542.48	2081.92	1,923,694.08	271.88	251,217,12
8.23 ,	As for Item 8.22 but class 15/20 for concrete channel drain type III and VII.	Ë	1,330	1504.61	2,001,131.30	901.98	1,199,633,40	204.34	271,772,20
8.24	Provide.place and compact class 20/20 concrete for concrete ditch.drain type VI including all formwork and placing of reinforcement as shown in the Drawinds.	E E	6	3093.60	290,798.40	5833.36	548,335.84	514.36	48,349.84

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8.25         Provide place and compact class 60/20         No         6.3         137,499.39         445.05         312.49         13.666.           8.25         36 for including all         No         18.2         31.484.40         288.72         50.168.96         30.30         5,900           8.25         35 for including all         No         18.2         31.484.40         288.72         50.168.96         30.30         5,900           8.25         Provide and place 50m dia. P/C weep         No         4         3.191,404.10         16.71         435.68           8.28         Foroide and place 50m dia. P/C weep         No         12.278         3.385,560.20         118.49         3.1091,404.10         16.71         435.68           8.28         foroide and place 50m dia. P/C weep         No         12.278         3.385,560.20         118.49         3.1091,404.10         16.71         435.68           8.28         foroide and place softend matrice         No         20         0.00         0	ITEM NO.	DESCRIPTION	TINU	QUANTITY	FOREIGN	CURRENCY AMOUNT	LOCAL	CURRENCY AMOUNT	VALU AD RATE	ADDED TAX AMOUNT
$a_{1}$ for item 8.24 but concrete cover of bo.         16.         16.         18.7.15         31,424,40         28.7.2         50,184.95         30.30         5,103           Provide and place form (i.a., PUC weep         No.         45         13,95         627.75         4.47         201.15         0.00           Provide and place form (i.a., PUC weep         No.         45         13,95         627.75         4.47         201.15         0.00           Received and place form thick         Received and the frogmethic         No.         45         13,355,560.20         118.49         3.1091.401.10         16.71         435.56           Received and the frogmethic         No.         0.10         255.29         407,051.70         27.00         45.71           Referid 3. and construct Stammely struct         No.         0.10         25.39         402,421.70         27.00         45.71           Referid 3. and construct Stammely struct         No.         0.10         25.39         407,051.70         27.00         45.71           Referid 3. and construct Stammely struct         No.         0.00         26.29         10.711.70         103.705         26.91         12.255           Referid 3. and construct Stammely struct         No.         27.117.70         100.41.170 <th>8.25</th> <th>Provide.place and compact class 20/20 concrete for gulley pot including all formwork.</th> <th>5</th> <th>63</th> <th>2182.53</th> <th>137,499.39</th> <th>4085.02</th> <th>257,356.26</th> <th>312.49</th> <th>19,686.87</th>	8.25	Provide.place and compact class 20/20 concrete for gulley pot including all formwork.	5	63	2182.53	137,499.39	4085.02	257,356.26	312.49	19,686.87
Provide and place 50m dia.PUC weep         No.         45         13.95         627.75         4.47         201.15         0.00           Example are researy provide all constring is and context of bod and side proteining starting bod and side recent in its and context of bod and side recent in its and context of curvers.         m2         26,090         129.78         3,385.860.20         118.49         3,091.404.10         16.71         435.96           Examine a recensary provide all recent in its and contress of curvers.         m2         1,730         9.00         0.00         235.29         407.051.70         27.00         46.71           As for item s.26 but 260m building curvers.         m2         1,730         25.39         43.924.70         27.88         47.986.40         5.37         9.29           As for item s.26 but 260m building curvers.         m2         1,730         25.39         43.924.70         27.88         47.986.40         5.37         9.29           Comment concreted by the fuginer.         m2         1,730         23.19         43.924.70         28.600         5.37         9.29         5.31.8           Provide and place mattresses. Da thick, cascade.         m2         1,330         7.94.94.70         27.86         9.29         25.91         12.56           Provide and place mattresses. Da thick, m2	8.26	As for Item 8.24 but concrete cover of gulley pot.	No.	168	187.05	31,424,40	298.72	50,184.96	30.30	5,090.40
Excavate as necessary, provide all monting stome pritring to bed and side grouting stome pritring to bed and side areas in lets and outbers, down and stome reses, in lets and outbers, down and and stome resestate.mc1,73029.3840,051.7021.00As for Itam 8.28 but 250m building stome.mc1,7302.5.3943,224.7027.6847.866.405.37Cament screen on building stome.mc1,7302.5.3943,224.7027.6847.866.405.37Cament screen on building stome.mc1,7302.2.39100,131.7020.0036.48Provide and place pation mesh, an thick, a sydom on brawings or directed by the figitner.mc1,33072.196.100.13526.91Provide and place mattresses.mc33530.36531,372.759.433,159.050.00Provide and place mattresses.mcmc57.117.40107.3561,189.3026.55Provide and place mattresses.mc33533.523.133.77.659.433.159.050.00Provide and place mattresses.mc33533.137.740107.359.43	8.27	Provide and place 50mm dia. PVC weep holes.	No.	45	13.95	627.75	4.47	201.15	0-00	0-00
As for item 8.28 bit 250mm building         m2         1,730         0.00         0.00         235.29         407,051.70         27.00           concrete channel with cascade.         m2         1,730         25.39         43,924.70         27.68         47,865.40         5.37           Connent screen on building stone.         m2         1,730         25.39         43,924.70         27.68         47,865.40         5.37           Provide and place gabion mesh, in thick, m2         467         111.77         52,196.59         108.76         50,790.92         26.91           Provide and place mattresses.0.3m thick, m2         467         111.77         52,196.59         108.76         50,790.92         26.91           Provide and place mattresses.0.3m thick, m2         467         111.77         52,196.59         108.76         50,790.92         26.91           Provide and place mattresses.0.3m thick, m2         467         111.77         52,196.59         107.35         51,189.50         22.95           Provide and place mattresses.         Travide and place mattresses.         71,317.40         107.35         51,189.50         20.05           Forvide and place mattresses.         Travide and place mattresses.         76,112.91         35.66         2.94           Forvide and place m	8.28	Excavate as necessary, provide all materials and construct 150mm thick grouting stone pitching to bed and side-slopes of drains, ditches, channels, ground faces, inlets and outlets of culverts, including carting of excavated material to spoil, as directed by the Engineer.	엍	26,090	129.78	3,385,960.20	118.49	3,091,404.10	16.71	435,963.90
Cement screen on building stone.         m2         1,730         25.39         43.924.70         27.68         47.865.40         5.37           Provide and place and place gabion mesh, im thick, in the set stoom on Drawings or directed by the Engineer.         m2         430         242.19         104.141.70         183.00         76,690.00         53.48         2           Provide and place mattresses.0.3m thick, in the set stoom on Drawings or directed by the Engineer.         m2         467         111.77         52,196.59         108.76         50,790.92         26.91         1           Provide and place mattresses.0.3m thick, in the main of the stoom on Drawings or directed by the Engineer.         m3         570         303.82         173,177.40         107.35         51,189.50         2.05         1         1           Provide and place rockfill to gabions         m3         570         303.82         173,177.40         107.35         51,189.50         2.05         1         1           Provide and place filter fabric under         m2         335         93.65         31,372.75         9.43         3,159.05         0.00         76,115.91         35.66         1           Provide and place filter fabric under         m2         335         114.49         62,938.98         150.13         76,115.91         35.66	8.29	As for Item 8.28 but 250mm building stone at concrete channel with cascade.	m2	1,730	0.00	0.00	235.29	407,051.70	27.00	46,710.00
Provide and place gabion mesh, in thick, m2         430         242.19         104,141.70         183.00         78,690.00         58.48         25.14           Engineer.         Provide and place mattresses, 0.3m thick, m2         467         111.77         52,196.59         108.76         50,790.92         26.91         12,56           Provide and place mattresses, 0.3m thick, m2         467         111.77         52,196.59         108.76         50,790.92         26.91         12,56           Provide and place mattresses, 0.3m thick, m2         467         111.77         52,196.59         108.76         50,790.92         26.91         12,56           Provide and place rockfill to gabions         m3         570         303.82         173,177.40         107.35         61,189.50         22.95         13,08           Provide and place rockfill to gabions         m2         335         93.65         31,372.75         9.43         3,159.05         0.00           Rowide and place filter fabric under         m2         335         13,372.75         9.43         3,159.05         0.00           Rowide and place filter fabric under         m2         570         124.14         62,938.98         150.13         76,115.91         35.66         18,07           Filto.10 <t< td=""><td>8.30</td><td>Cement screen on building stone.</td><td>щ</td><td>1,730</td><td>25.39</td><td>43,924.70</td><td>27.68</td><td>47,886.40</td><td>5.37</td><td>9,290.10</td></t<>	8.30	Cement screen on building stone.	щ	1,730	25.39	43,924.70	27.68	47,886.40	5.37	9,290.10
Provide and place mattresses.0.3m thick, m2         467         111.77         52,196.59         108.76         50,790.92         26.91         12,56           ss shown on Drawings or directed by the Engineer.         570         303.82         113,177.40         107.35         51,189.50         22.95         13.08           Provide and place rockfill to gabions         m3         570         303.82         173,177.40         107.35         51,189.50         22.95         13.08           Provide and place rockfill to gabions         m2         335         93.65         31,372.75         9.43         3,159.05         0.00           Provide and place filter fabric under         m2         335         93.65         31,372.75         9.43         3,159.05         0.00           For behind gabions.         m2         335         93.65         31,372.75         9.43         3,159.05         0.00           For vide and place filter fabric under         m2         335.65         31,372.75         9.43         3,159.05         0.00           For vide and jac for behind gabions.         m         507         124.14         62,938.98         150.13         76,115.91         35.66         18,07           For vide and iay 75mm thick P.C.C. invert block drains         m2 <t< td=""><td>8.31</td><td>Provide and place gabion mesh.im thick, as shown on Drawings or directed by the Engineer.</td><td>ĕ</td><td>430</td><td>242.19</td><td>104,141.70</td><td>183.00</td><td>78,690.00</td><td>58.48</td><td>25,146.40</td></t<>	8.31	Provide and place gabion mesh.im thick, as shown on Drawings or directed by the Engineer.	ĕ	430	242.19	104,141.70	183.00	78,690.00	58.48	25,146.40
Provide and place rockfill to gabions       m3       570       303.82       173,177.40       107.35       61,189.50       22.95       13,08         Provide and mattresses.       Provide and place filter fabric under       m2       335       93.65       31,372.75       9.43       3,159.05       0.00         Provide and place filter fabric under       m2       335       93.65       31,372.75       9.43       3,159.05       0.00         Excavate trench, provide, lay and joint       m       507       124.14       62,938.98       150.13       76,115.91       35.66       18,07         450 x 225mm P.C.C. invert block drains       m       507       124.14       62,938.98       150.13       76,115.91       35.66       18,07         Provide and lay 75mm thick P.C.C. side       m2       477       114.49       54,611.73       163.19       77,841.63       40.48       19,30         Frouch, provide, lay and joint       m       15,440       116.90       1,804,936.00       144.14       2,225,521.60       44.00       679.36         575 x 250mm P.C.C. invert block drain,       m       15,94,936.00       144.14       2,225,521.60       44.00       679.36	8.32	Provide and place mattresses.0.3m thick, as shown on Drawings or directed by the Engineer.	Ę	467	111.77	52,196.59	108.76	50,790.92	26.91	12,566.97
Provide and place filter fabric under       m2       335       93.65       31,372.75       9.43       3,159.05       0.00         and/or behind gabions.       Excavate trench.provide.lay and joint       m       507       124.14       62,938.98       150.13       76,115.91       35.66       18.07         450 x 225mm P.C.C. invert block drains       m       507       124.14       62,938.98       150.13       76,115.91       35.65       18.07         450 x 225mm P.C.C. invert block drains       m       507       124.14       62,938.98       150.13       76,115.91       35.65       18.07         Provide and lay 75mm thick P.C.C. side       m2       477       114.49       54,611.73       163.19       77,841.63       40.48       19,30         Provide and lay 75mm thick P.C.C. side       m2       477       114.49       54,611.73       163.19       77,841.63       40.48       19,30         Facavate trench.provide, lay and joint       m       15,440       116.90       1,804,936.00       144.14       2,225,521.60       44.00       679.36         355 x 250mm P.C.C. invert block drain,       m       15,90       1,804,936.00       144.14       2,225,521.60       44.00       679.36         355 x 250mm P.C.       in type IV. </td <td>8.33</td> <td>Provide and place rockfill to gabions and mattresses.</td> <td>ξ</td> <td>570</td> <td>303.82</td> <td>173,177.40</td> <td>107.35</td> <td>61,189.50</td> <td>22.95</td> <td>13,081.50</td>	8.33	Provide and place rockfill to gabions and mattresses.	ξ	570	303.82	173,177.40	107.35	61,189.50	22.95	13,081.50
Excavate trench, provide, lay and joint       m       507       124.14       62,938.98       150.13       76,115.91       35.66         450 x 225mm P.C.C. invert block drains       (1.B.D.) having 300mm dia.channel.       35.66       35.66       35.66       35.66         Provide and lay 75mm thick P.C.C. side       m2       477       114.49       54,611.73       163.19       77,841.63       40.48         Provide and lay 75mm thick P.C.C. side       m2       477       114.49       54,611.73       163.19       77,841.63       40.48         Frovide and lay 75mm thick P.C.C. side       m2       477       114.49       54,611.73       163.19       77,841.63       40.48         Fxcavate trench, provide, lay and joint       m       15,440       116.90       1,804,936.00       144.14       2,225,521.60       44.00         375 x 250mm type IV.       type IV.       116.90       1,804,936.00       144.14       2,225,521.60       44.00	8.34	Provide and place filter fabric under and/or behind gabions.	2 2	335	93.65	31,372.75	9.43	3,159.05	0.00	0.0
Provide and lay 75mm thick P.C.C. side       m2       477       114.49       54,611.73       163.19       77,841.63       40.48         slabs to I.B.D.Channel.       Excavate trench, provide, lay and joint       m       15,440       116.90       1,804,936.00       144.14       2,225,521.60       44.00         375 x 250mm P.C.C.invert block drain, drain, type IV.       colspan="2">colspan="2">colspan="2"	8.35	Excavate trench, provide, lay and joint 450 x 225mm P.C.C. invert block drains (1.B.D.)having 300mm dia.channel.	E	507	124.14	62,938.98	150.13	76,115.91	35.66	18,079.62
Excavate trench, provide, lay and joint m 15,440 116.90 1,804,936.00 144.14 2,225,521.60 44.00 375 x 250mm P.C.C.invert block drain, drain, drain type IV.	8.36	Provide and lay 75mm thick P.C.C. side slabs to I.B.D.Channel.	ш2	477	114.49	54,611.73	163.19	77,841.63	40.48	19,308.96
	8.37	Excavate trench, provide, lay and joint 375 x 250mm P.C.C.invert block drain, drain type IV.	E	15,440	116.90	1,804,936.00	144.14	2,225,521.60	44.00	679,360.00

ITEM NO.		UNIT	QUANTITY	FOREIGN CU RATE	CURRENCY AMOUNT	LOCAL	CURRENCY AMOUNT	VALU ADI RATE	ADDED TAX AMDUNT
8.38	8.38 As for Item 8.37 but for on berm.drain type VIII.		740	116.90	86,506.00	144.14	106,663.60	44.00	32,560.00
8.39	Excavate provide all materials and construct kerb in let at busbays as detailed on the Drawings.	NO	32	46.00	1,472.00	59.63	1,908.16	14.40	460.80
8.40	Excavate, provide all materials and construct intake block channel at busbays as detailed on the Drawings.	No	32	46.00	1,472.00	68.66	2,197.12	14.40	450.80
8 41	Provide and place concrete class 15 for 250 x 150mm in-situ gutters.	E.	48	279.57	13,419.36	364.31	17,486.88	36.89	1,770.72
8.42	Provide and place selected granular fill material for gravell bedding.	m3	62	313.42	24,760.18	116.25	9,183.75	27.87	2,201.73
8.43	Plant channel slopes with selected grass in accordance with the Specification.	m2	11,330	0.00	0.00	18.29	207,225.70	0.62	7,024.60
8.44	Earth dike of drainage pond.	<b>m</b> 3	710	71.41	50,701.10	20.24	14,370.40	6.03	4,281.30
	Sub total (8)			-	19,897,191.68		17,444,630.39		3,367,573.66

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	AX UNT	0.00	326,850.00	98,055-00	69,927.00	19,215.00	26,675-00	52,300.00	6,034.00	616.35	113,000-00		760.00	14,232.00
	ADDED TAX AMOUNT		326	85	63	61	26,	52,	θ,		113,			14,
	VALU A RATE	0.00	326850.00	326850.00	53790.00	21350.00	10670.00	·	86.20	17-61	-		7.60	23.72
	CURRENCY AMOUNT	665,000.00	618,670.00	185,601.00	131,937.00	56,583.00	78,575.00	103,700.00	10,334.80	1,788.50	121,300.00		2,407.00	41,910.00
	LOCAL C RATE	35000.00	618670.00	618670.00	101490.00	62870.00	31430.00		147.64	51.10			24.07	69.85
	CURRENCY AMOUNT	0.00	2,356,270.00	706,881.00	646,295.00	204,021.00	287,100.00	407,100.00	38,785.60	6,142.50	590,000.00		8,555.00	153,126.00
	FOREIGN RATE	0.00	2356270.00	2356270.00	497150.00	226690.00	114840.00		554.08	175.50			85.55	255.21
	QUANTITY	19.0	1.0	0.3	1.3	6-0	2.5		20	35			100	600
	LINU	ku	۳. ۲	ц Ц	ш Х	<u>Ř</u>	EX X	Lump Sum	2Ë	щ2	Lump Sum		m3	ст Г
BILL OF QUANTITIES No.9 PASSAGE OF TRAFFIC	DESCRIPTION	Provide and maintain signs and barriers in locations as directed by the Engineer.	Construct and maintain 7.0m wide deviations including drainage.pavement type Deviation-1(Mombasa Road Junction).	As for Item 9.02 but pavement type Deviation-1(Uhuru Monument Junction).	As for Item 9.02 but pavement type Deviation-2(Ngong Road Junction and Dagoretti Forest Junction).	Construct and maintain 6.0m wide deviations including drainage, pavement type Deviation-3.	Construct and maintain 3.0m wide deviations including drainage.pavement type Deviation-4.	Reinstatement of deviations and existing drainages.	Reinstatement of existing road after the completion of cross drainge works, Mombasa Road Junction.	Reinstatement of existing road after the completion of cross drainge works, Kikuyu Junction.	Maintenance of the project road (main road,siip road,approach road and service road) used for the deviation purpose as specified.	Improvement of the existing road as instructed and approved by the Engineer.	(1) Improved subgraded material.	(2) Gravel wearing course.
	ITEM NO.	10.2	9.02	<b>6</b> 03	9.04	9,05	9.06	9.07	90.08	60.6	9.10	9.11		

NO.	DESCRIPTION	UNIT Q	QUANTITY	FOREIGN RATE	FOREIGN CURRENCY RATE AMOUNT	LOCAL	LOCAL CURRENCY RATE AMOUNT	VALU ADDED TAX RATE AMOUNT	ED TAX AMOUNT
	(3) Graded crushed stone base.	50	50	638.87	31,943.50	211.04	10,552.00	58.91	2,945.50
	<pre>(4) MC3000 first seal coat.</pre>	litre	150	21.84	3,276.00	0.57	85.50	3.40	510.00
	(5) Chippings, 3/6mm.	5 <u>5</u>	5	640.33	1,280.66	196.07	392.14	44.64	8.8
9.12	Maintenance of Existing Roads used for heavy construction traffic as specified when and where directed by the Engineer.	km	30	00*0	0.00	5000.00	1.500,000.00	0.00	0.00
4	9.13 Re-carpeting of Existing Roads 6m wide or pro rata as specified when and where directed by the Engineer.	Сщ С	1,800	2517.78	4,532,004.00	491.40	884,520.00	521.01	937,818,00
	Sub total (9)				9,972,780.26		4,413,355.94		1,669,026.73

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	UNIT QUANTITY FOREIGN CURRENCY LOCAL CURRENCY VALU ADDED TAX RATE AMOUNT RATE AMOUNT RATE AMOUNT RATE AMOUNT	ha 1.0 4160.60 4.160.60 1086.90 1.086.90 202.30 202.30	km 1.0 212460.00 212,460.00 60840.00 60,840.00 18480.00 18,480.00	m3 4,000 38.62 154,480.00 10.75 43,000.00 3.20 12,800.00	, m3 4,320 255.21 1,102,507.20 69.85 301,752.00 23.72 102,470.40 t	1,473,607.80 406,678.99 133,952.70
BILL OF QUANTITIES NO.10 GRAVEL MEARING COURSE	DESCRIPTION	10.01 Clear site of the material site.	10.02 Construct access road to the material km site in excess of 200m in length.	10.03 Excavate and spoil topsoil and over- m3 burden in the material site.	10.04 Excavate gravel wearing course material, m3 transport spread and compact to at least 95% MDD AASHTO T.180 for service roads.	Sub total (10)
BILL GRAVE	ITEM NO.	10.01 Clear	10.02 Const site	10.03 Excar burde	10.04 Excar tran: 95% 1	Sub

DESCRIPTION         UNIT         QUANTITY         FORE for CURRENCY         LOCAL         CURRENCY         WALU         DDDE           Frowide spread and compact graded         m3         84,490         594.55         50,233,529.50         195.69         16,533,842.10         58.07         4,           Frowide spread and compact graded         m3         14,020         594.55         50,233,529.50         195.69         16,533,842.10         58.07         4,           As for Item 13.01 but for slip road.         m3         3,030         594.55         8,335,591.00         195.69         16,533,842.10         58.07         4,           As for Item 13.01 but for slip road.         m3         3,030         594.55         1,301,486.50         195.69         16,537,380         58.07         58.07           As for Item 13.01 but for slip road.         m3         3,030         594.55         1,373,570.50         211.04         453,736.00         58.07         58.07           As for Item 13.05 but for slip road.         m3         2,150         594.55.50         195.69         16,53,738.00         58.07         2.07         2.07         2.07         2.07         2.07         2.07         2.07         2.07         2.07         2.07         2.07         2.01	DESCRIPTION         UNIT         CURRENCY ANTE         LOCAL         CURRENCY ANTE         WALU         ADDE           Provide, spread and compact graded         m3         84,490         594.55         50,233,520.50         135.69         16,533,848.10         58.07         4, ANTE           R for Item 13.01 but for sity road.         m3         14,020         594.55         50,233,529.50         135.69         16,533,848.10         58.07         4, ANTE           R for Item 13.01 but for sity road.         m3         1,020         594.55         1,301,465.50         135.69         16,533,848.10         58.07         4, A           R as for item 13.01 but for sity road.         m3         2,150         594.55         1,373,570.50         211.04         433,736.00         58.07         7, A           R Provide.spread and compact graded         m3         2,150         594.55         26,047,235.50         135.69         8,573,178.90         58.07         2, A           R Provide.spread and compact graded         m3         2,150         594.55         26,047,235.50         58.07         2, A         2, A         244,588.40         58.07         2         26.07         2         2         2         2         2         2         3         2         2		BILL OF QUANTITIES NO.13 GRADED CRUSHED STONE FOR SUBBASE AND BASE	· · · ·		·		•	1. 		- - - - -
Provide, spread and compact graded       m3       84,490       594.55       50,233,529.50       195.69       16,533,848.10       58.07       4.         As for Item 13.01 but for slip road.       m3       14,020       594.55       8,335,591.00       195.69       2,743,573.80       58.07       58.07         As for Item 13.01 but for approach       m3       3,030       594.55       1,801,486.50       195.69       2,743,573.80       58.07       58.07         As for Item 13.01 but for approach       m3       3,030       594.55       1,801,486.50       195.69       522,940.70       58.07       58.07         As for Item 13.01 but for approach       m3       2,150       538.87       1,373,570.50       211.04       453,736.00       58.91       58.07         Provide, spread and compact graded       m3       2,150       538.87       1,373,570.50       211.04       453,736.00       58.91       2.         Provide, spread and compact graded       m3       2,313       594.55       2,6047,235.50       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.07       58.	Provide stread and compact gradedm3 $84,490$ $58,455$ $50,233,529.50$ $195.69$ $16,533,448.10$ $58.07$ $4.$ As for item 13.01 but for slip road.m3 $14,020$ $594.55$ $8,335,591.00$ $195.69$ $2,743,573.80$ $58.07$ As for item 13.01 but for approachm3 $3,030$ $594.55$ $1,301,466.50$ $195.69$ $2,743,573.80$ $58.07$ As for item 13.01 but for approachm3 $2,150$ $594.55$ $1,373,570.50$ $211.04$ $453,736.00$ $58.07$ Toold and service road.m3 $2,150$ $594.55$ $20,047,235.50$ $195.69$ $8,573,178.90$ $58.07$ $2,500.7$ Provide stored and compact gradedm3 $2,150$ $594.55$ $3,781,338.00$ $195.69$ $1,244,588.40$ $58.07$ $2,500.7$ As for item 13.05 but for slip road.m3 $1,000$ $594.55$ $3,781,338.00$ $195.69$ $1,244,588.40$ $58.07$ As for item 13.05 but for slip road.m3 $1,000$ $594.55$ $3,781,338.00$ $195.69$ $10,244,588.40$ $58.07$ As for item 13.05 but for slip road.m3 $1,000$ $594.55$ $3,781,338.00$ $195.69$ $10,244,588.40$ $58.07$ As for item 13.05 but for slip road.m3 $1,000$ $594,55$ $3,781,338.00$ $195,690.00$ $58.07$ As for item 13.05 but for slip road.m3 $1,000$ $594,55$ $3,781,338.00$ $195,690.00$ $58.07$ As for item 13.05 but for approachm3 $1,000$ $594,55$ $3$	NGN	DESCRIPTION	1 1	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL RATE	CURRENCY AMOUNT	VALU RATE	ADDED TAX AMOUNT
As for Item 13.01 but for slip road.       m3       14,020       594.55       8,335,591.00       195.69       2,745,573.80       58.07         As for Item 13.01 but for approach       m3       3,030       594.55       1,801,486.50       195.69       592,940.70       58.07         As for Item 13.01 but for approach       m3       3,030       594.55       1,373,570.50       195.69       592,740.70       58.07         Provide.spread and compact graded       m3       2,150       638.87       1,373,570.50       211.04       453,736.00       58.91         Provide.spread and compact graded       m3       2,150       638.87       1,373,570.50       211.04       453,736.00       58.07         Provide.spread and compact graded       m3       2,150       594.55       26,047,235.50       195.69       8,573,178.90       58.07         Provide.spread and compact graded       m3       43,810       594.55       26,047,235.50       195.690       58.07       2         Provide.spread and compact graded       m3       6,360       594.55       3,781.338.00       195.690       58.07       2         As for Item 13.05 but for slip road.       m3       1,000       594.55       3,781.338.00       195.690.00       58.07         As	As for Item 13.01 but for slip road,       m3       14,020       594.45       8,335,591.00       195.69       2,743,573.80       58.07         As for Item 13.01 but for approach       m3       3,030       594.55       1,801,486.50       195.69       592,940.70       58.07         road and service road.       m3       3,030       594.55       1,801,486.50       195.69       592,940.70       58.07         Provide, spread and compact graded       m3       2,150       638.87       1,373,570.50       211.04       453,736.00       58.07         Provide, spread and compact graded       m3       2,150       538.87       1,373,570.50       211.04       453,736.00       58.07       2,         Provide, spread and compact graded       m3       2,150       594.55       26,047,235.50       195.69       1244,588.40       58.07       2,         As for Item 13.05 but for approach       m3       6,360       594.55       594,550.00       195.69       1244,588.40       58.07         As for Item 13.05 but for approach       m3       1,000       594.55       594,550.00       195.690.00       58.07         Sub total (13)       Sub total (13)       93,7555.90       195.690.00       58.07       58.07	13.01	Provide.spread and compact graded crushed stone to subbase for main road.	2	84,490	594.55	50,233,529,50	195.69	16,533,848.10	58.07	4,906,334.30
As for Item 13.01 but for approach         m3         3,030         594.55         1,801,486.50         195.69         592,940.70         58.07         58.07         58.07         58.01           Provide, spread and compact graded         m3         2,150         638.87         1,373,570.50         211.04         453,736.00         58.01         58.01         58.07         2,15           Provide, spread and compact graded         m3         2,150         638.87         1,373,570.50         211.04         453,736.00         58.07         2,15           Provide, spread and compact graded         m3         2,150         594.55         26,047,235.50         211.04         453,736.00         58.07         2,15           Provide, spread and compact graded         m3         43,810         594.55         26,047,235.50         195.69         1,244,588.40         58.07         2,1           As for Item 13.05 but for approad.         m3         1,000         594.55         594,550.00         195.69         1,244,588.40         58.07         3         <	As for Item 13.01 but for approach       m3       3.030       594.55       1.801.486.50       195.69       592.940.70       58.07         Provide strvice road.       m3       2,150       638.87       1,373.570.50       211.04       453.736.00       56.91         Provide.spread and compact graded       m3       2,150       638.87       1,373.570.50       211.04       453.736.00       56.91         Provide.spread and compact graded       m3       2,150       594.55       26.047.235.50       195.69       8,573.178.90       58.07       21.07         Provide.spread and compact graded       m3       43.810       594.55       26.047.235.50       195.69       1,244.588.40       58.07       3.07         As for Item 13.05 but for slip road.       m3       1,000       594.55       594.550.00       195.69       1,244.588.40       58.07       3.07         As for Item 13.05 but for slip road.       m3       1,000       594.55       594.550.00       195.69       1,3569.00       58.07       3.03         Sub total (13)       .       .       .       .       .       .       .       .       .       .       .       .       .       .       .       .       .       .       .	13.02	As for Item 13.01 but for slip road.	<b>m</b> 3	14,020	594.55	8,335,591.00	195.69	2,743,573.80	58.07	814,141.40
Provide, Spread and compact gradedm32,150638.871,373,570.50211.04453,736.0058.91Crushed stone to base for slip road, approach road and service roads.m32,150638.871,373,570.50211.04453,736.0058.91Provide, spread and compact graded approach road and service roads.m343,810594.5526,047,235.50195.698,573,178.9058.072.Provide, spread and compact graded crushed stone to shoulder for main road.m36,360594.553,781,338.00195.691,244,588.4058.07As for Item 13.05 but for slip road.m31,000594.553,781,338.00195.691,244,588.4058.07As for Item 13.05 but for approachm31,000594.553,781,338.00195.69195,690.0058.07As for Item 13.05 but for approachm31,000594.553,781,301.00195.69135,690.0058.07Sub total (13)Sub total (13)92,167,301.0030,337,555.908.5	Provide.spread and compact graded       m3       2,150       53.87       1,373,570.50       211.04       453,736.00       56.91         approach road and service roads.       approach       m3       2,150       53.87       1,373,570.50       211.04       453,736.00       56.91         approach road and service roads.       m3       43,810       594.55       26,047,235.50       195.69       8,573,178.90       58.07       2.         Provide.spread and compact graded       m3       6,360       594.55       3,781,338.00       195.69       1,244,588.40       58.07       2.         As for Item 13.05 but for slip road.       m3       1,000       594.55       594,550.00       195.69       1,244,588.40       58.07         As for Item 13.05 but for approach       m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07         Sub total (13)       b.total (13)       92,167,301.00       30,337,555.90       50.337,555.90       8.0	13.03	As for Item 13.01 but for approach road and service road.	m3	3,030	594.55	1,801,486.50	195.69	592,940.70	58.07	175,952.10
m3       43,810       594.55       26,047,235.50       195.69       8,573,178.90       58.07       2,         m3       6,360       594.55       3,781,338.00       195.69       1,244,588.40       58.07       58.07         m3       1,000       594.55       3,781,338.00       195.69       195,690.00       58.07       58.07         m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07       58.07         m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07       58.07         m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07       8.	m3       43,810       594.55       26,047,235.50       195.69       8,573,178.90       58.07       2.         m3       6,360       594.55       3,781,338.00       195.69       1,244,588.40       58.07       58.07         m3       1,000       594.55       3,781,338.00       195.69       1,244,588.40       58.07       58.07         m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07       8.         m3       1,000       594.55       594,550.00       195.69       30,337,555.90       58.07       8.	13.04		2 2 2	2,150	638.87	1,373,570,50	211.04	453,736.00	58.91	126,656.50
As for Item 13.05 but for slip road.       m3       6,360       594.55       3,781,338.00       195.69       1,244,588.40       58.07         As for Item 13.05 but for approach       m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07         As for Item 13.05 but for approach       m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07         Sub total (13)       92,167,301.00       30,337,555.90       8.	As for Item 13.05 but for slip road.       m3       6,360       594.55       3,781,338.00       195.69       1,244,588.40       58.07         As for Item 13.05 but for approach       m3       1,000       594.55       594,550.00       195.69       195,690.00       58.07         As for Item 13.05 but for approach       m3       1,000       594.55       594,550.00       195.69       135,690.00       58.07         Vad and service road.       m3       1,000       594.55       694,550.00       195.69       135,650.00       58.07         Sub total (13)       92,167,301.00       30,337,555.90       8.       92,167,301.00       30,337,555.90       8.	13.05	Províde, spread and compact graded crushed stone to shoulder for main road.	Ш3 СШ	43,810	594.55	26,047,235.50	195.69	8,573,178.90	58.07	2,544,046.70
As for Item 13.05 but for approach m3 1,000 594.55 594,550.00 195.69 195,690.00 58.07 road and service road. The service road and service road	As for Item 13.05 but for approach m3 1,000 594.55 594,550.00 195.69 195,690.00 58.07 road and service road. Sub total (13) 92,167,301.00 30,337,555.90 8,9	3.06		Ш3 Сш	6,360	594.55	3,781,338.00	195.69	1,244,588.40	58.07	369,325.20
92,167,301.00 30,337,555.90	92,167,301.00 30,337,555.90	13.07	As for Item 13.05 but for approach road and service road.	۳ ۳	1,000	594.55	594,550.00	195.69	195,690.00	58.07	58,070,00
			Sub total (13)				92,167,301.00		30,337,555.90		8,994,526.20

ITEM         DESCRIPTION         UNIT         QNAUITY         FOREIGN CUMBENCY         LOGAL CUMBENCY         VALU 400ED TAX           NO.         DESCRIPTION         UNIT         QUANTITY         FOREIGN CUMBENCY         AMOUNT         RATE         AMOUNT         AMOUNT         RATE         AMOUNT         AMOUNT         RATE         AMOUNT         RATE         AMOUNT	;	BILL OF QUANTITIES No. 14A LEAN CONCRETE FOR BASE	o. 14A Se							: :	
Provide, process, mix, transport, spread and m3       90, 340       760.02       68, 660, 206.80       285.65       25, 805, 621.00       81.28       7, 342, 33.         for main road at 4% nominal cenent       compact lean concrete base material       m3       11, 150       760.02       88, 474, 223.00       285.65       3, 184, 997.50       81.28       906, 2         As for Item 14.01 but for slip road.       m3       11, 150       760.02       8, 474, 223.00       285.65       3, 184, 997.50       81.28       906, 2         As for Item 14.01 but for approach road.       m3       1,020       760.02       8, 474, 223.00       285.65       3, 134, 997.50       81.28       906, 2         As for Item 14.01 but for approach road.       m3       1,020       760.02       8, 474, 223.00       285.65       291, 363.00       81.28       87.96         Protecting and curing lean concrete       m2       515, 500       0.00       0.00       2.00       100100       0.00         Variation in cement content       tome       200       0.00       0.00       3236.93       647, 386.00       402.80       8.412.55         Sub total (14A)       total (14A)       30.966, 3650.20       30.966, 367.50       8.412.55       8.412.55       10.412.55         Sub tota	NO I			UNIT	QUANTITY	FOREIGN	CURRENCY	LOCAL	CURRENCY AMOUNT	VALU AL RATE	DDED TAX AMOUNT
As for Item 14.01 but for slip road.       m3       11,150       760.02       8,474,223.00       285.65       3,184,997.50       81.28       906,21         As for Item 14.01 but for approach road.       m3       1,020       760.02       775,220.40       285.65       291,363.00       81.28       82,94         Protecting and curing lean concrete       m2       515,500       0.00       0.00       2.00       1,031,000.00       0.00       0.00         Variation in cement content       tonne       200       0.00       0.00       3236.93       647,386.00       402.80       80.56         Variation in cement content       tonne       200       77,909,650.20       30.960,357.50       8,412,55         Sub total (14A)       77,909,650.20       30,960,357.50       8,412,55	14.		transport, spread and e base material nominal cement total mix.	ŝ	90,340	760.02	68, 660, 206. 80	285.65	25,805,621.00	81.28	7,342,835.20
As for Item 14.01 but for approach road.       m3       1,020       760.02       775,220.40       285.65       291,363.00       81.28       82,90         Protecting and curing lean concrete       m2       515,500       0.00       0.00       2.00       1,031,000.00       0.00       0.00         Variation in cement content       tonne       200       0.00       3236.93       647,386.00       402.80       80.56         Variation in cement content       tonne       200       0.00       30.960,357.50       8.412.55         Sub total (14A)       77,909,650.20       30.960,357.50       8.412.55       8.412.55	14.		t for slip road.	뗥	11,150	760.02		285.65	3,184,997.50	81.28	906,272.00
Protecting and curing lean concrete       m2       515,500       0.00       2.00       1,031,000.00       0.00         base.       Variation in cement content       tonne       200       0.00       3236.93       647,386.00       402.80       80.56         Variation in cement content       tonne       200       0.00       6.00       3236.93       647,386.00       80.56         Variation in cement content       tonal).       77,909,650.20       30.960,367.50       8,412,57         Sub total (14A)       30.960,367.50       30.960,367.50       8,412,57	14.		t for approach road.	БП.	1,020	760-02	775,220.40	285.65	291,363.00	81.28	82,905.60
Variation in cement content       tonne       200       0.00       3236.93       647,386.00       402.80         (Provisional).       77,909,650.20       30,960,357.50       8,4         Sub total (14A)       77,909,650.20       30,960,357.50       8,4	14.	04 Protecting and curin base.	g lean concrete	щZ	515,500	0.00	0.00	2.00	1,031,000.00	0.00	0.00
77,909,650.20 30,960,357.50	14.	05 Variation in cement (Provisional).	• • •	tonne	200	0.00	00.0	3236.93	647,386.00	402.30	80,560.00
		Sub total (14A)					77,909,650.20		30,960,367.50	÷	8,412,572.80
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	ADDED TAX AMOUNT			1,222,303.50	165,547.80	13,662.00		1,679,124.00	150,348.00	18,768.00			712,674.00	164,458.00	94,535.00
	VALU ADDEI RATE			2.97 1	2.97	2.97		3.40 1	3.40	3.40			3.40	3.40	40.40
· · ·	CURRENCY			205,775.00	27,870.00	2,300.00		281,500.20	25,205.40	3,146.40			119,477.70	27,570.90	417,105.00
	LOCAL CU RATE		. :	0.50	0.50	0.50		0.57	0.57	0.57			0.57	0.57	178.25
	CURRENCY AMOUNT	***		7 "844 "143.00	1,062,404.40	87,676.00		10,785,902.40	965,764.80	120,556.80			4,577,882.40	1,056,400.80	I,362,160.80
	FOREIGN (			19-06	19.06	19.06		21.84	21.84	21.84			21.84	21.84	582.12
	QUANTITY			411,550	55,740	4,600		493,860	44.220	5,520			209,610	48,370	2,340
DRESSING	LIND	6 6 7 7 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		litre	litre	litre		litre	litre	litre			litre	litre	Ϋ́Ε,
BILL OF QUANTITIES NO.15 BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING	DESCRIPTION	NOTE:	No haulage will be paid for bitumen or chippings and this shall be included in the following rates and prices. PRIME COAT	Preprare surface of base provide, transport,heat as specified and spray MC 30 prime coat at at a nominal spray rate of 1.0 litre/m2 for main road.	As for Item 15.01 but for slip road.	As for Item 15.01 but for approach road.	TACK COAT	Prepare surface of binder course, provide,transport,heat as specified and spray MC 3000 cut-back bitumen tack coat at nominal spray rate of 0.6 litre/m2 for main road.	As for Item 15.04 but for slip road.	As for Item 15.04 but for approach road.	SURFACE DRESSING	(Double Surface Dressing)	Provide,heat and spray MC3000 cut-back bitumen at a nominal spray rate of 1.3 litres/m2 as first seal coat.	As for Item 15.07 but at a nominal rate of 0.3 litre/m2 as second seal coat.	Provide,transport,lay and roll 10/14mm chippings at a rate of 69 m2/m3.
	NO.			15.01	15.02	15.03		15.04	15.05	15.05			15.07	15.08	15.09

NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN	CURRENCY	LOCAL	LOCAL CURRENCY RATE AMOUNT	VALU ADDED TAX RATE AMOUNT	DED TAX AMOUNT
0	15.10 As for Item 15.09 but 3/6mm chippings at a rate of 250 m2/m3.	E E	645	640.33	413,012.85	196.07	126,465.15	44-44	28,663.80
	(Single Surface Dressing)	·							
<b>=</b>	<pre>15.11 Provide.heat and spray MC3000 cut-back litre bitumen at a nominal spray rate of 0.6 litres/m2.</pre>	litre	3,170	21.84	69,232.80	0.57	1,806.90	3.40	10,778.00
2	<pre>15.12 Provide.transport.lay and roll 3/6mm chippings at a rate of 189 m2/m3.</pre>	En	58	640.33	17,929.24	196.07	5,489.96	44.44	1,244.32
	Sub total (15)				28,363,066.29		1,243,712.61	<u>.</u>	4.262.107.42

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NG.	DESCRIPTION		QUANTLIY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL RATE	CURRENCY AMOUNT	VALU /	ADDED TAX AMOUNT
	NOTE:	••				·			
	No haulage shall be paid for in respect of any of the items or materials contained in this Bill of Quantities and the cost of such haulage shall be deemed to be included in the rates entered below.								
16.01	Provide 1ay and compact Asphalt Concrete Binder Course using 5.5% nominal bitumen content by weight of total mix for main road.	Em	32,930	2330.98	76,759,171.40	483.64	15,926,265.20	466.23	15,352,953.90
16.02	As for Item 16.01 but for slip road.	Ъ.	3,430	2330.98	7,995,261.40	483.64	1,658,885.20	466.23	1,599,168.90
16.03	As for Item 16.01 but for approach road.	Ш3 Т	460	2330.98	1,072,250.80	483.64	222,474.40	466.23	214,465.80
15.04	Provide, lay and compact Asphalt Concrete Wearing Course using 6.5% nominal bitumen content by weight of total mix for main road.	m3	16,460	2517.78	41,442,658.80	491.40	8,088,444.00	521.01	8,575,824.60
16.05	As for Item 16.04 but for slip road.	Ð	2,230	2517.78	5,614,649.40	491.40	1,095,822.00	521.01	1,161,852.30
16.06	As for Item 16.04 but for approach road.	£	230	2517.78	579,089.40	491.40	113,022.00	521.01	119,832.30
16.07	80/100 penetration bitumen binder variation.	litre	Rate only	,			·		
16.08	Supply and mix in mineral filler for variation as directed by the Engineer.	tonne	100	0.00	0.00	3236.93	323,693.00	402.80	40,280.00
16.09	As for Item 16.08 but to sand.	tonne	50	0.00	0.00	288.00	14,400.00	43.20	2,160.00
	Sub total (16)				133,463,081.20		27,443,005.80		27,066,537.80

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JULL OF QUAN	BILL OF QUANTITIES NO.17 CONCRETE HORKS	т. н.н. н.н	. ·	- 					
	DESCRIPTION	UNIT	QUANTITY	FORE IGN (	CURRENCY AMOUNT	LOCAL	CURRENCY AMOUNT	VALU AL RATE	ADDED TAX AMOUNT
BRIDGES					P \$ \$ \$ 1 1 1 3 3 3 4 0 8 9 0	 			
Concrete:					•				
Provide.pla classes of specified.	Provide.place and compact the following classes of concrete for insitu works as specified.						:		
Class 15/40 all structu	Class 15/40 for blinding concrete on all structures.	<b>5</b>	180	1251.52	225,273.60	669.87	120,576.60	177.64	31,975.20
class 25/20 in:	Class 25/20 for structural concrete in:								
(l) Bridges Uhuru N	<ol> <li>Bridges for Mombasa Road Junction, Uhuru Monument Junction and Railway.</li> </ol>	ц Сш	2,880	1572.10	4,527,648.00	667.31	1,921,852.80	214.21	616,924.80
(2) Vehicle bridges.	e bridges.	Ш3 Т	1,090	1572.10	1,713,589.00	667.31	727,367.90	214.21	233,488.90
(3) Pedest	(3) Pedestrian bridges.	Ш3 СШ	06	1572.10	141,489.00	667.31	60,057.90	214.21	19,278-90
Class 30/2	Class 30/20 for structural concrete.	Ш3 СШ	2,120	1600.83	3,393,759.60	690.76	1,464,411.20	223.29	473,374,80
Provide UF	Provide UF2 finish to concrete surface.	22	5,830	6.93	40,401.90	34.63	201,892.90	1.14	6,646.20
Formwork:									
Provide,er and remove	Provide.erect and afterwards dismantle and remove the Items specified below:					·			
Formwork t	Formwork to achieve class Fl finish:								
(1) Sloping	Ď	m2	86	95.69	8,229.34	270.84	23, 292. 24	8.08	694.88
(2) Vertical	al	겉	2,660	70.52	187,583.20	273.59	727,749.40	8.32	22,131.20
Formwork t	Formwork to achieve class F2 finish:								
<ol> <li>Horizontal</li> </ol>	ntal	<b>n</b> 2	3,450	118.42	408,549.00	373.65	1,289,092.50	13.22	45,609.00
(2) Sloping	6		218	94.74	20,653.32	298.92	65,164.55	10.58	2,306.44
(3) Vertical	۵ľ	덭	9,050	69.33	627,436.50	346.31	3,134,105.50	11.44	103,532.00

UNIT         QUANITITY         FORETGIA         CURRENCY         LUCCAL           tonne         482.0         11776.80         2,378,913.60         9724.70           tonne         482.0         11776.80         2,378,913.60         9724.70           tonne         482.0         11776.80         2,378,913.60         9724.70           tonne         482.0         11776.80         5,577,961.60         9549.40           m2         57         371.93         21,200.01         54.90           m2         56         524.85         18,894.60         46.75           m3         538         1251.52         735,993.76         669.67           m3         538         1251.52         735,993.76         667.31           m3         5,820         1572.10         12,293,822.000         667.31           m3         5,320         1572.10         9,355,675.00         667.31           m3         6,320         1572.10         12,293,822.000         667.31           m3         5,320         1572.10         9,355,675.00         667.31           m3         6,46         1572.10         1,015,575.60         667.31           e         m3         5,336 <th>1 1 1 1 1</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</th> <th></th> <th></th> <th></th>	1 1 1 1 1						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
tonne         202.0         11776.80         2,378,913.60         9724.70         1,964,389.40         2835.90           tonne         462.0         11468.80         5,577,961.10         9549,40         4,602,810.80         2761.70         1,           tonne         462.0         11468.80         5,577,961.10         9549,40         4,602,810.80         2761.70         1,           tonne         462.0         11468.80         5,577,961.10         9549,40         48.75         1,755.00         0.00           m2         36         524.85         18,894.60         48.75         1,755.00         0.00         0.00           m2         36         524.85         18,894.60         48.75         1,755.00         0.00         0.00           m3         588         1251.52         735,893.76         669.87         393,883.56         177.64         1           m3         5,320         12,729         9.355,672.00         659.462.00         214.21         1.36           m3         5,320         12,729         325,492.00         10,756         1.36         1.421         1.36           m3         5,835,672.00         10,15,576.60         665.87         342,144.40         1.14		DESCRIPTION	TINU	QUANTITY	FOREIGN	CURRENCY AMOUNT	LOCAL RATE	CURRENCY AMOUNT		VDDED TAX AMOUNT
torne         482.0         11468.60         5,527,961.10         9549.40         4,602,810.80         2761.70         1,331,11           "stops         5         371.93         21,200.01         54.90         3.129.30         0.00           t         m2         36         524.65         18,894.60         46.75         1,755.00         0.00           t         m2         36         524.65         18,894.60         46.75         1,755.00         0.00           t         m2         36         524.65         18,894.60         46.75         1,755.00         0.00           on         m3         568         1251.52         735,893.76         669.87         393,883.56         177.64         104,455           tvs         m3         588         1251.52         735,893.76         665.31         4,217,399.20         214.21         1,675.122           m3         6,320         1572.10         12,125.466         667.31         4,217,399.20         214.21         1,675.126           m3         6,468.40         34.63         342,144.40         1,1<23         1,263.500           face.         m3         6,648.40         34.63         342,144.40         1,1<23         1,265.50	Prov tens BS 4 than	Provide and fix in position high tensile steel reinforcement bars to BS 4461 of diameter equal to or less than 16mm.	tonne	202.0	11776.80	2,378,913.60	9724.70	1,964,389.40	2835.90	572,851.80
stops         m         57         371.33         21,200.01         54.50         3.129.30         0.00           m2         35         524.85         18,894.60         48.75         1,755.00         0.00           awing scaas         35         524.85         18,894.60         48.75         1,755.00         0.00           awing scaas         35         524.85         18,894.60         48.75         177.64         104,455           awing scaas         m3         588         1251.52         735,893.76         669.87         393,883.55         177.64         104,455           e.         m3         7,820         1572.10         12,233,892.00         667.31         4,217,399.20         214.21         1,367,5123           f.         m3         6.46         1,015,576.60         667.31         4,217,399.20         214.21         1,363,397           f.tee.         m3         6.46         1,015,576.60         667.31         4,217,399.20         214.21         1,363,397           f.tee.         m3         6.46         1,015,576.60         667.31         4,217,399.20         214.21         1,263,397           f.tee.         m3         6.466         466.40         34.65         2	As a	As for Item 17.07 but of diameter greater than 16mm.	tonne	482.0	11468.80	5,527,961.00	9549.40	4,602,810.80	2761.70	1,331,139.40
m2         36         524.65         19,894.60         45.75         1,755.00         0.00           ss as	Pro	Provide and place 200mm wide waterstops as specified in the Drawings.	E	57	371.93	21,200.01	54.90	3,129.30	00.0	00*0
ing m3 588 1251.52 735,893.76 669.87 393,883.56 177.64 m3 7,820 1572.10 12,293,822.00 667.31 5,218,364.20 214.21 1, m3 6,320 1572.10 9,935,672.00 667.31 4,217,399.20 214.21 1, m3 6,46 1572.10 1,015,576.60 667.31 4,31,082.26 214.21 1, m2 9,880 6.93 68,468.40 34.63 342,144.40 1.14 i	Pro fil	Provide and place 20mm thick joint filler	ц Ц	36	524.85	18,894.60	48.75	1,755.00	0.00	00.00
ing m3 588 1251.52 735,893.76 669.87 393,883.56 177.64 m3 7,820 1572.10 12,293,822.00 667.31 5,218,364.20 214.21 1. m3 6,320 1572.10 9,935,672.00 667.31 4,217,399.20 214.21 1. m3 646 1572.10 1,015,576.60 667.31 431,082.25 214.21 1. m2 9,880 6.93 66,468.40 34.63 342,144.40 1.14 1.14 m2 12.120 70.52 854,702.40 273.59 3,315,910.80 8.32 1	BOX	CULVERTS						· .		
m3     588     1251.52     735,893.76     669.87     393,883.56     177.64       m3     7,820     1572.10     12,293,822.00     667.31     5,218,364.20     214.21     1,1       m3     6,320     1572.10     9,935,672.00     667.31     4,217,399.20     214.21     1,1       m3     6,320     1572.10     9,935,672.00     667.31     4,217,399.20     214.21     1,1       m3     6,46     1572.10     1,015,576.60     667.31     4,31,082.26     214.21     1,1       ce.     m2     9,880     6.93     68,468.40     34.63     342,144.40     1.14       ie        34.63     34.51.94.40     1.14   m3	spero spe	Provide.place and compact the following classes of concrete for insitu works as specified.				·				
m3       7,820       1572.10       12,293,822.00       667.31       5,218,364.20       214.21       1         m3       6,320       1572.10       9,935,672.00       667.31       4,217,399.20       214.21       1         m3       6,320       1572.10       9,935,672.00       667.31       4,217,399.20       214.21       1         m3       646       1572.10       1,015,576.60       667.31       4,31,082.26       214.21       1         ce.       m2       9,880       6.93       68,468.40       34.63       342,144.40       1.14         le         34.65.3       342,144.40       1.14       3.14         n2       12,120       70.52       854,702.40       273.59       3.315,910.80       8.32	a]]	ss 15/40 for blinding concrete on structures.	Щ3 Т	588	1251.52	735,893.76	669.87	393,883.56	177.64	104,452.32
m3       7,820       1572.10       12,293,822.00       667.31       5,218,364.20       214.21       1         m3       6,320       1572.10       9,935,672.00       667.31       4,217,399.20       214.21       1         m3       6,46       1572.10       9,935,672.00       667.31       4,217,399.20       214.21       1         m3       646       1572.10       9,015,576.60       667.31       431,082.26       214.21       1         ce.       m2       9,880       5.93       68,468.40       34.63       342,144.40       1.14         le          34.53       342,144.40       1.14         m2       12,120       70.52       854,702.40       273.59       3,315,910.80       8.32	Cla	ss 25/20 for structural concrete.								
m3       6,320       1572.10       9,935,672.00       667.31       4,217,399.20       214.21       1         m3       646       1572.10       1,015,576.60       667.31       431,082.26       214.21         ce.       m2       9,880       6.93       68,468.40       34.63       342,144.40       1.14         le           88,468.40       34.63       342,144.40       1.14         n2       12,120       70.52       854,702.40       273.59       3.315,910.80       8.32	Ξ	Box culverts for road.	ΕШ	7,820	1572.10	12,293,822.00	667.31	5,218,364.20	214.21	I,675,122.20
m3         646         1572.10         1,015,576.60         667.31         431,082.26         214.21           ce.         m2         9,880         6.93         68,468.40         34.63         342,144.40         1.14           le             86,468.40         34.63         342,144.40         1.14           ne         9,880         6.93         68,468.40         34.63         342,144.40         1.14           ie           8.468.40         34.53         342,144.40         1.14           m2         12.120         70.52         854,702.40         273.59         3,315,910.80         8.32	ଟ୍ର	<ol><li>80x culverts for drainage.</li></ol>	щ3 СШ	6,320	1572.10	9,935,672.00	667.31	4,217,399.20	214.21	1,353,807.20
ce. m2 9,880 5.93 68,468.40 34.63 342,144.40 1.14 le m2 12,120 70.52 854,702.40 273.59 3.315,910.80 8.32 1	ල	l Box culverts for footpath.	ይ	646	1572.10	1,015,576.60	667.31	431,082.26	214.21	138,379.66
12,120 70.52 854,702.40 273.59 3,315,910.80 8.32	Pro	Provide UF2 finish to concrete surface.	ш2	9,880	6.93	68,468.40	34.63	342,144.40	I.14	11,263.20
le : m2 12,120 70.52 854,702.40 273.59 3,315,910.80 8.32	For	mwork:								
m2 12,120 70.52 854,702.40 273.59 3,315,910.80 8.32	Pro and	vide,erect and afterwards dismantle remove the Items specified below:								
m2 12,120 70.52 854,702.40 273.59 3,315,910.80 8.32	For	mwork to achieve class Fl finish:								
	Ξ	Vertical	ш2	12,120	70.52	854,702.40	273.59	3,315,910.80	8.32	100,838-40

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I TEM	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	FOREIGN CURRENCY RATE AMOUNT	LOCAL RATE	LOCAL CURRENCY RATE AMOUNT	VALU AI RATE	ADDED TAX AMOUNT
17.15	17.15 Formwork to achieve class F2 finish:		• 5 5 5 5 7 7 7 7	₹ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
:	(1) Horizontal	ш2	4,000	118.42	473,680.00	373.65	1,494,600.00	13.22	52,880.00
	(2) Vertical	<b>m</b> 2	7,450	69.33	516,508.50	346.31	2,580,009.50	11.44	85,228.00
17.16	17.16 Provide and fix in position high tensile steel reinforcement bars to 85 4461 of diameter equal to or less than 16mm.	tonne	215.0	11776.80	2,532,012.00	9724.70	2,090,810.50	2835.90	609,718,50
17.17	17.17 As for Item 17.16 but of diameter greater than 16mm.	tonne	1,225.0	11458.80	14,049,280.00	9549.40	11,698,015.00	2751.70	3,383,082.50
17.18	17.18 Provide and place 200mm wide waterstops as specified in the Drawings.	E	605	371.93	338,084.37	54.90	49,904.10	0.00	00-00
17.19	17.19 Provide and place 20mm thick joint filler	тn2	712	524.85	373,693.20	48.75	34,710.00	00-00	0.00
• .	Sub total (17)				62,428,975.50		48,174,481.52		10,974,725.50

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BILL OF QUANTITIES No.20         ROAD FURNITURE         ROAD FURNITURE         DESCRIPTION         DESCRIPTION         Provide and erect standard warning         signs:         (1) Type W29,1200mm         (2) Type W29,1200mm         (3) Type W36,1200mm         (1) Type W1,1200mm         Provide and erect standard priority         signs:         (1) Type R1,1200mm         Provide and erect standard prohibitory         signs:         (1) Type P1,1000mm         Provide and erect standard mandatory         signs:         (1) Type P1,1000mm         Provide and erect standard mandatory         signs:         (1) Type P1,1000mm         Provide and erect standard mandatory         signs:         (1) Type P1,1000mm         Provide and erect standard mandatory         signs:         (2) Type P3,1000mm         Provide and erect standard mandatory         signs:         (1) Type P1,1000mm         Provide and erect standard mandatory         signs:         (2) Type P3,1000mm         Provide and erect standard mandatory         signs:         (1) Type	LIN NNNNN NN NN NN NNNNNNNNNNNNNNNNNNNN	00000155 1.1 30.1 10 22.30 1.172.508.555 1.1 30.1 10 22.30 1.172.508.555 1.5 23.30	FORE 200 00 00 00 00 00 00 00 00 00 00 00 00	FORE IGN CURRENCY FATE AMOUNT 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	LOCAL RATE RATE 7000.00 7000.00 7000.00 6000.00 6000.00 6000.00 6000.00 5000.00 23000.00 25000.00 25000.00 20000.00	CURRENCY AMOUNT 210,000,00 154,000,00 154,000,00 154,000,00 154,000,00 154,000,00 154,000,00 154,000,00 154,000,00 154,000,00 152,000,00 255,000,000,000,000 255,000,000,000,000,000 255,000,000,000,000,000,000,000,000,000,	RATE AD 1000000000000000000000000000000000000	ADDED TAX ANOUNT AMOUNT AMOUNT AMOUNT AMOUNT 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.
Road marking in yellow or white paint.	ш2	3,430	155.03	531,752.90	19.29	56,154.70	0.78	2,675.40
Provide and fix flex beam guardrails, all in accordance with the Drawings.	e	8,590	1086.39	9,332,090.10	255.17	2,191,910.30	21.03	180,647.70

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59 19	DESCRIPTION	UNIT	QUANTITY	FOREIGN	CURRENCY AMOUNT	LOCAL	CURRENCY AMOUNT	VALU P RATE	ADDED TAX Amount
20.08	Provide and erect road edge marker post.	No.	87	284.02	24,709,74	475.93	41,405,91	39-90	3,471.30
20-09	Provide and erect road reserve boundary post where directed by the Engineer.	No.	230	284.02	65,324.60	475.93	109,463.90	39-90	6,177.00
20.10	Plant selected grasses in the central reserves, including the establishment of plant nurseries where required.	m2	32,000	0.00	0.00	18.29	585,280.00	0.62	19,840.00
20.11	Plant selected shrubs and bushes approved by the Engineer at locations in the central reserve and road reserve boundary, including the establishment of plant nurseries where required.	No.	8,120	17.20	139,664.00	59.38	482,165.60	6. 6 <u>3</u>	53,835.60
20.12	As for Item 20.11 but to selected trees.	No.	226	34.41	7,776.66	82.54	18,654.04	7.87	1,778.62
20.13	Provide and erect kilometer posts as directed by the Engineer.	No.	58	526.60	30,542.80	612.88	35,547,04	112.52	6,526.16
20.14	Provide and lay flush kerb,150 x 100mm, Type A	E	119,160	44.10	5,254,956.00	68.53	8,166,034.80	11.66 *	1,389,405.60
20.15	Provide and lay flush kerb.150mm x 80mm. Type B.	E	6,380	35.28	225,086.40	60.24	384,331.20	9.33	59,525.40
20.16	Provide and lay flush kerb.150mm x 80mm, Type C.	E	3,300	54.06	178,398.00	70.29	231,957.00	12.00	39,600.00
20.17	Provide and lay flush kerb.150mm x 80mm, Type D.	E	3,900	29.03	113,217.00	56.89	221,871.00	8.45	32,955.00
20.18	Provide and lay flush kerb,150mm x 80mm, Type E.	e	1,300	52.80	68,640.00	69.62	90,506.00	11.82	15,366.00
20.19	Quardrant for flush kerb,main road and slip road: (1) in-situ 0.5m radius,Type A. (2) in-situ 0.5m radius,Type B.	No.	25 4	53.82 48.81	1,345.50 195.24	55.89 53.21	1,397.25 212.84	7.64 6.93	191.00 27.72
20.20	Provide and lay raised kerb,125mm x 250mm,slip road.								
	(1) straight. (2) radius 5m to 1m.	EE	1,530	111.46 122.75	170,533.80 8,838.00	142.14 154.55	217,474,20 11,127.60	24.40 27.93	37,332.00 2,010.96

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	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	FOREIGN CURRENCY RATE AMOUNT	LOCAL RATE	CURRENCY AMOUNT	VALU ADI RATE	ADDED TAX AMOUNT
	20.21 Provide and lay raised kerb,125mm x 250mm,main road.							1 4 3 3 3 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
	<ol> <li>straight.</li> <li>radius 5m to 1m.</li> </ol>	, E E	256 114	122.73 134.01	31,418.88 15,277.14	148.17 160.58	37,931.52 18,306.12	26.00	6,656.00 3,366.42
2	20.22 Provide and lay ramped kerb.	No.	64	142.06	9,091.84	128.00	8,192.00	35-91	2,298.24
20.23	Provide and erect permanent five strand wire fencing including intermediate and straining posts in areas specifically directed by the Engineer.	E	1,500	43.57	65,355.00	98.20	147,300.00	8.11	12,165.00
20.24	Provide and erect gates as directed and approved by the Engineer.	No.	8	373.15	2,985.20	1840.05	14,720.40	234.34	1,874.72
20.25	Provide and erect double headed guardrail,all in accordance with the Drawings.	E	3,660	2061.59	7,545,419.40	313.78	1,148,434.80	22.54	82,496.40
20.26	Provide stairways for bus stops as specified in the Drawings.	E	53	762.52	40,413.56	835.93	44,304.29	100.05	5,302.65
	Sub total (20)				23.863.031.76		16.465.692.51		1 968 524 89

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	BILL OF QUANTITIES NO.21 MISCELLANEOUS									
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL RATE	CURRENCY AMOUNT	VALU ADI RATE	ADDED TAX AMOUNT	
21.01	Supply and apply, in accordance to manufacturer's instructions waterproof- ing materials to top of bridge decks, approach slabs and all structural concrete surfaces in contact with fill material prior to backfilling.	2 E	20,050	261.54	5,243,877.00	20.45	410,022.50	0.0	00.0	
21-02	Supply and install in position elastomeric bearings including mortar mortar plinth,fixed.									
	(1) 406 × 279 × 18mm (2) 432 × 203 × 18mm	No.	12 37	2089.75 1693.58	25,077.00 62,662.46	471.82 452.01	5,661.84 16,724.37	2.01	24.12	
21.03	Supply and install in position elastomeric bearings including mortar plinth,movable:					·				
	(1) 229 × 152 × 56mm (2) 279 × 229 × 37mm (3) 279 × 229 × 46mm (4) 279 × 229 × 65mm (5) 432 × 203 × 65mm	N00. N00. N00.	1282 1823 1823 1823 1833 1934 1935 1935 1935 1935 1935 1935 1935 1935	1880.11 2272.87 2823.96 3987.41 5223.48	15,040.88 36,92 62,127.12 71,773.38 62,681.76	458.22 479.41 506.97 565.14 526.94	3,665.76 7,670.56 11,153.34 10,172.52 7,523.28	1.55 1.55 1.55 1.55 1.55 1.55 1.55 1.55	8.08 24.15 33.22 27.18 18.12	
21.04	Supply and install joint filler for expansion joint:									
	<ol> <li>30mm thick.</li> <li>25mm thick.</li> <li>20mm thick.</li> </ol>	222 2	23 23 23 23	787.28 655.44 524.85	54,322.32 53,746.08 12,071.55	61.87 55.28 48.75	4,269.03 4,532.96 1,121.25	0000	00.00	·
21.05	Supply and install sealant for expansion joint:									
	(1) 30 × 50mm deep. (2) 25 × 50mm deep.	EE	66 75	446.56 371.93	29,472.96 27,894.75	27.00 23.26	1,782.00 1,744.50	0.00	00.00	
21.06	Provide, lay and compact Asphalt Concrete Mearing Course for bridge decks.	m3	134	2517.78	337,382.52	491.40	65,847.60	521.01	69,815.34	
21.07	Supply and install flex beam guardrails including post for vehicle bridge as detailed on the Drawings.	E	244	1054.88	257,390.72	242.69	59,216.36	21.86	5,333.84	

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NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL C RATE	CURRENCY AMOUNT	VALU AD RATE	ADDED TAX AMOUNT
21.08	21.08 Provide and erect in position parapet handrails to railway bridge as detailed on the Drawings.	E	114	155.01	17,671.14	472.20	53,830.80	37.37	4,260.18
21.09	Provide and erect in position pedestrian parapets to footbridges as detailed on the Drawings.	E	282	236.14	66,591.48	518.31	146,163.42	56.94	16,057.08
21.10	Provide and install 100mm dia.drain pipe through deck slabs.	No.	36	143.32	5,159.52	12.58	452.88	00.00	00"0
21.11	Provide and place 75mm dia.PVC weep holes.	No.	62	66.63	4,131.06	8.74	541.88	0.0	0°00
21.12	Provide and place 200mm dia.perforated PVC pipes.	E	1,770	389-85	690,034.50	35.26	62,410.20	0.00	0.00
21.13	<pre>Provide and install 20mm dia. dowel bars with caps as specified on the Drawings.</pre>	No.	152	435.24	66,156.48	105.40	16,020.80	00-00	0.00
21.14	H As for Item 21.13 but 40mm dia.	No.	98	1306.47	128,034.05	148.96	14,598.08	0.00	00-0
21.15	provide.spread and compact graded crushed stone to base for box culverts.	۳ ۳	132	638.87	84,330.84	211.04	27,857.28	58.91	7.776.12
21.16	) Provide lay and compact Asphalt Concrete Wearing Course for box culverts.	EU	142	2517.78	357,524.76	491.40	69,778.80	521.01	73,983.42
21.17	<pre>Provide and place 200mm dia.PVC weep holes.</pre>	No.	30	553.31	16,599.30	43.44	1,303.20	00-0	0.00
	Sub total (21)	1			7,788,119.56	3 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1,004,065.21		177,435.23

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RATE         AMOUNT         RATE         AMOUNT         RATE           Roman         Rate         ANOUNT         RATE         RATE           Roman         Rate         Rate         Rate         Rate           Roman         Rate         Rate         Rate         Rate           Rate         Rate         Rate         Rate         Rate         Rate           Rate         Rate         Rate         Rate         Rate         Rate         Rate           Rate <t< th=""><th>DESCRIPTION</th><th></th><th>UNIT</th><th>QUANTITY</th><th>FOREIGN</th><th>CURRENCY</th><th>LOCAL C</th><th>CURRENCY</th><th><u> </u></th><th>DED TAX</th></t<>	DESCRIPTION		UNIT	QUANTITY	FOREIGN	CURRENCY	LOCAL C	CURRENCY	<u> </u>	DED TAX
hr     200     1032.47     206.494.00     474.81     94,962.00     33.94       hr     200     135.955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33					RATE	AMOUNT	RATE	AMOUNT		AMOUNT
hr       200       1032.47       205,494.00       474.81       94,962.00       83.94         hr       200       1032.47       205,494.00       474.81       94,962.00       83.94         hr       200       1032.47       205,494.00       474.81       94,962.00       83.94         hr       200       1032.57       205,998.00       666.70       133,340.00       119.92         hr       100       1869.55       185,955.00       818.14       81,814.00       150.32         hr       300       738.65       221,595.00       334.73       100,419.00       59.33										
hr     200     1032.47     206.494.00     474.81     94,562.00     83.94       hr     200     1032.47     206.494.00     474.81     94,562.00     83.94       hr     200     1032.47     205.498.00     666.70     133.340.00     119.92       hr     100     1859.55     185.955.00     818.14     81,614.00     150.32       hr     300     738.65     221,555.00     334.73     100.419.00     59.33	01E:									•
hr     200     1032.47     205.494.00     474.81     94.962.00     83.94       hr     200     1032.47     205.494.00     474.81     94.962.00     83.94       hr     200     1032.47     205.494.00     474.81     94.962.00     83.94       hr     200     1032.55     294.998.00     666.70     133.340.00     119.92       hr     100     1859.55     185.955.00     314.73     100.419.00     150.32       hr     300     738.65     221.555.00     314.73     100.419.00     59.33										
hr     200     1032.47     205,494.00     474.81     94,962.00     83.94       hr     200     1032.47     205,494.00     474.81     94,962.00     83.94       hr     200     1032.47     205,494.00     474.81     94,962.00     83.94       hr     200     1032.55     06.70     818.14     81.814.00     190.32       hr     100     1859.55     185,955.00     818.14     81.814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	he rate incerted herei	in are to include								
hr     200     1032.47     206.494.00     474.81     94.962.00     83.94       hr     200     1032.47     205.498.00     666.70     133.340.00     119.92       hr     200     1474.99     294.998.00     666.70     133.340.00     119.92       hr     100     1869.55     185.955.00     818.14     81.814.90     150.32       hr     300     738.65     221.595.00     334.73     100.419.00     59.33	11 operational and mai	intenance cost,		:	-		· .			• •
hr     200     1032.47     206,494.00     474.81     94,962.00     33.94       hr     200     1032.47     205,494.00     474.81     94,962.00     33.54       hr     200     137.990.00     566.70     133.340.00     119.92       hr     300     1386.955.00     314.13     100,419.00     50.33	uei, oi I, grease, grivers ages, supervision, overh	s and turnboys. weads and profits.				:		. •		
hr     200     1032.47     206.494.00     474.81     94.962.00     83.94       hr     200     1032.47     205.494.00     474.81     94.962.00     83.94       hr     200     1032.47     205.499.00     666.70     133.340.00     119.92       hr     100     1859.55     185.955.00     818.14     81.814.00     150.32       hr     300     738.65     221.595.00     334.73     100.419.00     59.33	nly time actually employed	loyed upon the								
hr     200     1032.47     206.494.00     474.81     94,962.00     83.94       hr     200     1032.47     206.494.00     474.81     94,962.00     83.94       hr     200     1032.47     205.498.00     666.70     133,340.00     119.92       hr     100     1869.55     185.955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	hould include for idle	situtie ites time, travelling				·		•.		
hr     200     1032.47     206.494.00     474.81     94.962.00     83.94       hr     200     1032.47     206.494.00     474.81     94.962.00     83.94       hr     200     1032.47     205.499.00     666.70     133.340.00     119.92       hr     100     1869.55     185.955.00     818.14     81.814.00     150.32       hr     330     738.65     221.595.00     334.73     100.419.00     59.33	nu over time. Arri i tems ie priced.	or plant must								
hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1474.99     294,998.00     666.70     133,340.00     115.92       hr     100     1859.55     185,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	tems of Major Plant Em	aployed on								
hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1474.99     294,998.00     666.70     133,340.00     119.92       hr     100     1859.55     185,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     50.33	layworks.	•								
hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1032.47     205,494.00     474.81     94,962.00     83.94       hr     200     1474.99     294,998.00     666.70     133,340.00     119.92       hr     100     1859.55     135,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	Where items of major pl	lant listed in the								
hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1032.47     205,494.00     474.81     94,962.00     83.94       hr     200     1474.99     294,998.00     666.70     133,340.00     119.92       hr     100     1859.55     185,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	type (e.g. D-6,D-8,CAT.	.14, ets. )the power								
hr     200     1032.47     205,494.60     474.81     94,962.00     83.94       hr     200     1032.47     205,494.60     474.81     94,962.00     83.94       hr     200     1474.99     294,998.60     666.70     133,340.00     119.92       hr     100     1859.55     185,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334,73     100,419.00     59.33	catings shall not be it bower ratings of such p	ower tnan tne Slant manufactured								
hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1032.47     206,494.00     474.81     94,962.00     83.94       hr     200     1474.99     294,998.00     666.70     133,340.00     119.92       hr     100     1859.55     185,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	within the two years profite the second	rior to the date								
hr     200     1032.47     205,494.00     474.81     94,962.00     83.94       hr     200     1474.99     294,998.00     666.70     133,340.00     119.92       hr     100     1859.55     185,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	employed upon Dayworks	which has a power								
hr       200       1032.47       206,494.00       474.81       94,962.00       83.94         hr       200       1474.99       294,998.00       666.70       133,340.00       119.92         hr       100       1859.55       185,955.00       818.14       81,814.00       150.32         hr       300       738.65       221,595.00       334.73       100,419.00       59.33	rating lower than that shall be paid for at ra	specified above. ates lower than				·				
in       in       in       in       in         above.       brade       hr       200       1032.47       205,494.00       474.81       94,962.00       83.94         brade       hr       200       1032.47       205,494.00       666.70       133,340.00       119.92         brade       hr       200       1474.99       294,998.00       666.70       133,340.00       119.92         brade       hr       100       1859.55       185,955.00       818.14       81,814.00       150.32         hr       300       738.65       221,595.00       334.73       100,419.00       59.33	those in the Schedule c The reduction in the ra	of Dayworks. ate pavable shall								
brade     hr     200     1032.47     205,494.00     474.81     94,962.00     83.94       brade     hr     200     1474.99     294,998.00     666.70     133,340.00     119.92       brade     hr     100     1859.55     185,955.00     818.14     81,814.00     150.32       hr     300     738.65     221,595.00     334.73     100,419.00     59.33	be in proportion to the power rating below that	e reduction in t specified above.	·	·						
or equivalent, including brade hr 200 1474.99 294,998.00 666.70 133,340.00 119.92 or equivalent, including brade hr 100 1869.55 185,955.00 818.14 81,814.00 150.32 r CAT1406 or equivalent hr 300 738.65 221,595.00 334.73 100,419.00 59.33	D6 tractor or equivaler and ripper.	nt, including brade	hr	200	1032.47	206,494.00	474.81	94,962.00	83.94	16,788.00
brade hr 100 1859.55 185,955.00 818.14 81,814.00 150.32 hr 300 738.65 221,595.00 334.73 100,419.00 59.33	07 tractor or equivaler	nt, including brade	h	200	1474.99	294,998.00	666.70	133,340.00	119.92	23,984.00
brade hr 100 1859.55 185,955.00 818.14 81,814.00 150.32 hr 300 738.65 221,595.00 334.73 100,419.00 59.33	and ripper.	,								
hr 300 738.65 221,595.00 334.73 100.419.00 59.33	38 tractor or equivaler and ripper.	nt,including brade	hr	100	1859.55	185,955.00	818.14	81,814.00	150.32	15,032.00
	Notor grader CAT1406 or	r equivalent	hr	300	738.65	221,595.00	334.73	100,419.00	59.33	17,799.00

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ITEM NO.	LINU	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL RATE	CURRENCY AMOUNT	VALU RATE	VALU ADDED TAX RATE AMOUNT
22.05 Heavy grid or sheeps foot roller.	h	100	790.86	79,086.00	335.95	33,595.00	62.36	6,236.00
22.06 Vibrating roller,10 ton.	Чг	100	997.40	99,740.00	437.68	43,768.00	79.85	7,985.00
22.07 15 ton pneumatic self-propelled roller.	ler. hr	100	441.83	44,183,00	199.74	19,974,00	34.85	
22.08 16-18 ton smooth wheel roller.	h	100	441.83	44,183.00	199.74	19,974,00	38.45	3,845.00
22.09 As for Item 22.08 but 6-8 ton.	าน	100	347 99	34,799.00	163.06	16,306.00	27.44	2,744.00
22.10 Small hand-propelied vibrating roller.	er. hr	200	120.87	24,174.00	72.91	14,582.00	9.45	1,890.00
22.11 Rammer and/or compactor.	าส	300	31.46	9,438.00	38.40	11,520.00	2.42	726-00
22.12 1.6 m3 class tractor shovel or equivalent.	ᅫ	200	851.70	172,340.00	385-99	77,198.00	69.22	13,844,00
22.13 2.3 m3 tractor shovel or equivalent.	hr	100	1025.34	102,534.00	463.30	46,330.00	82.88	8,288.00
<pre>22.14 0.7 m3 class mechanical excavator (backhoe) or equivalent.</pre>	hr	100	871.36	87,136.00	397.75	39,775.00	70.43	7,043.00
22.15 0.3 m3 class mechanical excavator (backhoe) or equivalent.	hr	200	553.96	110,792.00	257.83	51,566.00	44.50	8,900.00
22.16 2.3 m3 class wheel loader or equivalent.	lent. hr	200	1025.34	205,068.00	463.30	92,660.00	82.88	16,576.00
22.17 3 m3 class wheel loader or equivalent.	nt. hr	100	1281.68	128,168.00	572.37	57,237.00	103.61	10,361.00
22.18 6 ton tipper lorry.	hr	300	320.05	96,015.00	160.45	48,135.00	25.71	7,713.00
22.19 10 ton tipper lorry.	hr	300	418.60	125,580.00	201.42	60,426.00	33.62	10,086.00
22.20 6 ton lorry.	hr	300	11.701	59,133.00	109.22	32,766.00	15.83	4,749.00
22.21 10 ton lorry.	hr	300	246.22	73,866.00	129.66	38,898.00	19.78	5,934.00
22.22 0.7 to 1 ton pick up car.	hr	200	167.44	33,488.00	97.62	19,524.00	13.49	2,698.00
22.23 Land Rover.	hr	200	150.08	30,016,00	90-39	18,078,00	12.10	2,420.00
22.24 6 m3/min air compressor.	hr	100	217.50	21,750.00	112.08	11,208.00	17.15	1,715.00
22.25 10 m3/min air compressor.	hr	100	418.59	41,859.00	124,49	12,449.00	25.26	2,526.00
00 06 60mm delivery water numb and moton	2	000	10 01	00 000 0	04 66	6 400 00	00 0	105 00

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NO.	DESCRIPTION	LINU	QUANTITY	FOREIGN CURRENCY RATE AMOUNT	RRENCY Amount	LOCAL	CURRENCY AMOUNT	VALU ADDED TAX RATE AMOUNT	DED TAX AMOUNT
22.27	22.27 As for item 22.26 but 75mm.	j,	200	32.17	6,434.00	41.23	8,246.00	2.62	524.00
22.28	22.28 Concrete mixer 14/10.	rđ	100	182.98	18,298.00	99.64	9,964.00	14.48	1,448.00
22.29	22.29 Concrete vibrator, poker type.	ר ר ר	100	19.96	1,996.00	33.80	3,380.00	1.51	151.00
22.30	22.30 Self-propelled water tanker 9500 litre.	ĥr	200	443.10	88,620.00	184.09	36,818.00	35.60	7,120.00
22.31	Pressure bitumen distributor 4500 litre.	hr	100	662,75	66,275.00	285.91	28,591.00	52-26	5,226.00
22-32	22.32 Lorry for Benkelman beam & plate bearing Tests.	ħ	300	320.05	96,015.00	160.45	48,135.00	25.71	7,713-00
÷	LABOR				•				
	The rates inserted herein are to include all costs of labor such as insurance, accommodation, travelling time, use and maintenance of small tools of the trade, supervision, overheads and profit. Only the actual time engaged upon the works will be paid for.								
22.33	Unskilled labor	hr	50,000	0.00	00.00	19.00	950°000°00	0.00	0*00
22.34	Working ganger	hr	10,000	0.00	0.00	25.00	250,000.00	0°00	0.00
22.35	· Artisans	۲	10,000	0°00	0.00	29.00	290,000.00	00.0	0.00
	MATERIALS								
	All materials are to comply with the Specifications. The rates inserted herein are to include for delivery to the site,storage,handling,overheads and profit.								
22.36	Ordinary Portland Cement.	tonne	40	0.00	0.00	3236.93	129,477.20	402.80	16,112.00
22.37	Mild stéel (any diameter).	tonne	m	0.00	0.00	17870.40	53,611.20	2628.00	7,384.00
22.38	High yield steel (any diameter).	tonne	ũ	00.0	00*0	18604.80	55,814.40	2736.00	8,208.00

Ξ.	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	RAT	LOCAL ( RATE	CURRENCY AMOUNT	VALU AD RATE	ADDED TAX AMOUNT
39	22.39 Fine aggregate for concrete.	E	500	0.00	0.0		403.20	80,640.00	50.48	12,096.00
40	22.40 Coarse aggregate for concrete, maximum size 20mm.	Ê	100	00*0	0.00		515.23	51,523.00	24.41	2,441.00
22.41	Coarse aggregate for concrete, maximum size 40mm.	m3.	100	0.00	00.00		515.23	51,523.00	24.41	2.441.00
22.42	Graded crushed stone for subbase and base.	СШ СШ	100	0.00	0.00		552.04	55,204.00	26.16	2,616.00
22.43	Wrought shuttering timber.	Щ2 Т	100	0.00	0.0		217.09	21,709.00	31.93	3,193.00
22.44	Unwrought shuttering timber.	<b>m</b> 2	001	0.00	0.00		217.09	21,709.00	31.93	3,193.00
22.45	Timbering for trenches.	ш2	100	0.00	0.00		217.09	21, 709, 00	31.93	3,193.00
22.46	Cut back bitumen, Grade MC 30.	litre	1,000	0.00	00.0		18.97	18,970.00	2.79	2,790.00
22.47	Cut back bitumen, Grade MC 3000.	litre	1,000	00.0	0.00		21.79	21,790.00	3.20	3,200.00
22.48	Emulsion, K1-60	litre	1,000	0.00	0.00		13.40	13,400.00	1.97	1,970.00
22.48	Straight-run bitumen, Grade 80/100.	litre	1,000	0.00	0.00		8.45	8,450.00	2.35	2,350.00
22.49	10/14mm nominal size chippings.	Ш3 113	200	0.00	0-00		586.99	117,398.00	27.81	5,562.00
22.50	3/6mm nominal size chippings.	m3	200	0.00	00-0		586.99	117,398.00	27.81	5,562.00
	Sub total (22)				2.812.430.00			3 648 443 80		308 556 00

	DILL OF YOUND IN THE NO.			•					
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL RATE	LOCAL CURRENCY ATE AMOUNT	VALU RATE	VALU ADDED TAX RATE AMOUNT
3.01	23.01 Mobilization of all the necessary plant for the piling operation, setting up on the position of the first pile and removal on completion of the last pile.	L.S.			79,800.00		26,200.00		00.0
3.02	23.02 Move and set up each pile position.	No.	<u> 3</u> 6	855.82	82,158.72	231.48	22,222.08	21.22	2,037.12
3.03	23.03 Supply of steel pipe piles 500 mm dia., 9 mm thick.	E	816	3801.25	3,101,820.00	380.12	310,177.92	0.00	0.00
3.04	23.04 Driving piles of 500 mm dia.including positioning and pitching.Include for cutting pile heads to correct level.	E	816	261.72	213,563.52	70.79	57,764.64	6.49	5,295.84
	Sub total (23)				3,477,342.24		416,364.64		7,332.96

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## APPENDIX D FURNITURE AND EQUIPMENT FOR THE ENGINEER'S OFFICE (GENERAL 1.04)

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c, es 11 30 9	GENERAL, APPENDIX TO ITEM 1.04				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CTS
· ·	Provide and maintain furniture and office equipment for the Engineer's office and laboratory as listed in the Special Specification,all to the satisfaction of the Engineer.				
l.Resi	dent Engineer's Main Office Furniture				
-	Writing desks $(1.5 \times 0.9m)$ with lockable drawers.	No.	5	5000.00	25,000.00
-	Writing desks (1.35 x 0.75m) with lockable drawers.	No.	-3	4000.00	12,000.00
-	Office tables $(1.8 \times 0.9m)$ .	No.	2	3000.00	6,000.00
-	Plan filing cabinets.	No.	2	5000.00	10,000.00
-	Chairs, standard desk type.	No.	12	1500.00	18,000.00
-	Chairs, exective swivel type.	No.	5	2500.00	12,500.00
	Drawing table stools (0.7m high).	No.	2	1000.00	2,000.00
-	Typist desk.	No.	1	4000.00	4,000.00
•	Typist chairs.	No.	1	2500.00	2,500.00
	Lockable steel cupboards.	No.	5	4000.00	20,000.00
-	Lockable steel filing cabinets (4-drawers).	No.	2	10000.00	20,000.00
	Refrigerator of 220 litres capacity.	No.	1	25000.00	25,000.00
-	Bookshelves.	No.	5	2000.00	10,000.00
-	Conference table.	No.	1	8000.00	8,000.00
-	Chairs for conference table.	No.	8	1500.00	12,000.00
-	Drawing benches.	No.	6	2000.00	12,000.00
.Engi	neer's Laboratory Furniture				
-	Laboratory benches as specified.	No.	1	5000.00	5,000.00
	Shelves along outside walls.	No.	1	5000.00	5,000.00
-	Writing desks (1.35 x 0.75m) with lockable drawers.	No.	2	4000.00	8,000.00
-	Chairs,standard desk type.	No.	2	1500.00	3,000.00
-	Laboratory stools (0.7m high).	No.	6	1000.00	6,000.00
· 2	Lockable steel filing cabinet (4-drawers).	No.	1	10000.00	10,000.00
. <b>.</b>	Lockable steel cupboard.	No.	1	4000.00	4,000.00
_	Refrigerator of 220 litre capacity.	No.	1	25000.00	25,000.00
: 1	Bookshelves	No.	1	2000.00	2,000.00

D- 1

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ITEM NO	DESCRIPTION	UNIT	• · · · · · · · · · · ·	RATE	AMOUNT SHILLINGS CT
3.Eng	ineer's Main Office Equipment				
	- Camera,single lens reflextype.	No.	1	15000.00	15,000.00
	- Electric type writer with self- collecting facilities.	No.	1	60000.00	60,000.00
	- Filing trays.	No.	12	200.00	2,400.00
	- Stapling machine (large).	No.	1	2500.00	2,500.00
	- Stapling machines (regular).	No.	6	500.00	3,000.00
-	- Paper punches,heavy duty.	No.	2	2000.00	4,000.00
	- Paper punches,ordinary.	No.	6	500.00	3,000.00
	- Pairs of scissors.	No.	6	500.00	3,000.00
	- Waste paper bins.	No.	8	200.00	1,600.00
	- Desk mounted pencil sharpeners.	No.	6	500.00	3,000.00
-	- Electric fans	No.	6	5000.00	30,000.00
-	- Electric heaters.	No.	6	2500.00	15,000.00
	· Fire extinguishers.	No.	4	3000.00	12,000.00
-	- First aid kits.	No.	2	4000.00	8,000.00
-	Cooker,2 plate.electric.	No.	1	5000.00	5,000.00
-	AO size drawing board on adjustable metal stand with parallel motion.	No.	1	16800.00	16,800.00
-	AO size drawing board.	No.	2	6000.00	12,000.00
-	AO size Tee squares.	No.	2	2700.00	5,400.00
-	250mm Set squares 45 degree.	No.	6	150.00	900.00
-	250mm Set squares 60 degree.	No.	6	150.00	900.00
-	Protractor for tachy plotting with interchangeable scales.	No.	2	6700.00	13,400.00
-	Fully divided scales (metric 1/1000, 1/2500,1/500,1/1200,1/2000,1/200,1/200,1/200,1/250, 1/1500).	No.	6	500.00	3,000.00
	Erasing shield.	No.	2	400.00	800.00
-	Circular template.	No.	2	400.00	800.00
	Arrow template	No.	2	400.00	800.00
, <del></del>	Complete compass set.	No.	1	3000.00	3,000.00
•	Set of drawing instruments steadler.	No.	3	2200.00	6,600.00
	Set of Rotring pens complete with set of stencils.	No.	4	3600.00	14,400.00

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### BILL OF QUANTITIES No.1

GENERAL, APPENDIX TO	O ITEM	1.04
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ITEM NO.	DESCRIPTION		QUANTITY	RATE	AMOUNT SHILLINGS CTS	
•	- Adjustable planimeter,ott 30010 or equivalent.	No.	1	17200.00	17,200.00	
	- Protractor 360 degree.	No.	4	450.00	1,800.00	
- 	- Electronic calculator with paper printout,12 figures,with 10rolls paper.	No.	1	4500.00	4,500.00	
· · ·	<ul> <li>Electronic scientific calculator, 12 figures.</li> </ul>	No.	10	2000.00	20,000.00	
	<ul> <li>IBM compatible micro-computer with 40 MB hard disk,3.5" froppy drive,monochrome display/grafics,alphanumeric keyboard, MS DOS 3.3,Basic,Lotus 1-2-3,Wordperfect, Wordstar,and 20 Nos.3.5"diskettes.</li> </ul>	No.	1	200000.00	200,000.00	
	- Wide carrage 16-pin dot matrix printer invluding parallel cable(2m) and 20 spare ribbons.	No.	1	50000.00	50,000.00	
•	<ul> <li>Desk top photocopying machine A3/A4 size, reduction and enlargement facilities.</li> </ul>	No.	1	200000.00	200,000.00	
· .	Total				1,006,800.00	

D- 3

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	ENERAL, APPENDIX TO ITEM 1.04				****************		VAT exemptic
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN	CURRENCY	LOCAL	CURRENCY Amount
0 0 5	rovide and maintain furniture and ffice equipment for the Engineer's ffice and laboratory as listed in the pecial Specification,all to the atisfaction of the Engineer.						
1.Reside	nt Engineer's Main Office Furniture						
	riting desks (1.5 x 0.9m) with lockable rawers.	No.	5	0.00	0.00	5000.00	25,000.
- H 1	riting desks (1.35 x 0.75m) with ockable drawers.	No.	3	0.00	0.00	4000.00	12,000.
- 0	ffice tables (1.8 x 0.9m).	No.	2	0.00	0.00	3000.00	6,000
- P	lan filing cabinets.	No.	2	0.00	0.00	5000.00	10,000
- Ci	hairs,standard desk type.	No.	. 12	0.00	0.00	1500.00	18,000
- C	hairs, exective swivel type.	No.	. 5	0.00	0.00	2500.00	12,500
- D	rawing table stools (0.7m high).	No.	2	0.00	0.00	1000.00	2,000
- T	ypist desk.	No.	1	0.00	0.00	4000.00	4,000
- T	ypist chairs.	No.	1	0.00	0.00	2500.00	2,500
- Li	ockable steel cupboards.	No.	5	0.00	0.00	4000.00	20,000
- L(	ockable steel filing cabinets 4-drawers).	No.	2	0.00	0.00	10000.00	20,000
- R	efrigerator of 220 litres capacity.	No.	1	25000.00	25,000.00	0.00	0
- Be	cokshelves.	No.	5	0.00	0.00	2000.00	10,000
- Co	onference table.	No.	1	0.00	0.00	8000.00	8,000
- Ci	hairs for conference table.	No.	8	0.00	0.00	1500.00	12,000
- Di	rawing benchés.	No.	6	0.00	0.00	2000.00	12,000
Enginee	er's Laboratory Furniture						
- Li	aboratory benches as specified.	No.	1	0.00	0.00	5000.00	5,000
- Sl	helves along outside walls.	No.	1	0.00	0.00	5000.00	5,000
– Wi to	riting desks (1.35 x 0.75m) with ockable drawers.	No.	2	0.00	0.00	4000.00	8,000
- <u>C</u>	hairs,standard desk type.	No.	2	0.00	0.00	1500.00	3,000
- La	aboratory stools (0.7m high).	No.	6	0,00	0.00	1000.00	6,000
	ockable steel filing cabinet 4-drawers).	No.	1	0.00	0.00	10000.00	10,000
- Lo	ockable steel cupboard.	No.	1	0.00	0.00	4000.00	4,000
– Re	efrigerator of 220 litre capacity.	No.	1	25000.00	25,000.00	0.00	0
- Bo	pokshelves	No.	1	0.00	0.00	2000.00	2,000

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D- 1 -1

	QUANTITIES No.1
GENERAL	APPENDIX TO ITEM 1.04
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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN C	URRENCY	LOCAL C RATE	URRENCY
-	ineer's Main Office Equipment						
•	- Camera, single lens reflextype.	No.	1	15000.00	15,000.00	0.00	0.0
	<ul> <li>Electric type writer with self- collecting facilities.</li> </ul>	No.	1	60000.00	60,000.00	0.00	0.0
	- Filing trays.	No.	12	0.00	0.00	200.00	2,400.0
	- Stapling machine (large).	No.	1	0.00	0.00	2500.00	2,500.0
	- Stapling machines (regular).	No.	6	0.00	0.00	500.00	3,000.0
	- Paper punches, heavy duty.	No.	2	0.00	0.00	2000.00	4,000.0
	- Paper punches, ordinary.	No.	6	0.00	0.00	500.00	3,000.0
	- Pairs of scissors.	No.	6	0.00	0.00	500.00	3,000.0
	- Waste paper bins.	No.	8	0.00	0,00	200.00	1,600.0
	- Desk mounted pencil sharpeners.	No.	6	0.00	0.00	500.00	3,000.0
	- Electric fans	No.	6	5000.00	30,000.00	0.00	0.0
	- Electric heaters.	No.	6	2500.00	15,000.00	0.00	0.0
	- Fire extinguishers.	No.	4	0.00	0.00	3000.00	12,000.0
	- First aid kits.	No.	2	0.00	0.00	4000.00	8,000.0
	- Cooker,2 plate,electric.	No.	1	5000.00	5,000.00	0.00	0.0
	<ul> <li>A0 size drawing board on adjustable metal stand with parallel motion.</li> </ul>	No.	1	16800.00	16,800.00	0.00	0.0
	- A0 size drawing board.	No.	2	6000.00	12,000.00	0.00	0.0
	- AO size Tee squares.	No.	2	2700.00	5,400.00	0.00	0.0
	- 250mm Set squares 45 degree.	No.	6	150.00	900.00	0.00	0.0
	- 250mm Set squares 60 degree.	No.	6	150,00	900.00	0.00	0.0
	<ul> <li>Protractor for tachy plotting with interchangeable scales.</li> </ul>	Ňo.	2	6700.00	13,400.00	0.00	0.0
• •	- Fully divided scales (metric 1/1000, 1/2500,1/500,1/1200,1/2000,1/50,1/250, 1/1500).	No.	6	500.00	3,000.00	0.00	0.0
	- Erasing shield.	No.	2	400.00	800.00	0.00	0.0
	- Circular template.	No.	2	400.00	800.00	0.00	0.0
	- Arrow template	No.	2	400.00	800.00	0.00	0.0
· · .	- Complete compass set.	No.	1	3000.00	3,000.00	0.00	0.0
• •	- Set of drawing instruments steadler.	No.	3	2200.00	6,600.00	0.00	.0.0
•	- Set of Rotring pens complete with set of stencils.	No.	4	3600.00	14,400.00	0.00	0.0

D- 2 -1

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL ( RATE	CURRENCY Amount
tine i li	- Adjustable planimeter.ott 30010 or equivalent.	No.	1	17200.00	17,200.00	0.00	0.00
	- Protractor 360 degree.	No.	4	450.00	1,800.00	0.00	0.00
	- Electronic calculator with paper printout,12 figures,with 10rolls paper.	No.	1	4500.00	4,500.00	0.00	0.00
	<ul> <li>Electronic scientific calculator, 12 figures.</li> </ul>	No.	10	2000.00	20,000.00	0.00	0.00
	<ul> <li>IBM compatible micro-computer with 40 MB hard disk,3.5" froppy drive,monochrome display/grafics,alphanumeric keyboard, MS DOS 3.3,Basic,Lotus 1-2-3,Wordperfect Wordstar,and 20 Nos.3.5"diskettes.</li> </ul>		1	200000.00	200,000.00	0.00	0.00
	<ul> <li>Wide carrage 16-pin dot matrix printer invluding parallel cable(2m) and 20 spare ribbons.</li> </ul>	No.	1	50000.00	50,000.00	0.00	0.00
	<ul> <li>Desk top photocopying machine A3/A4 size,reduction and enlargement facilities.</li> </ul>	No.	1	200000.00	200,000.00	0.00	0.00
e trati Ut	Total				747,300.00		259,500.00

D- 3 -1

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## APPENDIX E

(GENERAL 1.05)

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# SURVEY AND LABORATORY EQUIPMENT

ITEM NO.	DESCRIPTION	UNIT	1	RATE	SHILLINGS CT
	Provide survey and laboratory equipment as listed in the Special Specification.				
l. Sur	vey Equipment				
-	Carl Zeiss NI3 Automatic Engineers level c/w tripod or similar.	No.	3	60000.00	180,000.00
. <b>.</b>	Carl Zeiss TH2 single second theodolite complete with tripod or similar.	No.	2	305000.00	610,000.00
	Survey umbrellas.	No.	2	4000.00	8,000.00
	4m Levelling staves with bubble and case.	No.	5	4700.00	23,500.00
-	2.5m Ranging rods.	No.	20	300.00	6,000.00
	1m Stainless steel straight edge.	No.	2	2300.00	4,600.00
-	3m aluminium straight edge.	No.	3	2800.00	8,400.00
-	30m steel white face tape.	No.	3	1600.00	4,800.00
-	100m steel band tape.	No.	2	6000.00	12,000.00
-	3m pocket tape.	No.	15	300.00	4,500.00
-	Steel tape repair outfit.	No.	1	3000.00	3,000.00
	Subtotal(Item 1, Survey Equipment)				864,800.00

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		AFFENDIA TO TIEN 1.05		
		DESCRIPTION	UNIT	QUANTITY
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ITEM NO.		DESCRIPTION				AMOUNT SHILLINGS CTS
	NOTE: The following made for use and shall com	equipment shall be purpose in soils testing laboratory oly with the relevant or American (AASHTO)				
2.Comp	action Test (A	SHTO T.99 and T.180)				
	Compaction mou plate extension diameter x 110	nd complete with base n collar,101.6mm internal .43mm high.	No.	10	2557.00	25,570.00
-	2.495 kg compa regulated to 3	ction hammer,drop 04.8mm.	No.	5	2685.00	13,425.00
-	4.536 kg compa regulated to 4	ction hammer,drop 57.2mm.	No.	5	3133.00	15,665.00
-	Aggregate comp complete.	action mould to BS.5835	No.	10	3000.00	30,000.00
-	Loading frame (to BS.5835).	for the Kango hammer	No.	1	100000.00	100,000.00
-	Electric vibra steel tamper.	ting Kango hammer with	No.	1	80986.00	80,986.00
-	Steel straight wide x 3mm thi	edge 300mm long x 25mm ck.	No.	6	492:00	2,952.00
-		ld 152.4mm dia.x 116.43mm with base plate and ar.	No.	10	3452.00	34,520.00
Dens	ity Test (Sand	replacement method BS 1377	)			
	Galvanized met deep.	al tray 1m x 0.5m x 75mm	No.	2	1304.00	2,608.00
-	75mm brush.		No.	6	153.00	918.00
-	Semi-automatic accurate to 1	balance,25 kg capacity, g,including weights.	No.	2	76588.00	153,176.00
-	Metal containe	rs,450mm dia.	No.	6	500.00	3,000.00
	Stainless stee	) tray,305mm dia.	No.	3	1854.00	5,562.00
		h 100mm diameter hole in mm x 300mm square.	No.	3	1036.00	3,108.00
		h 150mm diameter hole in mm x 300mm square.	No.	3	1227.00	3,681.00
<b>*</b>	Metal tray wit the centre,457	h 200mm diameter hole in mm x 457mm square.	No.	3	1164.00	3,492.00
-	Steel pegs for	fixing tray in position.	No.	36	50.00	1,800.00
-	Sand pouring c	ylinder,100mm diameter.	No.	3	9014.00	27,042.00
	Sand pouring c	ylinder,150mm diameter.	No.	3	11233.00	33,699.00

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ITEM NO.	DESCRIPTION	UNIT		RATE	AMOUNT SHILLINGS CTS
	Sand pouring cylinder,200mm diameter.	No.	3	21097.00	63,291.00
-	Cold steel chisel,25mm x 300mm long.	No.	6	300.00	1,800.00
<del>.</del>	Cold steel chisel,10mm * 250mm long.	No.	6	250.00	1,500.00
 55	1.8 kg hammer.	No.	6	288.00	1,728.00
-	Scoop for removing excavated material from hole,250mm long handle.	No.	б	500.00	3,000.00
: <del>.</del>	100mm brush, soft.	No.	6	256.00	1,536.00
-	Metal dibber	No.	6	577.00	3,462.00
	Screper	No.	6	577.00	3,462.00
-	Steel pointed rod	No.	6	433.00	2,598.00
	Density spoon	No.	6	87.00	522.00
••	50mm brush,soft.	No.	6	153.00	918.00
-	Calibrating can,100mm diameter x 150mm deep.	No.	3	2270.00	6.810.00
	Calibrating can,150mm diameter x 200mm deep.	No.	3	5050.00	15,150.00
-	Calibrating can,200mm diameter x 250mm deep.	No.	3	6713.00	20,139.00
-	Polythene container jars,with neck 125mm diameter and 4 litre capacity.	No.	6	211.00	1,266.00
-	Standard sand 600/300 micron,50kg bag.	No.	10	200.00	2,000.00
.Dens	ity(Nuclear Density Method,AASHTO T238)				
-	Nuclear moisture/density guage (Troxler 34118 or similar approved).	No.	1	500000.00	500,000.00
-	Hole forming device.	No.	1	10000.00	10,000.00
-	Guide for the above.	No.	1	6000.00	6,000.00
.Atter	rberg Limits Apparatus to BS 1377				
	Casagrande liquid limit apparatus.	No.	4	7352.00	29,408.00
-	Grooving tool.	No.	4	614.00	2,456.00
· –	Liquid limit penetrometer.	No.	2	25892.00	51,784.00
-	Penetration test cone.	No.	2	1310.00	2,620.00
	Penetration sample cap.	No.	2	102.00	204.00
-	Linear shrinkage mould.	No.	20	1227.00	24,540.00
-	Vernier caliper,150mm x 0.1mm.	No.	2	1600.00	3,200.00
· · ·	Stainless steel,3mm dia.and 100mm long.	No.	4	400.00	1,600.00

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
6.Sand	Equivalent				
-	Sand equivalent test set.	Set	2	16622.00	33,244.00
7.Spec and	ific Gravity (BS.1377 and BS.812) Water Absorption(Rice Test ASTM D2041-78)				
-	Pycometer for sands and fine aggregate, 1 kg capacity, complete with cone and rubber seal.	No.	10	462.00	4,620.00
	Glass Plastic or metal bowl having a capacity of at least 1000 ml strong enough to wishstand a full vacuum complete with cover fitted with rubber gasket and a hose connection.	No.	10	2283.00	22,830.00
- 	Volumetric flask having a capacity of at least 1000 ml strong enough to wishstand a full vacuum complete with rubber stopper and a hose connection.		10	4566.00	45,660.00
	An intermediate size heavy wall glass pycnometer having a capacity of approximately 4000 ml or a large size polycarbonate plastic pycnometer having a capacity of at least 10000 ml complete with a suitable vacuum connection assembly consisting of a vacuum gauge, release valve, and tubing connector, plus a tapered stopper device for maintaining consistent volume regulation	:	10	7990.00	79,900.00
-	A manometer or vacuum gauge suitable for measuring the specified vacuum.	No.	1	21918.00	21,918.00
-	Gay Lussac-specific gravity bottle,25ml.	No.	10	1034.00	10,340.00
	Gay Lussac-specific gravity bottle,50ml.	No.	10	1034.00	10,340.00
-	Wire mesh basket with appertures not greater than 6.5mm large enough to take 2.5 kg of aggregate	No.	1	5000.00	5,000.00
~	Stout watertight container in which the basket can be freely suspended under water.	No.	1	5000.00	5,000.00
<b>.</b>	End-over-end shaker	No.	1	231040.00	231,040.00
-	Gas jar,300mm high x 75mm dia. with glass plate and rubber stopper.	No.	10	1964.00	19,640.00
-	Vaccume type dessicator,200mm dia.	No.	2	10397.00	20,794.00
<del>~</del> .	Vaccume pump,1 HP	No.	1	29458.00	29,458.00
	Rubber headed pestel	No.	2	635.00	1,270.00
	Soft absorbent cloth (tee towel).	No.	20	230.00	4,600.00
	Shallow tray of area not less than 0.065m2.	No.	2	500.00	1,000.00

	GENERAL, APPENDIX TO ITEM 1.05				
ITEM NO.	DESCRIPTION	UNIT	•	RATE	AMOUNT SHILLINGS CTS
	Airtight container of similar capacity to the basket.	No.	1	8000.00	8,000.00
-	5 kg balance accurate to 0.1 g capable of suspending the basket plus sample in the watertight container.	No.	1	89195.00	89,195.00
	Hair drier	No.	1	6000.00	6,000.00
	Sand absorption cone and tamper	No.	2	2166.00	4,332.00
. <b>.</b>	Picometer for the above.	No.	2	1300.00	2,600.00
8.Flak	iness Index (BS.812)				
	Flakiness sieve,4.9 x 30mm slot.	No.	2	2110.00	4,220.00
-	Flakiness sieve,7.2 x 40mm slot.	No.	2	2110.00	4,220.00
	Flakiness sieve,10.2 x 50mm slot.	No.	2	2110.00	4,220.00
-	Flakiness sieve,14.4 x 60mm slot.	No.	2	2110.00	4,220.00
+*	Flakiness sieve,19.7 x 80mm slot.	No.	2	2110.00	4,220.00
-	Flakiness sieve,26.3 x 90mm slot.	No.	2	2110.00	4,220.00
-	Flakiness sieve,33.9 x 100mm slot.	No.	2	2110.00	4,220.00
9.Siev	e Analysis (BS.1377)				
-	BS sieve 300mm diameter in sizes 75,63, 50,37.5,28,20,14,6.3,5 and 3.35mm plus lid and receiver.	Set	4	40468.00	161,872.00
- -	BS sieve 200mm diameter in sizes 2,1.18, 0.6,0.425,0.300,0.212,0.150, 0.075 and 0.063mm plus lid and receiver.	Set	4	19051.00	76,204.00
	Electric sieve shaker.	No.	1	67766.00	67,766.00
	BS sieve 200mm diameter,0.425 and 0.075mm.	Set	10	4571.00	45,710.00
-	Field rocker sieve set	Set	4	52995.00	211,980.00
10.CBR	Test(AASHTO T.193)				
-	CBR mould,152mm dia. x 178mm high, complete with perforated base plate and extension collar 50.8mm high that can be fitted to either end of the mould.	No.	30	3548.00	106,440.00
	Spacer disk.	No.	6	1630.00	9,780.00
<del></del> .	Perforated swell plate with adjustable centre post of rust prooted steel provided with a lock nut.	No.	6	1694.00	10,164.00
, · ••	Sliding weight rammer,2.49kg.	No.	3	1183.00	3,549.00
-	2.27 kg annular surcharge weight.	No.	30	959.00	28,770.00

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
	Static compaction press,50 tonnes capa. with an adjustable platten speed between 1mm/min. and 50.8mm/min.(Hydraulic or mechanical operation and hand operated).	No.			112,517.00
-	Set of guards.	No.	1	8694.00	8,694.00
	CBR/Marshall motorised dual speed 60kN load frame,ASTM.	No.	1	92699.00	92,699.00
-	Stabilising bar for the above.	No.	1	20000.00	20,000.00
	Proving ring for above,10 kN and 50 kN capacity.	Set	. 1	27234.00	27,234.00
•	Penetration gauge range 0-25mm.	No.	1	2525.00	2,525.00
-	CBR piston, including bracket.	No.	1	3037.00	3,037.00
-	Swell measurement tripod complete with gauge calibrated in 0.01mm divisions.	No.	30	4187.00	125,610.00
•	Soaking tank for CBR mould sufficient for 200 moulds.	No.	1	23168.00	23,168.00
-	Tamping bar,steel 13mm diameter, 380mm long.	No.	1	448.00	448.00
1.Nis	cellaneous Equipment			- - -	· · · ·
	<pre>1m x 1m x 75mm deep galvanised metal tray.</pre>	No.	10	2365.00	23,650.00
6	1.5 kg hanner.	No.	4	288.00	1,152.00
-	Riffle box with 10mm slots (BS.1377).	No.	2	7543.00	15,086.00
-	Riffle box with 20mm slots (BS.1377).	Ko.	1	9114.00	9,114.00
-	Riffle box with 50mm slots (BS.1377).	No.	1	10633.00	10,633.00
-	Wheel barrow.	No.	4	2046.00	8,184.00
-	Dustpan brush.	No.	4	100.00	400.00
-	Plastic funnels,65mm dia.	No.	2	52.00	104.00
~	Plastic funnels,100mm dia.	No.	.2	101.00	202.00
-	Plastic funnels,140mm dia.	No.	2	173.00	346.00
-	Shove 1.	No.	6	250.00	1,500.00
÷	Pick-axe.	No.	6	479.00	2,874.00
4	Metal scoop,large,150mm wide.	No.	4	600.00	2,400.00
· -	Metal scoop,medium,100mm wide.	No.	6	400.00	2,400.00
	Schmidt concrete test hanmer.	No.	1	12530.00	12,530.00
-	Jack,20 tonne, lever, frame, sample extrud.	No.	1	7160.00	7,160.00
	Garden trowel.	No.	4	250,00	1,000.00

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
	- Steel rule,500mm long.	No.	3	300.00	900.00
	- Stop watch.	No.	1	3000.00	3,000.00
	- Steel tray,0.3m x 0.3m x 0.01m deep.	No.	40	607.00	24,280.00
	- 3.5 kg hammer.	No.	4	1022.00	4,088.00
	- 7 kg hammer.	No.	3	4571.00	13,713.00
	- Complete sand patch test apparatus.	No.	1	0.00	0.00
	- Cold chisel.	No.	6	300.00	1,800.00
	<ul> <li>Oven,electric thermostatically controled to any temperature between 60 deg. and 149 deg.C,minimum capacity including dial thermometer range 0-160 deg.C (BS.1377).</li> </ul>	No.	2	69684.00	139,368.00
	- Gas for the above oven.	No.	2	30000.00	60,000.00
	- Single plate electric cooker.	No.	4	3069.00	12,276.00
	- 3 metre straight edge including calibrated wedges.	No.	1	12211.00	12,211.00
-	- Dessicator,300mm dia.	No.	2	13862.00	27,724.00
	- Streight edge,300mm long,25mm wide and 3mm thick.	No.	δ	722.00	4,332.00
-	- Moisture content tin,75mm dia.cadmium plate or alminium.	No.	100	100.00	10,000.00
	- Concrete beam moulds 150 x 150 x 750mm.	No.	24	15663.00	375,912.00
. •	- 450mm x 460mm x 9mm plate glass (85,1377).	No.	4	1471.00	5,884.00
-	- Refrigerator 250 litre capacity.	No.	1	30000.00	30,000.00
-	- Palette knife 200mm blade.	No.	6	428.00	2,568.00
-	- Palette knife 100mm blade.	No.	6	313.00	1,878.00
-	- BS Sieve brush.	No.	8	211.00	1,688.00
•••	- 200mm x 200mm x 20mm cadmium plated or aluminium tin.	No.	50	352.00	17,600.00
•	Electronic balance capacity 600 g, accurate to 0.001 g.	No.	1	98836.00	98,836.00
-	- Electronic balance capacity 1600 g, accurate to 0.01 g.	No.	1	72880.00	72,880.00
-	Electronic balance capacity 5000 g, accurate to 0.1 g.	No.	1	58841.00	58,841:00
	Balance (Chain dial) 250 g capacity to 0.01 g.	No.	1	21193.00	21,193.00
-	Balance 2000 g capacity accuracy to 0.1 g (manual),including weights.	No.	1	13873.00	13,873.00
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	GENERAL, APPENDIX TO ITEM 1.05				
TEM NO.	DESCRIPTION	UNIT	QUANTITY		AMOUNT SHILLINGS CT
•	Balance 4000 g capacity accuracy to 1.0 g (manual),including weights.		1	30000.00	30,000.00
	Balance 12000 g capacity accuracy to 1.0 g (manual), including weights.	No.	2	97653.00	195,306.00
-	Balance 50 kg capacity accurate to 20 g, including weights.	No.	1	28449.00	28,449.00
-	Load rings with dial gauges,10kN	No.	1	13297.00	13,297.00
-	Load rings with dial gauges,14kN	No.	1	13937.00	13,937.00
-	Load rings with dial gauges,20kN	No.	1	13937.00	13,937.00
-	Load rings with dial gauges,28kN	No.	1	13937.00	13,937.00
- 1	Load rings with dial gauges,50kN	No.	1	14576.00	14,576.00
-	Still for producing distilled water.	No.	1	32093.00	32,093.00
-	Polythene or glass 20 litres storage vessel with tap at bottom.	No.	1	3197.00	3,197.00
-	Petrol driven core cutting machine with all accessaries.	No.	1	247665.00	247,665.00
-	Core cutting compound.	kg	1,000	92.00	92,000.00
-	Vernier calipers,250mm.	No.	2	1982.00	3,964.00
	Benkelman beams.	No.	2	59135.00	118,270.00
-	Average least dimension gauge.	No.	2	3000.00	6,000.00
- 	Lockable tool box containing: 1 pair "Molegrips",2 x 150mm screwdriver 2 * 200mm screwdriver,2 x 300mm screwdriver,(1 Standard and 1 phillips head of each) adjustable spanners 200mm and 300mm,1 pair roundnosed pliers,1pair general purpose pliers,1 plastic faced mallet (1 kg),1 set imperial spanners 1/4" to 15/16",1 set metric spanners 8mm to 20mm,2 tyre pressure gauge range 0-100 p.s.i.	•	1	9781.00	9,781.00
-	Plastic or metal bucket including lid, 10 litres capacity.	No.	20	256.00	5,120.00
-	Polythene wash bottle (500ml).	No.	10	150.00	1,500.00
-	A4 size clipboard.	No.	20	100.00	2,000.00
	Mercury thermometer,range -10 deg.C to 150 deg.C,glass (BS.593).	No.	10	300.00	3,000.00
-	Laboratory thermometer, range +50 deg.C to 250 deg.C (BS.593).	No.	1	300.00	300.00
•	Maximum and minimum thermometer (BS.692)	No.	1	467.00	467.00
	Rain gauge.	No.	3	2557.00	7,671.00

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GENERAL, AL	ALONIX	10	1164	1.05

L,APPENDIX TO ITEM 1.05 DESCRIPTION le dial thermometer +50 deg.C to g.C accurate to + - 3% with 0.6m tem. dial thermometer +50 deg.C to eg.C accurate to + - 3% with 0.1m tem. e capacity steel storage container eak and dust proof lids for b of bitumen samples. ocifications of each of the following Standard cations:-	NO. NO. NO.	QUANTITY 2 10 100 100	RATE 4475.00 1084.00 400.00 30047.00 1438.00 33371.00	AMOUNT SHILLINGS CTS 8,950.00
le dial thermometer +50 deg.C to g.C accurate to + - 3% with 0.6m tem. dial thermometer +50 deg.C to eg.C accurate to + - 3% with 0.1m tem. e capacity steel storage container eak and dust proof lids for e of bitumen samples. ocifications of each of the following Standard cations:-	No. No. No. No. No.	2 10 100	4475.00 1084.00 400.00 30047.00 1438.00 33371.00	8,950.00 10,840.00 40,000.00 30,047.00 1,438.00
eg.C accurate to + - 3% with 0.1m tem. e capacity steel storage container eak and dust proof lids for e of bitumen samples. ocifications of each of the following Standard cations:-	No. No. No.	100 1 1 1	400.00 30047.00 1438.00 33371.00	40,000.00 30,047.00 1,438.00
eak and dust proof lids for of bitumen samples. ocifications of each of the following Standard cations:-	No. No. No.	1 1 1	30047.00 1438.00 33371.00	30,047.00 1,438.00
ocifications of each of the following Standard cations:-	No. No. No.	1	1438.00 33371.00	1,438.00
of each of the following Standard cations:-	No. No. No.	1	1438.00 33371.00	1,438.00
	No. No.	1	1438.00 33371.00	1,438.00
	No.	1	33371.00	
				33,371.00
	No.			
		1	29919.00	29,919.00
t i i i i i i i i i i i i i i i i i i i	No.	1	1694.00	1,694.00
5,Part 1	No.	1	1694.00	1,694.00
rd Specifications for Transporta- iterial and Methods of Sampling sting (AASHTO) Part I and II,13th 1.	No.	1	23015.00	23,015.00
ump and Cube Manufacture(BS 1881)				
cone, tamping rod and base.	Set	2	2122.00	4,244.00
te cube mould,150mm.	No.	20	3452,00	69,040.00
	No.	1	37463.00	37,463.00
	No.	. 1	230.00	230.00
	No.	1	74510.00	74,510.00
	No.	1	0.00	0.00
bar container.	No.	3	0.00	0.00
be Compression Testing and te Unconfined Compressive Strength	h Testi	ing	:	
with 300mm gauge, rectangular s,capacity 1560 kN with load	No.	1	227655.00	227,655.00
	No.	1	4667.00	4,667.00
	y tank for cubes, capacity 50 Nos. amping bars for Item 1.252. test set for concrete mixing ial alkali reactivity of cement- ite combinations. bar container. bar container. be Compression Testing and te Unconfined Compressive Strength te compression machine, to BS.1610 with 300mm gauge, rectangular is, capacity 1560 kN with load	g tank for cubes, capacity 50 Nos. No. Imping bars for Item 1.252. No. test set for concrete mixing No. Ital alkali reactivity of cement- No. No. No. We compression Testing and te Unconfined Compressive Strength Testing te compression machine, to 85.1610 No. With 300mm gauge, rectangular is, capacity 1560 kN with load	g tank for cubes, capacity 50 Nos.No.1amping bars for Item 1.252.No.1test set for concrete mixingNo.1tal alkali reactivity of cement- ate combinations.No.1bar container.No.1ube Compression Testing and ete Unconfined Compressive Strength Testingte compression machine, to BS.1610No.1with 300mm gauge, rectangular is, capacity 1560 kN with load1	g tank for cubes, capacity 50 Nos.No.137463.00amping bars for Item 1.252.No.1230.00test set for concrete mixingNo.174510.00test set for concrete mixingNo.10.00tal alkali reactivity of cement- ate combinations.No.10.00bar container.No.30.00te Compression Testing and ete Unconfined Compressive Strength Testing1227655.00te compression machine, to BS.1610 with 300mm gauge, rectangular is, capacity 1560 kN with loadNo.1

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TEM DESCRIPTION NO.	UNIT	•	RATE	AMOUNT SHILLINGS CT
- 50mm distance piece.	No.	1	5000.00	5,000.00
- 70mm distance piece.	No.	1	6500.00	6,500.00
- 100mm distance piece.	No.	1	6500.00	6,500.00
- Mechanical load pacer.	No.	1	30686.00	30,686.00
- Tamping rod,16mm dia.x 600mm long.	No.	2	578.00	1,156.00
- Tamping bar,380mm x 25mm square.	No.	2	1444.00	2,888.00
- Tamping rod,10mm dia.x 250mm long.	No.	2	578.00	1,156.00
- Electric vibrating hammer 750 watt with tamping food square.	No.	1	375440.00	375,440.00
5.Potential Alkali Reactivity of Cement- Aggregate Combination and Mortar Bar Contain	er			. *
- Comparator mould(25.4 x 25.4 x 285mm)	No.	3	20216.00	60,648.00
- Length comparator	No.	1	98480.00	98,480.00
- ASTM type flow table	No.	1	64691.00	64,691.0
- Curing box(60 x 40 x 60cm)	No.	1	209669.00	209,669.0
- Concrete consistency apparatus	No.	1	1444.00	1,444.0
- Mortar mixer	No.	1	216600.00	216,600.0
6.Marshall Stability Test Equipment(AASHTO T 2	45)			
<ul> <li>Specimen mould including base plate and extension collar.</li> </ul>	No.	10	2397.00	23,970.0
- Specimen extractor.	No.	1	4000.00	4,000.0
- Compaction hammer.	No.	2	7352.00	14,704.0
- Compaction pedestal and specimen mould holder.	No.	2	21896.00	43,792.0
- Breaking head mould.	No.	1	9000.00	9,000.0
<ul> <li>CBR/Marshall motorised dual speed</li> <li>60 kN load frame,ASTM.</li> </ul>	No.	1	101265.00	101,265.0
- Electrically operated laboratory mixer 10 litre capacity.	No.	1	97813.00	97,813.0
- Flowmeter.	No.	2	4603.00	9,206.0
- Suitable mechanical mixer.	No.	1	60000.00	60,000.0
- Water bath with cover at least 150mm deep thermostatically controlled to maintain the temperature of the water at 60 deg.C + $-1$ deg.C.The tank shall have a perforated false bottom or be equipped with a shelf for supporting specimens 50mm above the bottom of the	No.	2	24613.00	49,226.0

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	GENERAL, APPENDIX TO ITEM 1.05				
ITEM NO.	DESCRIPTION		QUANTITY		AMOUNT SHILLINGS CTS
•	Isomantle electric heater for bowl of laboratory mixer.			59212.00	59,212.00
-	- Thermometer with 50nm dia. and 180nm stainless steel stem (50 to 250 deg.C).	No.	1	4475.00	4,475.00
	- ASTM Marshall automatic compactor, electric.	No.	1	115074.00	115,074.00
	tumen Extraction Test				
	<pre>(1) Extractor Bottle Method,B.S.598, Part 2</pre>				
	- Flat bottomed scoop.	No.	2	1634.00	3,268.00
• -	- Steel garden trowel.	No.	2	720.00	1,440.00
	- Large steel spoon.	No.	2	187.00	374.00
-	- Hater resistant gloves.	Pair	3	290.00	870.00
-	- Foot pump for pressurising air-water assemblies upto a maximum of 700kH/m2 and fitted with flexible hose approxi- mately 1.2m long and connector.	No.	1	17450.00	17,450.00
-	- Steel bottle 600ml capacity with 49mm rubber stopper.	No.	1	1467.00	1,467.00
-	- Steel bottle 2500ml capacity with 71mm rubber stopper.	No.	2	1973.00	3,946.00
•	- Steel bottle 7000ml capacity with 71mm rubber stopper.	No.	1	2195.00	2,195.00
• -	Flash funnel fpr fitting to the 700ml steel bottles. The rim of the funnel retains a sieve 200mm nominal diameter.	No.	1	2195.00	2,195.00
	Bottle roller-A compact bench mounted unit designed to rotate two bottles simultaneously about their longitudinal axis.	No.	1	24436.00	24,436.00
	Pressure filter complete with cutting tool for making a hole in the filter paper.	No.	· • 1	52307.00	52,307.00
•	<ul> <li>Filter funnel to take 200mm nominal diameter sieves.</li> </ul>	No.	1	2195.00	2,195.00
. <b>.</b>	Centrifuge complying with as BS 598.	No.	1	24382.00	24,382.00
-	Binder recovery apparatus.	No.	1	36732.00	36,732.00
-	Volumetric flask 250ml,500ml,1000ml and 2000ml capacity of each.	No.	2	2561.00	5,122.00
· •	Recovery still for Dichloromethane.	No.	1	60000.00	60,000.00
	(2) Hot Extractor Method,B.S.596, Part 2				

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### BILL OF QUANTITIES No.1

CENCOAL	APPENDIX	TA	TTCM	1 06	
OCUCANE *	NECTORIA	10	1151	1.03	

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CTS
	<ul> <li>Hot extractor complete with wire qauze container,gasket,cork lid and support assembly.</li> </ul>	No.	1	11936.00	11,936.00
	- Dean and Stark Receiver with condenser to suit Trichloroethylene.	No.	1	3461.00	3,461.00
18.Co	nsumables				
	- Paraffin wax.	kg	50	15.00	750.00
	- Gas.	kg	1,600	26.00	41,600.00
:	- Gunny sack.	No.	400	35.00	14,000.00
	- Plastic bag,900 x 450mm x 1000 gauge.	No.	2,000	19.00	38,000.00
	- Plastic bag,450 x 300mm x 1000 gauge.	No.	1,000	8.00	8,000.00
	- Filter paper 150mm dia.,Whatman No.5 (Boxes of 100).	No.	10	346.00	3,460.00
 	- Filter paper 400mm dia.,Whatman No.5 (Boxes of 100).	No.	5	381.00	1,905.00
	- Filter paper 100mm dia.,Whatman No.5 (Boxes of 100).	No.	5	346.00	1,730.00
	- Trichloroethylene (205 litre drum).	No.	2	25836.00	51,672.00
	- Dichloromethane (275 kg drum).	No.	2	16437.00	32,874.00
	- Cotton waste (or drying cloths).	kg	100	78.00	7,800.00
	<ul> <li>Filter paper 270mm dia.,33mm with dia.</li> <li>hole in centre,Whatman No.5 (Box of 100</li> </ul>	No. )	15	346.00	5,190.00
:	- Filter paper 400mm diameter Whatman No.54 (Box of 100).	No.	10	381.00	3,810.00
	- Registration paper for compaction test.	sheets	1,000	10.00	10,000.00
	<ul> <li>Moisture-density relation test plot paper.</li> </ul>	sheets	1,000	10.00	10,000.00
• • •	- Registration paper for Atterberg Limits.	sheets	1,000	10.00	10,000.00
	- Registration paper for Particle size analysis.	sheets	1,000	10.00	10,000.00
4.5 -	- Registration paper for CBR.	sheets	1,000	10.00	10,000.00
	Subtotal(Labo.Equipment.Item 2 to 18)				7,882,672.00
	Total(Item 1 to 18)		·		8,747,472.00

E- 12

ITEM NO.DESCRIPTIONUNIT QUANTITYFOREIGN RATECURRENCY RATELOCAL CUR RATEProvide survey and laboratory equipment as listed in the Special Specification.1.Survey Equipment1000.000.00- Carl Zeiss NI3 Automatic Engineers level c/w tripod or similar.No.360000.00180,000.000.00- Carl Zeiss TH2 single second theodolite complete with tripod or similar.No.2305000.00610,000.000.00- Carl Zeiss TH2 single second theodolite complete with tripod or similar.No.24000.008,000.000.00- Survey umbrellas.No.24000.008,000.000.000.00- 4m Levelling staves with bubble and case.No.54700.0023,500.000.00- 1m Stainless steel straight edge.No.2300.006,000.000.00- 3m aluminium straight edge.No.31600.004,600.000.00- 30m steel white face tape.No.15300.004,500.000.00	imated a exemption						BILL OF QUANTITIES No.1 GENERAL, APPENDIX TO ITEM 1.05	
as listed in the Special Specification.         1. Survey Equipment         - Carl Zeiss NI3 Automatic Engineers level c/w tripod or similar.       No.       3       60000.00       180,000.00       0.00         - Carl Zeiss TH2 single second theodolite complete with tripod or similar.       No.       2       305000.00       610,000.00       0.00         - Survey umbrellas.       No.       2       4000.00       8,000.00       0.00         - Am Levelling staves with bubble and case.       No.       2       4000.00       6,000.00       0.00         - 2.5m Ranging rods.       No.       20       300.00       6,000.00       0.00         - Im Stainless steel straight edge.       No.       2       2300.00       8,400.00       0.00         - 3m aluminium straight edge.       No.       3       1600.00       4,600.00       0.00         - 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       15       300.00       4,500.00       0.00	IRRENCY AMOUNT				QUANTITY	UNIT	DESCRIPTION	ITEM NO.
1. Survey Equipment         - Carl Zeiss NI3 Automatic Engineers level c/w tripod or similar.       No.       3       60000.00       180,000.00       0.00         - Carl Zeiss TH2 single second theodolite complete with tripod or similar.       No.       2       305000.00       610,000.00       0.00         - Survey umbrellas.       No.       2       4000.00       8,000.00       0.00         - 4m Levelling staves with bubble and case.       No.       5       4700.00       23,500.00       0.00         - 2.5m Ranging rods.       No.       20       300.00       6,000.00       0.00         - Im Stainless steel straight edge.       No.       2       2300.00       4,600.00       0.00         - 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 30m steel band tape.       No.       2       6000.00       12,000.00       0.00							Provide survey and laboratory equipment as listed in the Special Specification.	· · · ·
level c/w tripod or similar.         - Carl Zeiss TH2 single second theodolite No. complete with tripod or similar.       2       305000.00       610,000.00       0.00         - Survey umbrellas.       No.       2       4000.00       8,000.00       0.00         - 4m Levelling staves with bubble and case.       No.       5       4700.00       23,500.00       0.00         - 2.5m Ranging rods.       No.       20       300.00       6,000.00       0.00         - Im Stainless steel straight edge.       No.       2       2300.00       4,600.00       0.00         - 3m aluminium straight edge.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       15       300.00       4,500.00       0.00								1. Sur
complete with tripod or similar.         - Survey umbrellas.       No.       2       4000.00       8,000.00       0.00         - 4m Levelling staves with bubble and case.       No.       5       4700.00       23,500.00       0.00         - 2.5m Ranging rods.       No.       20       300.00       6,000.00       0.00         - Im Stainless steel straight edge.       No.       2       2300.00       4,600.00       0.00         - 3m aluminium straight edge.       No.       3       2800.00       8,400.00       0.00         - 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       15       300.00       4,500.00       0.00	0	0.00	180,000.00	60000.00	3	No.	Carl Zeiss NI3 Automatic Engineers	
- Am Levelling staves with bubble and case.       No.       5       4700.00       23,500.00       0.00         - 2.5m Ranging rods.       No.       20       300.00       6,000.00       0.00         - Im Stainless steel straight edge.       No.       2       2300.00       4,600.00       0.00         - 3m aluminium straight edge.       No.       3       2800.00       8,400.00       0.00         - 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       15       300.00       4,500.00       0.00	0	0.00	610,000.00	305000.00	2	No.	Carl Zeiss TH2 single second theodolite complete with tripod or similar.	
case.         - 2.5m Ranging rods.       No.       20       300.00       6,000.00       0.00         - 1m Stainless steel straight edge.       No.       2       2300.00       4,600.00       0.00         - 3m aluminium straight edge.       No.       3       2800.00       8,400.00       0.00         - 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       2       6000.00       12,000.00       0.00         - 3m pocket tape.       No.       15       300.00       4,500.00       0.00	0	0.00	8,000.00	4000.00	2	No.	Survey umbrellas.	-
- Im Stainless steel straight edge.       No.       2       2300.00       4,600.00       0.00         - 3m aluminium straight edge.       No.       3       2800.00       8,400.00       0.00         - 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       2       6000.00       12,000.00       0.00         - 3m pocket tape.       No.       15       309.00       4,500.00       0.00	0	0.00	23,500.00	4700.00	5	No.		
- 3m aluminium straight edge.       No.       3       2800.00       8,400.00       0.00         - 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       2       6000.00       12,000.00       0.00         - 3m pocket tape.       No.       15       300.00       4,500.00       0.00	0	0.00	6,000.00	300.00	20	No.	2.5m Ranging rods.	-
- 30m steel white face tape.       No.       3       1600.00       4,800.00       0.00         - 100m steel band tape.       No.       2       6000.00       12,000.00       0.00         - 3m pocket tape.       No.       15       300.00       4,500.00       0.00	0	0.00	4,600.00	2300.00	2	No.	1m Stainless steel straight edge.	. –
- 100m steel band tape.       No.       2       6000.00       12,000.00       0.00         - 3m pocket tape.       No.       15       300.00       4,500.00       0.00	0	0.00	8,400.00	2800.00	. 3	No.	3m aluminium straight edge.	-
- 3m pocket tape. No. 15 300.00 4,500.00 0.00	0	0.00	4,800.00	1600.00	3	No.	30m steel white face tape.	
	0	0.00	12,000.00	6000.00	2	No.	100m steel band tape.	-
	0	0.00	4,500.00	300.00	15	No.	3m pocket tape.	· · -
- Steel tape repair outfit. No. 1 3000.00 3,000.00 0.00	0	0.00	3,000.00	3000.00	1	No.	Steel tape repair outfit.	<del>.</del>

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	GENERAL, APPENDIX TO ITEM 1.05						
ITEM NO.	DESCRIPTION			FOREIGN	ANOUNT	LOCAL	CURRENCY
· · · · · · · · · · · · · · · · · · ·	NOTE: The following equipment shall be purpose made for use in soils testing laboratory and shall comply with the relevant British (BS) or American (AASHTO) Standard.						
2.Comp	action Test (AASHTO T.99 and T.180)					. '	
	Compaction mould complete with base plate extension collar,101.6mm internal diameter x 116.43mm high.	No.	10	2557.00	25,570.00	0.00	0.00
-	2.495 kg compaction hammer,drop regulated to 304.8mm.	No.	5	2685.00	13,425.00	0.00	0.00
-	4.536 kg compaction hammer,drop regulated to 457.2mm.	No.	5	3133.00	15,665.00	0.00	0.00
-	Aggregate compaction mould to BS.5835 complete.	No.	10	3000.00	30,000.00	0.00	0.00
-	Loading frame for the Kango hammer (to BS.5835).	No.	1	100000.00	100,000.00	0.00	0.00
-	Electric vibrating Kango hammer with steel tamper.	No.	1	80986.00	80,986.00	0.00	0.00
-	Steel straight edge 300mm long x 25mm wide x 3mm thick.	No.	6	492.00	2,952.00	0.00	0.00
. <b>-</b>	Compaction mould 152.4mm dia.x 116.43mm high complete with base plate and extension collar.	No.	10	3452.00	34,520.00	0.00	0.00
.Dens	ity Test (Sand replacement method BS 1377	)					
	Galvanized metal tray 1m x 0.5m x 75mm deep.	No.	2	1304.00	2,608.00	0.00	0.00
· -	75mm brush.	No.	6	153.00	918.00	0.00	0.00
<del></del>	Semi-automatic balance,25 kg capacity, accurate to 1 g,including weights.	No.	2	76588.00	153,176.00	0.00	0.00
-	Metal containers,450mm dia.	No.	6	500.00	3,000.00	0.00	0.00
	Stainless steel tray,305mm dia.	No.	3	1854.00	5,562.00	0.00	0.00
	Metal tray with 100mm diameter hole in the centre,300mm x 300mm square.	No.	3	1036.00	3,108.00	0.00	0.00
-	Metal tray with 150mm diameter hole in the centre,300mm x 300mm square.	No.	3	1227.00	3,681.00	0.00	0.00
	Metal tray with 200mm diameter hole in the centre,457mm x 457mm square.	No.	3	1164.00	3,492.00	0.00	0.00
	Steel pegs for fixing tray in position.	No.	36	50.00	1,800.00	0.00	0.00
۰۰ ۳۰ م	Sand pouring cylinder,100mm diameter.	No.	3	9014.00	27,042.00	0.00	0.00
• •	Sand pouring cylinder,150mm diameter.	No.	3	11233.00	33,699.00	0.00	0.00

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## BILL OF QUANTITIES No.1

GENERAL,	APPENUIX	10	TIFW	1.05

ITEM NO.	DESCRIPTION		QUANTITY	FOREIGN ( RATE	CURRENCY Amount		CURRENCY
· · •	Sand pouring cylinder,200mm diameter.	No.	3	21097.00	63,291.00	0.00	0.00
-	Cold steel chisel,25mm x 300mm long.	No.	6	300.00	1,800.00	0.00	0.00
-	Cold steel chisel,10mm * 250mm long.	No.	δ	250.00	1,500.00	0.00	0.00
-	1.8 kg hammer.	No.	6	288.00	1,728.00	0.00	0.00
-	Scoop for removing excavated material from hole,250mm long handle.	No.	6	500.00	3,000.00	0.00	0.00
-	100nm brush.soft.	No.	6	256.00	1,536.00	0.00	0.00
-	Metal dibber	No.	6	577.00	3,462.00	0.00	0.00
-	Screper	No.	6	577.00	3,462.00	0.00	0.00
-	Steel pointed rod	No.	6	433.00	2,598.00	0.00	0.00
-	Density spoon	No.	6	87.00	522.00	0.00	0.00
	50mm brush, soft.	No.	6	153.00	918.00	0.00	0.00
-	Calibrating can,100mm diameter x 150mm deep.	No.	3	2270.00	6,810.00	0.00	0.00
-	Calibrating can,150mm diameter x 200mm deep.	No.	3	5050.00	15,150.00	0.00	0.00
-	Calibrating can,200mm diameter x 250mm deep.	No.	3	6713.00	20,139.00	0.00	0.00
-	Polythene container jars,with neck 125mm diameter and 4 litre capacity.	No.	6	211.00	1,266.00	0.00	0.00
-	Standard sand 600/300 micron,50kg bag.	No.	10	200.00	2,000.00	0.00	0.00
Dens	ity(Nuclear Density Method, AASHTO T238)			:			
	Nuclear moisture/density guage (Troxler 3411B or similar approved).	No.	1	500000.00	500,000.00	0.00	.00
_	Hole forming device.	No.	1	10000.00	10,000.00	0.00	0.00
· ••	Guide for the above.	No.	1	6000.00	6,000.00	0.00	0.00
Atte	rberg Limits Apparatus to BS 1377						
	Casagrande liquid limit apparatus.	No.	4	7352.00	29,408.00	0.00	0.00
	Grooving tool.	No.	4	614.00	2,456.00	0.00	0.00
_	Liquid limit penetrometer.	No.	2	25892.00	51,784.00	0.00	0.00
-	Penetration test cone.	No.	2	1310.00	2,620.00	0.00	0.00
· _	Penetration sample cap.	No.	2	102.00	204.00	0.00	0.00
· · ·	Linear shrinkage mould.	No.	20	1227.00	24,540.00	0.00	0.00
~	Vernier caliper,150mm x 0.1mm.	No.	2	1600.00	3,200.00	0.00	0.0
 . <del>.</del>	Stainless steel,3mm dia.and 100mm long.	No.	4	400.00	1,600.00	0.00	0.00

E- 3 -1

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ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN		LOCAL C	URRENCY
	l Equivalent						
-	Sand equivalent test set.	Set	2	16622.00	33,244.00	0.00	0.00
.Spec	ific Gravity (85.1377 and 85.812) Water Absorption(Rice Test ASIM D2041-78)						
	Pycometer for sands and fine aggregate, 1 kg capacity,complete with cone and rubber seal.	No.	10	462.00	4,620.00	0.00	0.00
	Glass Plastic or metal bowl having a capacity of at least 1000 ml strong enough to wishstand a full vacuum complete with cover fitted with rubber gasket and a hose connection.	No.	10	2283.00	22,830.00	0.00	0.00
-	Volumetric flask having a capacity of at least 1000 ml strong enough to wishstand a full vacuum complete with rubber stopper and a hose connection.	No.	10	4566.00	45,660.00	0.00	0.0
-	An intermediate size heavy wall glass pycnometer having a capacity of approximately 4000 ml or a large size polycarbonate plastic pycnometer having a capacity of at least 10000 ml complete with a suitable vacuum connection assembly consisting of a vacuum gauge, release valve, and tubing connector, plus a tapered stopper device for maintaining consistent volume regulation		10	7990.00	79,900.00	0.00	0.0
-	A manometer or vacuum gauge suitable for measuring the specified vacuum.	No.	i	21918.00	21,918.00	0,00	0.0
	Gay Lussac-specific gravity bottle,25ml.	No.	10	1034.00	10,340.00	0.00	0.0
-	Gay Lussac-specific gravity bottle,50ml.	No,	10	1034.00	10,340.00	0.00	0.0
-	Wire mesh basket with appertures not greater than 6.5mm large enough to take 2.5 kg of aggregate	No.	1	5000.00	5,000.00	0.00	0.0
-	Stout watertight container in which the basket can be freely suspended under water.	No.	1	5000.00	5,000.00	0.00	0.0
-	End-over-end shaker	No.	1	231040.00	231,040.00	0.00	0.0
-	Gas jar,300mm high x 75mm dia. with glass plate and rubber stopper.	No.	10	1964.00	19,640.00	0.00	0.0
-	Vaccume type dessicator,200mm dia.	No.	2	10397.00	20,794.00	0.00	0.0
· -	Vaccume pump,1 HP	No.	1	29458.00	29,458.00	0.00	0.0
	Rubber headed pestel	No.	2	635.00	1,270.00	0.00	0.0
•	Soft absorbent cloth (tee towel).	No.	20	230.00	4,600.00	0.00	0.0
· · · -	Shallow tray of area not less than 0.065m2.	No.	2	500.00	1,000.00	0.00	0.0
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ITEM NO.	DESCRIPTION	UNIT	QUANTITY		CURRENCY AMOUNT	LOCAL CU RATE	
-	Airtight container of similar capacity to the basket.	No.	1	8000.00	8,000.00	0.00	0.00
	5 kg balance accurate to 0.1 g capable of suspending the basket plus sample in the watertight container.	No.	1	89195.00	89,195.00	0.00	0.00
-	Hair drier	No.	1	6000.00	6,000.00	0.00	0.00
-	Sand absorption cone and tamper	No.	2	2166.00	4,332.00	0.00	0.00
-	Picometer for the above.	No.	2	1300.00	2,600.00	0.00	0.00
8.Flak	iness Index (BS.812)						
-	Flakiness sieve,4.9 x 30mm slot.	No.	2	2110.00	4,220.00	0.00	0.00
-	Flakiness sieve,7.2 x 40mm slot.	No.	2	2110.00	4,220.00	0.00	0.00
-	Flakiness sieve,10.2 x 50mm slot.	No.	2	2110.00	4,220.00	0.00	0.00
-	Flakiness sieve,14.4 x 60mm slot.	No.	2	2110.00	4,220.00	0.00	0.00
-	Flakiness sieve,19.7 x 80mm slot.	No.	2	2110.00	4,220.00	0.00	0.00
· .	Flakiness sieve,26.3 x 90mm slot.	No.	2	2110.00	4,220.00	0.00	0.00
<b>.</b> .	Flakiness sieve,33.9 x 100mm slot.	No.	2	2110.00	4,220.00	0.00	0.00
9.Siev	e Analysis (BS.1377)						
-	BS sieve 300mm diameter in sizes 75,63, 50,37.5,28,20,14,6.3,5 and 3.35mm plus lid and receiver.	Set	4	40468.00	161,872.00	0.00	0.00
	BS sieve 200mm diameter in sizes 2,1.18, 0.6,0.425,0.300,0.212,0.150, 0.075 and 0.063mm plus lid and receiver.	Set	4	19051.00	76,204.00	0.00	0.00
. <b></b>	Electric sieve shaker.	No.	1	67766.00	67,766.00	0.00	0.00
	BS sieve 200mm diameter,0.425 and 0.075mm.	Set	10	4571.00	45,710.00	0.00	0.00
· _	Field rocker sieve set	Set	4	52995.00	211,980.00	0.00	0.00
	e Martine and a state of the second				:		
	Test(AASHTO T.193)			8540 AA	100 100 00	0.00	0.00
- -	CBR mould,152mm dia. x 178mm high, complete with perforated base plate and extension collar 50.8mm high that can be fitted to either end of the mould.	No.	30	3548.00	106,440.00	0.00	0.00
-	Spacer disk.	No.	6	1630.00	9,780.00	0.00	0.00
*. <del>•</del>	Perforated swell plate with adjustable centre post of rust prooted steel provided with a lock nut.	No.	6	1694.00	10,164.00	0.00	0.00

0.00

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3,549.00

28,770.00

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#### BILL OF QUANTITIES NO.1 GENERAL, APPENDIX TO ITEM 1.05 ....................... ----------

- Sliding weight rammer,2.49kg.

- 2.27 kg annular surcharge weight.

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TEM NO.	DESCRIPTION		QUANTITY	FOREIGN RATE	CURRENCY Amount	LOCAL C RATE	CURRENCY Amount
	Static compaction press,50 tonnes capa. with an adjustable platten speed between 1mm/min. and 50.8mm/min.(Hydraulic or mechanical operation and hand operated).	No.	1	112517.00	112,517.00	0.00	0.0
	Set of guards.	No.	1	8694.00	8,694.00	0.00	0.0
-	CBR/Marshall motorised dual speed 60kN load frame,ASTM.	No.	1	92699.00	92,699.00	0.00	0.00
	Stabilising bar for the above.	No.	1	20000.00	20,000.00	0.00	0.00
-	Proving ring for above,10 kN and 50 kN capacity.	Set	1	27234.00	27,234.00	0.00	0.0
-	Penetration gauge range 0-25mm.	No.	1	2525.00	2,525.00	0.00	0.0
-	CBR piston, including bracket.	No.	1	3037.00	3,037.00	0.00	0.0
-	Swell measurement tripod complete with gauge calibrated in 0.01mm divisions.	No.	30	4187.00	125,610.00	0.00	0.0
• •	Soaking tank for CBR mould sufficient for 200 moulds.	No.	1	23168.00	23,168.00	0.00	0.0
-	Tamping bar,steel 13mm diameter, 380mm long.	No.	i	448.00	448.00	0.00	0.0
1.Mis	cellaneous Equipment						
	1m x 1m x 75mm deep galvanised metal tray.	No.	10	2365.00	23,650.00	0.00	0.00
-	1.5 kg hammer.	No.	4	288.00	1,152.00	0.00	0.00
-	Riffle box with 10mm slots (BS.1377).	No.	2	7543.00	15,086.00	0.00	0.0
	Riffle box with 20mm slots (85.1377).	No.	1	9114.00	9,114.00	0.00	0.0
-	Riffle box with 50mm slots (8S.1377).	No.	1	10633.00	10,633.00	0.00	.0.0
	Wheel barrow.	No.	4	2046.00	8,184.00	0.00	0.0
-	Dustpan brush.	No.	. 4	100.00	400.00	0.00	0.0
-	Plastic funnels,65mm dia	No.	2	52.00	104.00	0.00	0.0
·	Plastic funnels,100mm dia.	No.	2	101.00	202.00	0.00	0.0
-	Plastic funnels,140mm dia.	No.	2	173.00	346.00	0.00	0.0
-	Shove 1.	No.	6	250.00	1,500.00	0.00	0.0
	Pick-axe.	No.	6	479.00	2,874.00	0.00	0.0
- <b>-</b> -	Metal scoop,large,150mm wide.	No.	4	600.00	2,400.00	0.00	0.0
• -	Metal scoop,medium,100mm wide.	No.	6	400.00	2,400.00	0.00	0.0
-	Schmidt concrete test hammer.	No.	1	12530.00	12,530.00	0.00	0.0
	Jack,20 tonne,lever,frame,sample extrud.	No.	1	7160.00	7,160.00	0.00	0.0
	Garden trowel.	No.	4	250.00	1,000.00	0.00	0.0

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ITEM NO.	DESCRIPTION		QUANTITY	FOREIGN ( RATE	CURRENCY Amount	LOCAL RATE	CURRENCY AMOUNT
	- Steel rule,500mm long.	No.	3	300.00	900.00	0.00	0.00
	- Stop watch.	No.	1	3000.00	3,000.00	0.00	0.00
	- Steel tray,0.3m x 0.3m x 0.01m deep.	No.	40	607.00	24,280.00	0.00	0.00
	- 3.5 kg hammer.	No.	4	1022.00	4,088.00	0.00	0.00
	- 7 kg hammer.	No.	3	4571.00	13,713.00	0.00	0.00
	- Complete sand patch test apparatus.	No.	1	0.00	0.00	0.00	0.00
. •	- Cold chisel.	No.	6	300.00	1,800.00	0.00	0.00
	- Oven,electric thermostatically controled to any temperature between 60 deg. and 149 deg.C,minimum capacity including dial thermometer range 0-160 deg.C (BS.1377).	No.	2	69684.00	139,368.00	0.00	0.00
	- Gas for the above oven.	No.	2	30000.00	60,000.00	0.00	0.00
	- Single plate electric cooker.	No.	4	3069.00	12,276.00	0.00	0.00
·. •	- 3 metre straight edge including calibrated wedges.	No.	1	12211.00	12,211.00	0.00	0.00
	- Dessicator,300mm dia.	No:	2	13862.00	27,724.00	0.00	0.00
	- Streight edge,300mm long,25mm wide and 3mm thick.	No.	6	722.00	4,332.00	0.00	0.00
	- Moisture content tin,75mm dia.cadmium plate or alminium.	No.	100	100.00	10,000.00	0.00	0.00
	- Concrete beam moulds 150 x 150 x 750mm.	No.	24	15663.00	375,912.00	0.00	0.00
	- 450nm x 450nm x 9nm plate glass (85.1377).	No.	4	1471.00	5,884.00	0.00	0.00
	- Refrigerator 250 litre capacity.	No.	1	30000.00	30,000.00	0.00	0.00
•	- Palette knife 200mm blade.	No.	6	428.00	2,568.00	0.00	0.00
÷	- Palette knife 100mm blade.	No.	6	313.00	1,878.00	0.00	0.00
-	- BS Sieve brush.	No.	8	211.00	1,688.00	0.00	0.00
-	- 200mm x 200mm x 20mm cadmium plated or aluminium tin.	No.	50	352.00	17,600.00	0.00	0.00
•	- Electronic balance capacity 600 g, accurate to 0.001 g.	No.	1	98836.00	98,836.00	0.00	0.00
•	- Electronic balance capacity 1600 g, accurate to 0.01 g.	No.	1	72880.00	72,880.00	0.00	0.00
•	- Electronic balance capacity 5000 g, accurate to 0.1 g.	No.	1	58841.00	58,841.00	0.00	0.00
•	- Balance (Chain dial) 250 g capacity to 0.01 g.	No.	1	21193.00	21,193.00	0.00	0.00
-	Balance 2000 g capacity accuracy to 0.1 g (manual), including weights.	No.	1	13873.00	13,873.00	0.00	0.00

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GENERAL, APPENDIX	10	1116	1.02

ITEM NO.	DESCRIPTION		QUANTITY		CURRENCY Amount	LOCAL RATE	CURRENCY Amount
	- Balance 4000 g capacity accuracy to 1.0 g (manual),including weights.	No.		30000.00	30,000.00		0.0
	- Balance 12000 g capacity accuracy to 1.0 g (manual),including weights.	No.	2	97653.00	195,306.00	0.00	0.0
	<ul> <li>Balance 50 kg capacity accurate to 20 g, including weights.</li> </ul>	No.	1	28449.00	28,449.00	0.00	0.0
	- Load rings with dial gauges,10kN	No.	1	13297.00	13,297.00	0.00	0.0
	- Load rings with dial gauges,14kN	No.	1	13937.00	13,937.00	0,00	0.0
	- Load rings with dial gauges,20kN	No.	1	13937.00	13,937.00	0.00	0.0
	- Load rings with dial gauges,28kN	No.	1	13937.00	13,937.00	0.00	0.0
	- Load rings with dial gauges,50kN	No.	1	14576.00	14,576.00	0.00	0.0
•	- Still for producing distilled water.	No.	1	32093.00	32,093.00	0.00	0.0
	<ul> <li>Polythene or glass 20 litres storage vessel with tap at bottom.</li> </ul>	No.	1	3197.00	3,197.00	0.00	0.0
	- Petrol driven core cutting machine with all accessaries.	No.	1	247665.00	247,665.00	0.00	0.0
	- Core cutting compound.	kg	1,000	₹92.00	92,000.00	0.00	°0.0
	- Vernier calipers,250mm.	No.	2	1982.00	3,964.00	0.00	0.0
	- Benkelman beams.	No.	2	59135.00	118,270.00	0.00	0.0
	- Average least dimension gauge.	No.	2	3000.00	6,000.00	0.00	0.0
· · · · ·	<ul> <li>Lockable tool box containing:</li> <li>1 pair "Molegrips",2 x 150mm screwdriver</li> <li>2 * 200mm screwdriver,2 x 300mm screwdriver,(1 Standard and 1 phillips head of each) adjustable spanners 200mm and 300mm,1 pair roundnosed pliers,1pair general purpose pliers,1 plastic faced mallet (1 kg),1 set imperial spanners 1/4" to 15/16",1 set metric spanners 8mm to 20mm,2 tyre pressure gauge range 0-100 p.s.i.</li> </ul>		1	9781.00	9,781.00	0.00	0.0
•	- Plastic or metal bucket including lid, 10 litres capacity.	No.	20	256.00	5,120.00	0.00	0.0
	- Polythene wash bottle (500ml).	No.	10	150.00	1,500.00	0.00	0.0
	- A4 size clipboard.	No.	20	100.00	2,000.00	0.00	0.(
	<ul> <li>Mercury thermometer, range -10 deg.C to 150 deg.C.glass (85.593).</li> </ul>	No.	10	300.00	3,000.00	0.00	0.0
: . · ·	- Laboratory thermometer, range +50 deg.C to 250 deg.C (BS.593).	No.	1	300.00	300.00	0.00	0.(
•	- Maximum and minimum thermometer (BS.692)	No.	1	467.00	467.00	0.00	0.0
•	- Rain gauge.	No.	3	2557.00	7,671.00	0.00	0.0

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	GENERAL, APPENDIX TO ITEM 1.05						
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN ( RATE	CURRENCY Amount	LOCAL C RATE	URRENCY AMOUNT
	- Portable dial thermometer +50 deg.C to 250 deg.C accurate to + - 3% with 0.6m long stem.	No.	2	4475.00	8,950.00	0.00	0.00
• •	- Pocket dial thermometer +50 deg.C to +250 deg.C accurate to + - 3% with 0.1m long stem.	No.	10	1084.00	10,840.00	0.00	0.00
	<ul> <li>5 litre capacity steel storage container with leak and dust proof lids for storage of bitumen samples.</li> </ul>	No.	100	400.00	40,000.00	0.00	0.00
12.Sta	andard Spcifications						÷
÷	NOTE: Cpoies of each of the following Standard Spcifications:-						
	- BS.812	No.	1	30047.00	30,047.00	0.00	0.00
	- BS.882	No.	1	1438.00	1,438.00	0.00	0.00
. •	- BS.1377	No.	1	33371.00	33,371,00	0.00	0.00
• . •	- BS.1881	No.	1	29919.00	29,919.00	0.00	0.00
•	- 85.1924	No.	1	1694.00	1,694.00	0.00	0.00
	- 8\$.5835,Part 1	No.	1	1694.00	1,694.00	0.00	0.00
•	- Standard Specifications for Transporta- tion Material and Methods of Sampling and Testing (AASHTO) Part I and II,13th Edition.	No.	1	23015.00	23,015.00	0.00	0.00
13.Co	ncrete:Slump and Cube Manufacture(BS 1881)			· .			
	- Slump cone, tamping rod and base.	Set	2	2122.00	4,244.00	0.00	0.00
	- Concrete cube mould,150mm.	No.	20	3452.00	69,040.00	0.00	0.00
	- Soaking tank for cubes, capacity 50 Nos.	No.	1	37463.00	37,463.00	0.00	0.00
	- Cube tamping bars for Item 1.252.	No.	1	230.00	230.00	0.00	0.00
. ·	- Water test set for concrete mixing water.	No.	1	74510.00	74,510.00	0.00	0.00
	- Potential alkali reactivity of cement- aggregate combinations.	No.	1	0.00	0.00	0.00	0.00
. <b>-</b>	- Mortar bar container.	No.	3	0.00	0.00	0.00	0.00
14.Con Lea	ncrete:Cube Compression Testing and an Concrete Unconfined Compressive Strengt	h Ťest	ing				
· · · ·	- Concrete compression machine,to BS.1610 Grade A with 300mm gauge, rectangular plattens,capacity 1560 kN with load pacer.	No.	1	227655.00	227,655.00	0.00	0.00
•	- Safety guard for Item 1.255.	No.	1	4667.00	4,667.00	0.00	0.00

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BILL OF QUANTITIES No.1

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GENERAL, APPERUL	K 10	1151	1.05	

ITEM NO.	DESCRIPTION		QUANTITY	FOREIGN ( RATE	CURRENCY AMOUNT	LOCAL RATE	CURRENCY Amount
·	50mm distance piece.	No.	1	5000.00	5,000.00	0.00	0.00
-	70mm distance piece.	No.	1	6500.00	6,500.00	0.00	0.00
-	100mm distance piece.	No.	1	6500.00	6,500.00	0.00	0.00
-	Mechanical load pacer.	Χο.	1	30686.00	30,686.00	0.00	0.00
	Tamping rod,16mm dia.x 600mm long.	No.	2	578.00	1,156.00	0.00	0.00
	Tamping bar, 380mm x 25mm square.	No.	2	1444.00	2,888.00	0.00	0.00
	Tamping rod,10mm dia.x 250mm long.	No.	2	578.00	1,156.00	0.00	0.00
-	Electric vibrating hammer 750 watt with tamping food square.	No.	1	375440.00	375,440.00	0.00	0.00
15.Pot Agg	ential Alkali Reactivity of Cement- regate Combination and Mortar Bar Contain	er				·	
	Comparator mould(25.4 x 25.4 x 285mm)	No.	3	20216.00	60,648.00	0.00	0.00
-	Length comparator	No.	1	98480.00	98,480.00	0.00	0.00
· <u>-</u>	ASTM type flow table	No.	1	64691.00	64,691.00	0.00	0.00
-	Curing box(60 x 40 x 60cm)	No.	1	209669.00	209,669.00	0.00	0.0
-	Concrete consistency apparatus	No.	1	1444.00	1,444.00	0.00	0.0
•	Mortar mixer	No.	1	216600.00	216,600.00	0.00	0.0
6.Mar	shall Stability Test Equipment(AASHTO T 2	45)					
-	Specimen mould including base plate and extension collar.	Ņo.	10	2397.00	23,970.00	0.00	0.0
-	Specimen extractor.	No.	1	4000.00	4,000.00	0.00	0.0
•	Compaction hammer.	No.	2	7352.00	14,704.00	0.00	0.0
-	Compaction pedestal and specimen mould holder.	No.	2	21896.00	43,792.00	0.00	0.0
-	Breaking head mould.	No.	1	9000.00	9,000.00	0.00	0.0
-	CBR/Marshall motorised dual speed 60 kN load frame,ASIM.	No.	1	101265.00	101,265.00	0.00	0.0
	Electrically operated laboratory mixer 10 litre capacity:	No.	1	97813.00	97,813.00	0.00	0.0
	Flowmeter.	No.	2	4603.00	9,206.00	0.00	0.0
	Suitable mechanical mixer.	No.	1	60000.00	60,000.00	0.00	. 0.0
	Water bath with cover at least 150mm deep thermostatically controlled to maintain the temperature of the water at 60 deg.C + $-1$ deg.C.The tank shall have a perforated false bottom or be equipped with a shelf for supporting specimens 50mm above the bottom of the bath.	No.	2	24613.00	49,226.00	0.00	0.0

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# BILL OF QUANTITIES No.1

	GENERAL, APPENDIX TO ITEM 1.05						
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	FOREIGN ( RATE	CURRENCY Amount	LOCAL CU RATE	RRENCY Amount
•	- Isomantle electric heater for bowl of laboratory mixer.	No.	1	59212.00	59,212.00	0.00	0.00
	- Thermometer with 50mm dia. and 180mm stainless steel stem (50 to 250 deg.C).	No.	1	4475.00	4,475.00	0.00	0.00
	- ASTM Marshall automatic compactor, electric.	No.	• 1	115074.00	115,074.00	0.00	0.00
	tumen Extraction Test						
1	<pre>(1) Extractor Bottle Method,B.S.598, Part 2</pre>				·		···
-	- Flat bottomed scoop.	No.	2	1634.00	3,268.00	0.00	0.00
•	- Steel garden trowel.	No.	2	720.00	1,440.00	0.00	0.0
	- Large steel spoon.	No.	2	187.00	374.00	0.00	0.0
-	- Water resistant gloves.	Pair	3	290.00	870.00	0.00	0.0
-	- Foot pump for pressurising air-water assemblies upto a maximum of 700kN/m2 and fitted with flexible hose approxi- mately 1.2m long and connector.	No.	1	17450.00	17,450.00	0.00	0.0
•••••••••••••••••••••••••••••••••••••••	- Steel bottle 600ml capacity with 49mm rubber stopper.	No.	1	1467.00	1,467.00	0.00	0.0
	- Steel bottle 2500ml capacity with 71mm rubber stopper.	No.	2	1973.00	3,946.00	0.00	0.0
	- Steel bottle 7000ml capacity with 71mm rubber stopper.	No.	1	2195.00	2,195.00	0.00	0.0
	- Flash funnel fpr fitting to the 700ml steel bottles. The rim of the funnel retains a sieve 200mm nominal diameter.	No.	<b>1</b>	2195.00	2,195.00	0.00	0.0
	<ul> <li>Bottle roller-A compact bench mounted unit designed to rotate two bottles simultaneously about their longitudinal axis.</li> </ul>	No.	1	24436.00	24,436.00	0.00	0.0
	- Pressure filter complete with cutting tool for making a hole in the filter paper.	No.	1	52307.00	52,307.00	0.00	0.0
•	- Filter funnel to take 200mm nominal diameter sieves.	No.	1	2195.00	2,195.00	0.00	0.0
	- Centrifuge complying with as BS 598.	No.	- 1	24382.00	24,382.00	0.00	0.0
	- Binder recovery apparatus.	No.	1	36732.00	36,732.00	0.00	0.0
•	- Volumetric flask 250ml,500ml,1000ml and 2000ml capacity of each.	No.	2	2561.00	5,122.00	0.00	0.0
•	- Recovery still for Dichloromethane.	No.	1	60000.00	60,000.00	0.00	0.0
	(2) Hot Extractor Method, B.S.596, Part 2						

Part 2

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## BILL OF QUANTITIES No.1

GENERAL, APPEND	IX TO	ITEM	1.05	

TEM 10.	DESCRIPTION	UNIT	QUANTITY	FOREIGN RATE	CURRENCY AMOUNT	LOCAL C RATE	URRENCY Amount
	<ul> <li>Hot extractor complete with wire qauze container,gasket,cork lid and support assembly.</li> </ul>	No.	1	11936.00	11,936.00	0.00	0.(
	- Dean and Stark Receiver with condenser to suit Trichloroethylene.	No.	- 1	3461.00	3,461.00	0.00	0.
B.Cor	nsumables					•	
	- Paraffin wax.	kg	50	15.00	750.00	0.00	0.0
-	- Gas.	kg	1,600	26.00	41,600.00	0.00	0.
	- Gunny sack.	No.	400	35.00	14,000.00	0.00	0.
•	- Plastic bag,900 x 450mm x 1000 gauge.	No.	2,000	19.00	38,000.00	0.00	0.
•	- Plastic bag,450 x 300mm x 1000 gauge.	No.	1,000	8.00	8,000.00	0.00	0.
•	- Filter paper 150mm dia.,Whatman No.5 (Boxes of 100).	No.	10	346.00	3,460.00	0.00	0.
	- Filter paper 400mm dia.,Whatman No.5 (Boxes of 100).	No.	5	381.00	1,905.00	0.00	0.
•	- Filter paper 100mm dia.,Whatman No.5 (Boxes of 100).	No.	5	346.00	1,730.00	0.00	0.
	- Trichloroethylene (205 litre drum).	No.	2	25836.00	51,672.00	0.00	0.
•	- Dichloromethane (275 kg drum).	No.	2	16437.00	32,874.00	0.00	0.
-	- Cotton waste (or drying cloths).	kg	100	78.00	7,800.00	0.00	0
-	<ul> <li>Filter paper 270mm dia.,33mm with dia.</li> <li>hole in centre,Whatman No.5 (Box of 100)</li> </ul>	No.	15	346.00	5,190.00	0,00	. 0
	- Filter paper 400mm diameter Whatman No.54 (Box of 100).	No.	10	381.00	3,810.00	0.00	0.
	- Registration paper for compaction test.	sheet	1,000	10.00	10,000.00	0.00	0
	- Moisture-density relation test plot paper.	sheet	1,000	10.00	10,000.00	0.00	0.
•	- Registration paper for Atterberg Limits.	sheet	1,000	10.00	10,000.00	0.00	0
•	- Registration paper for Particle size analysis.	sheet	1,000	10.00	10,000.00	0.00	0.
	- Registration paper for CBR.	sheet	1,000	10.00	10,000.00	0.00	0
	Subtotal(Labo.Equipment,Item 2 to 18)				7,882,672.00		0
	Total(Item 1 to 18)				8,747,472.00		0

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# APPENDIX F

# EXTERNAL LABORATORY TEST (GENERAL )

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### BILL OF QUANTITIES No.1 GENERAL, APPENDIX TO ITEM

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TEM NO.	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT SHILLINGS CT
	Item Prime Cost Sum of the external laborator test as listed in the Special Specification.	ry			
	(1) Los Angeles Abrasion (AASHTO T96 and ASTM C535).	No.	10	260.00	2,600.00
	(2) Aggregate Crushing Value (BS.812).	No.	10	280.00	2,800.00
	(3) Sodium Sulphate Soundness (AASHTO T104).	No.	10	220.00	2,200.00
	(4) Crushing Ratio.	No.	10	220.00	2,200.00
	(5) Solube Chloride Content (BS.812).	No.	10	110.00	1,100.00
	(6) Organic Impurities in sand (AASHTO T21).	No.	20	110.00	2,200.00
• .	Total				13,100.00
	Item Overhead and profit 40%				5,240.0

Overhead and profit, 40%

5,240.00

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	BILL OF QUANTITIES No.1 GENERAL, APPENDIX TO ITEM 1.06/1.07						Estimated at VAT exemption.
TEN No.	DESCRIPTION	UNIT	QUANTITY	RATE	CURRENCY ANOUNT	LOCAL Rate	CURRENCY Amount
	Item 1.06 Prime Cost Sum of the external laborator test as listed in the Special Specification.						
	(1) Los Angeles Abrasion (AASHTO T96 and ASTN C535).	No.	10	0.00	0.00	260.00	2,600.00
	(2) Aggregate Crushing Value (BS.812).	No.	10	0.00	0.00	280.00	2,800.00
	(3) Sodium Sulphate Soundness (AASHTO T104).	No.	10	0.00	0.00	220.00	2,200.00
	(4) Crushing Ratio.	No.	. 10	0.00	0.00	220.00	2,200.00
	(5) Solube Chloride Content (BS.812).	No.	10	0.00	0.00	110.00	1,100.00
	(6) Organic Impurities in sand (AASHTO T21).	No.	20	0.00	0.00	110.00	2,200.00
•	Total		·		0.00		13,100.0
.: · · ·	Item 1.07 Overhead and profit,40%				0.00		5,240.00
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## APPENDIX G ENGINEERING SERVICES

# ENGINEERING COST

A.Foreign Currency Portion	Foreign Currency (Japanese Yen)	Local Currency (Kenya Shillings)
1.Remuneration 2.Direct Cost 3.Contingency	271,400,000 58,400,000 16,490,000	0 0 0
<b>B.Local Currency Portion</b>		
1.Direct Cost 2.Contingency	0 0	7,972,000 398,600
Total	346,290,000	8,370,600
	(K.Shs.) 79,061,644	

BREAKDOWN		Foreign Currency (Japanese Yen)
A.Foreign Currency Portion		(dapanese ren)
1.Remuneration		271,400,000
1.1 Expartriate	2,700,000 x 32 2,200,000 x 58	86,400,000 127,600,000
1.2 Local	700,000 x 77	57,400,000
2.Direct Cost	· .	58,400,000
2.1 International Travel Co	st	
(1) International Airfair	1,000,000 x 11 trips	11,000,000
(2) Excess Baggage	10,000 x 20kg x 2 x 11 trips	4,400,000
(3) Mobilization Cost Passport,visa,etc.	100,000 x 11 trips	1,100,000
2.2 International Communicat	tion Cost	
	200,000 x 30 months	6,000,000
2.3 International Transport	ation cost	
(1) Air Cargo	2,200 x 500kg	1,100,000
(2) DHL Services	10.000 x 5kg x 1 x 30 months	1,500,000
2.4 Office Supplies	50,000 x 30 months	1,500,000
2.5 Printing Cost		2,000,000
2.6 Overseas Allowance	11,000 x 90 M/M x 30 days	29,700,000
2.8 Custom Clearance		100,000
3.Contingency (Remuneration+Direct cost	,5%)	16,490,000
Total(Foreign Currency)		346,290,000

**B.Local Currency Portion** 

1.Direct Cost		7,972,000
1.1 Office Rental in Nairobi	K.22,000 x 4 months	88,000
1.2 Domestic Communication and Transportation Cost	K.5,000 x 30 months	150,000
1.3 Vehicle Rental Rate	K.40,000 x 1 units x 2 months	80,000
1.4 Office Supplies and Consumables	K.10,000 x 30 months	300,000
1.5 Procurement of Office Equipment in Kenya		200,000
1.6 Salary of Local Staff		
Chief inspector Surveyor Inspector Draftman Clerk Typist Office boy/Watchman Admini. assist. Admini. officer Labo.technician	50,000 x 30 M/M 20,000 x 2 x 26 M/M 20,000 x 4 x 30 M/M 8,000 x 1 x 28 M/M 5,000 x 1 x 30 M/M 7,000 x 2 x 30 M/M 2,500 x 2 x 30 M/M 5,000 x 1 x 30 M/M 10,000 x 1 x 30 M/M 10,000 x 3 x 26 M/M	$\begin{array}{c} 1,500,000\\ 1,040,000\\ 2,400,000\\ 224,000\\ 150,000\\ 420,000\\ 150,000\\ 150,000\\ 150,000\\ 300,000\\ 780,000 \end{array}$
(Subtotal)		7,114,000
1.7 Cost of Work Permit	10,000 x 4 persons	40,000
2.Contingency (Direct cost,5%)		398,600
Total(Local Currency)		8,370,600

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## APPENDIX H LAND ACQUISITION AND COMPENSATION

### LAND AQUISITION AND COMPENSATION

The cost for land aquisition and compensation was estimated on the Preliminary Design stage.

Land value was obtained from Ministry of Land and Housing on September 3,1990. The detailed breakdown is shown in the Pleliminary Design (COST ESTIMATE,October 1990) Report.

1. Preliminary Design

- Government land	: Free of charge.
- Private land	: K.Shs. 66,602,700
- Agricultural land	: K.Shs. 6,153,000
- Housing	: K.Shs. 26,468,000
- Others	: K.Shs. 2,468,800
Total	K.Shs.101,871,200

2. Detailed Design

Land value is reviewed and increased to about 30 % from the Preliminary Design stage.

Land aquisition and compensation

K.Shs.101,871,200 x 1.30= K.Shs.132,432,560

(K.Shs.132,400,000)

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UNIT PRICE LIST

APPENDIX I

BILL OF QUANTIFIES No.1 GENERAL

	acticity.						CIICULATION	.ciicu
NO.	DESCRIPTION	LINU	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
1.01	Representative and his staff houses:			00 00000			000000	
.1	(1) Type 1 (senior staff house), INO.	Month	0.0	22000.00	22000.00	0.0	22000.00	22000-00
	(2) Type 11 (Selilor Stait House), 2005.	Month Month		12000 00		32	00-000/T	00,00011
•	(3) Type 114 (Junior Staff house) 5005.	Month	80	12000.00	14000-00	00.0		7500 00
1_03	Furineer's main office	In the second	567000 00	567000 00	13	200	567000 00	1134000 00
1.03	Laboratory	22	347000-00	347000.00		00.0	347000.00	694000.00
1.04	Furniture and office equipment	L.S.	747300.00	259500.00		00.00	259500.00	1006800.00
1.05	Survey and laboratory equipment	L-S-J	8747472.00	00.0	1.1	0.0	0.0	8747472.00
1.06	One (1) new 504 Peugeot	Veh M	0.00	40000.00	40000.00	00.00	40000-00	40000.00
1.07	3 1 0 5	E N N	00.0	6.00	6.00	0.0	6.00	00.9
88	Three (3) new LWB 4HD Land Rovers	Ven M	00.0	44000.00	44000.00	00.0	44000.00	44000.00
1.09	E.U. Item 1.08 for distance in excess	E X	00.0	11.50	11.50	00.0	11.50	11.50 20000-00
07.1	inree (J) new Subaru	ven.m	0.00	38000.00	26000.00	0. UU	38000-00	2000.00
1-11	E.O.Item 1.10 for distance in excess	E <u>y</u>	0.00	7.00	1.00	0.00	7-00	7.00
77-7	recommendate and a relations	( (	6					1000000
	1 lelecommunication line		8.0			0.0		
	2 Lister vine line		32				460000 00	4600000.00
	(4) Railway			450000.00		000	4500000.00	4500000.00
	(5) Sewerade Dipe line	د. م	00.0	1600000.00		0.00	1600000.00	1600000.00
	(6) Existing street lighting	с п	0.00	100000.00		0.00	100000.00	100000.00
	(7) Electrič fence	ບ. ເ	0.00	500000.00		00-00	500000.00	500000.00
	(8) Fence	Ч	00.00	300000-00	300000-00	0.00	300000.00	300000-00
21-1	Percentage of P.L.Sum in Item 1.12	201 201		00 0000000		000	00 0000000	200000 00
	P.L. Dum, compensation and aquisition Derrentare of D.C.sum in [tem 1 14	ۍ. مور	0.00	3000000.00	2000000-00	00.00	2000000-00	00.000000
91.1	P.C.Sum, Miscellaneous account		00-00	600000.00	600000.00	0.00	600000.00	600000.00
1.1	Percentage of P.C.Sum in Item 1.15	% 55	00 0	26000 00		000	0000000	25000 00
961 	1. D. C		0.00	500000.00	500000-00	0.00	500000.00	500000.00
1.20	rercentage of r.u.sum in item 1.19	10 %						

Unit:Kshs.

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	Total(Kshs) (incl.VAT)	5449.80 11842.80 52.57 137.87 136000.00 50000.00
	1 1	1289.20 3105.60 13.95 33000.61 50000.00
-	VAT(Kshs) LC(Kshs) (incl.VAT)	202.30 607.00 3.20 7000.00 0.00
	Total(Kshs) (excl.VAT)	5247.50 11235.80 49.37 129000.00 50000.00 50000.00
	LC(Kshs) T (	1086.90 2499.60 10.75 26007.64 26000.00
	FC(Kshs)	4160.60 8736.20 33.62 133.62 103000.03 0.00
	1 I NO	Prov. Sum Sum
BILL OF QUANTITIES NO.4 SITE CLEARANCE AND TOPSOIL STRIPPING	DESCRIPTION	<ul> <li>4.01 Clear site in Open Country</li> <li>4.02 Clear site in forest area</li> <li>4.03 Removal topsoil</li> <li>4.04 Scarify and remove, pavement material</li> <li>4.05 Demolish existing railway bridge</li> <li>4.06 Allow for the removal of structures, fences and obstructions.</li> </ul>
	ITEM NO.	44.01 44.03 44.03 400 65 400 65 400 65

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	ORKS								
NO.	DESCRIPTION	UNIT	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)	
5.01	Fill in soft material, main, service roads Fill in soft material, slip roads,	ይ ይ ይ	71.89	20.33 20.33	92.22 92.22	6.03 6.03	26-36 26-36	98.25 98.25	
5.03	approach roads As for Item 5.01 but hauling from	m3	71.41	20.24	91.65	6.03	26.27	97.68	
5.04	drainage pond excavation works As for Item 5.01 but for new railway	<u>ш</u> 3	71.41	20.24	91.65	6.03	26.27	97.68	
5.05 5.05	Fill in hard material for main road. Fill in soft material central reserves	22 22	197.72 81.17	48.68	246.40 156.62	11.07	59.75 83.06	257.47 164.23	
	Fill in soft material adjacent to shoulders Spoil in unsuitable material such as	22	81.17	75.45 20.23		7.61 6.51	83.06 26.74		
	black cotton and rubbish. Spoil in soft material.	g	72.50	20.23		6.51	26.74	<u>99.24</u>	
5.10	Spoil in hard material. Overhaul sarthworks in everse of 1 0km	Ě	242.36	58.26		14.97	73.23	315.59	
101 101 101 101 101 101 101 101 101 101	Excursion in Swamps.	2	89.16	25.60 25.60		0.10	31.74	120.90	
5.14	Compact and procession of the former of the	155	13.30	4.28 2.14	17.58	0.56	4.84	18.14 18.14	
5.16	of 300mm subgrade material in fill area Compact in-situ subgrade in Cut area to		13.30	4.28		0.56	4.84	18.14	
5.17	a uepui of pourm below formation level Compact in-situ subgrade material in Cut area between 150mm and 300mm below	ព	13.30	4.28	17.58	0.56	4.84	18.14	
5.18	underside of imported subgrade material Compact in-situ subgrade material in Cut area between Omm and 150mm below	ŝ	6.65	2.14	8.79	0.28	2.42	9.07	
5.19	underside of imported subgrade material Provide, place and compact improved	m3	85.55	24.07	109.62	7.60	31.67	117.22	
5.20	Book formation levelling in Cut area below lean concrete base level or as	2m	14.44		25.00	1.56	12.12	26.56	
5.21	Haul from stockpile and spread on side- slopes and central reserves, lightly roll	25	5.52	4.54	10.06	0.50	5.04	10.56	
5.22	and compact / Jum thickness of toppoll. Haul from stockpile and spread on black cotton spoil area, lightly roll and	2E	13.35	6.70	20-05	1.17	7.87	21.22	
5.23	compact 200mm thickness of topsoil Haul from stockpile and spread on rubbish spoil area and side borrow area, and compact topsoil.	Ш3 СШ	74.80	22.19	96,39	6.17	28.35	103.16	

BILL OF QUANTITIES NO.5 EARTHHORKS

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2	FC(Kshs)	LINU	DESCRIPTION	ITEM
			BILL OF QUANTIFIES No.5 EARTHMORKS	BILL OF QU EARTHWORKS

9	NO.	1180	(micu/a)		(exc1.VAT) (exc1.VAT)	( chen hun	(incl.VAT) (incl.VAT) (incl.VAT)	(incl.VAT)
-24	5.24 Plant fillslopes and cutslopes with	2	0.00	18.29	18.29	0.62	18.91	18-91
5.25	Provide place and compact filter material for dealing of and and mut	ß	277.05	208.89	485.94	08.21	288.69	565.74
5.26	Fill for new national boundary dike	СП.	65.36	18.82	84.18	5.41	24 23	89.59
5.27	Filter fabloc for rockfill	т Сш	187.30	18.86	206.16	0.00	18.86	206.16

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BILL OF QUANTITIES No.7 EXCAVATION AND FILLING FOR STRUCTURES

ITEM NO.	ITEM DESCRIPTION NO.	UNIT	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (inci.VAT)	Total(Kshs) (incl.VAT)
1.01	BRIDGES Excavation.compaction at foundation isons backfilling.and composed of	۲ ۲	85.68	22.37	108.05	6.58	28.95	114.63
	excavated material to spoil for struct- excavated material to spoil for struct- ures foundations in soft materials.	i and the second se	259.05 25	61.48 61.48		14 <b>.</b> 59		
7.05	backTilling with selected material Porous filter material Selected granular fill material	555	277.05 313.42	208.89 116.25	485.94 429.67	79.80 27.87	288.69 144.12	565.74 457.54
	BOX CULVERTS As Item 7.01 F.O.Trem 7.06 in hard material	E E	85.68 259 05	22.37 61 48		6.58 14.59		
	Backfilling with selected material Porous filter material	122	85.90 277.05	55.18 208.89		8.13		
7.10	Selected granular fill material Excavation and backfilling for gabions	55	313.42	116.25	429.67 90.95	27.87	144.12 90.95	457-54
7.12	in Sort material. Provide and place gabion mesh.0.5m Rockfill to gabions	2°2	194.72 303.82	155.98 107.35	350.70 411.17	46.89 22.95	202.87 130.30	397.59 434.12

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	UULVEKIS AND UKAINALE WUKKS							
NO.	DESCRIPTION		FC(Kshs)	LC(Kshs)	Tota I (Kshs) (exc1.VAT)	VAT (Kshs)	LC(Kshs) (incl.VAT)	lota (Kshs) (incl.VAT)
. 10	Excavate in soft material . Dipe culverts	13	94.58	40.66	- -	7.71	48.37	:
20	As for Item 8.01, inlets and outlets	6 6 6	94.98 85.58	40.66	135.64 108 05	7.71	48.37	143.35
22	Excavate in soft nitching channel []	372	85.68	22.37		5.58	28.95	
<u>بع</u>	Excavate in soft, conc.channel, III	ገግ	85.68	22.37	•	6.58	28.95	
പ്പ	Excavate in soft, conc. chan. cascade, VII	<u>ሮ</u>	85.68 2.58	22.37	•	6.58	28.95	
Σġ	Excav.backfill.gulley pot	21	94.98 04.08	40.05 40.65		1/ /	48.37	
່ ຊຸ	скоактиаски и и голиста и солуки Excav. backf i 11. gabions	22	0.00	90°92		00.00	90.95	
9	Excavate subsoil drain	E	00-00	90.95		00 0	90.95	
=	Excav.hard material	Ъ.	259.05	61.48		14 59	76.07	
	Filter fabric to subsoil drain	6 1	93.65	9.43		000	9.43	
	URUSHED FOCK TO SUDSOLI DEALD Derforsted 200mm DVC sine	2 e	313.42	35 36		10-17	144-1C 35 26	•
20	Provide, lay and joint 300mm I.D.	: E	209.88	203.19		58.00	261.19	
	concrete pipes ogee jointed.							
٩Q	As for Item 8.15 but 600mm I.D.	E	619.81	782.19		178.88	961.07	
~ 0	As for item 8.15 but /50mm 1.0.	e I	923.63	1961.91		2/3 99	1235.90	
οo	AS IUF LICHTO.ID UNL SUUMINI I.U. As for 14cm 8 15 hit 1200mm 1 D	ΞΕ	1266 73	2218 604		560.32	10.0770	
$\mathbf{o}$	Class 15/20 concrete bed	1 2 1	1499.31	1120.87		198.49	1319.36	
11	Class 15/20, berm conc.	잍	67.91	28.68		60"6	37.77	
<u>N</u>	Class 25/20, fabric mesh	뗱'	1901.02	2081.92		271-88	2353.80	
<u>m</u> ;	As for Item 8.22 but 15/20, III	2°	1504.61	901-98		204.34	1106-32	
Ξ.K	Conc 20/20,reint.vi Conc 20/20 au]lev pot	9 E	5082-00	2022.20 4085 02		312-49	4397_51	
2 S	Concrete cover, quiley pot	No.	187.05	298.72		30.30	329.02	
5	50mm dia.PVC weep holes	No.	13.95	4.47		00.0	4.47	
202	150mm thick grouted stone pitching	Ë	129-78	118.49		16.71	135.20	
אַר	Comment store	Ë	0.00 25 30	83.CC2		27.12 5.37	22.202	
37	cement screen Gabion mesh.lm thick.	12	242.19	183.00		58.48	241.48	
:23	Mattresses.0.3m thick	12	111.77	108.76		26.91	135.67	
2	Rockfill to gabions and mattresses	<u>الم</u>	303.82	107.35		22-95	130.30	
21	Filter fabric	2	93.65	9.43		00.0	9.43 54.73	
u ) (u	450 x 225mm P.C.C. invertiblock drains	Ē	124.14	150.13		10, 11, 10, 12, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10	185./9	
32	375x250mm inv.block drain.lV		116.90	144.14		44 00	188.14	
:82	As for Item 8.37 but berm.VIII	E .	116.90	144.14	261.04	44 00	188.14	305.04
25	Kerd inlet Tutake block channel	22	40,00	03-00 68-66		14.40	74.US 83.D6	
8.41	Conc.dutter.250 x 150mm	2 8	279.57	364.31		36.89	401.20	

BILL OF QUANTITIES No.8 CULVERTS AND DRAINAGE HORKS

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ata da persoante en esta da constructiva en en en en el forma de la construcción de la construcción de la cons A seconda persoante en entre en entre en entre en el construcción de la construcción de la construcción de la co A seconda de la construcción de la c	

(incl.VAT) (incl.VAT)
116.25         429.67         27.87           18.29         18.29         0.62           20.24         91.65         6.03

BILL OF QUANTITIES No.9 PASSAGE OF TRAFFIC

DESCRIPTION

Total(Kshs) (incl.VAT)

LC(Kshs) (incl.VAT)

VAT(Kshs)

Total(Kshs) (exc1.VAT)

LC(Kshs)

FC(Kshs)

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3500.00 3301790.00 552430.00 552430.00 110910.00 1565090.00 565190.00 565190.00 587.92 787.92 244.21 824300.00

35000.00 945520.00 945520.00 155280.00 84220.00 84220.00 155280.00 155000.00 156000.00 156000.00 156000.00 156000.00 233.84 58.71 233.84

226850.00 326850.00 53790.00 21350.00 52300.00 52300.00 113000.00 113000.00

35000.00 2974940.00 2974940.00 598640.00 510820.00 510820.00 510820.00 701.72 701.72 701.72 701.72

35000.00 618670.00 618670.00 62870.00 62870.00 101490.00 103700.00 137430.00 13760.00 147.64 51.10 51.10

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ITEM NO.	ł

Sign and barrier Construct/maintain deviation,7m,type 1 Construct/maintain deviation,7m,type 1 Construct/maintain deviation,6m,type 3 Construct/maintain deviation,6m,type 3 Construct/maintain deviation,3m,type 4 Reinstatement of deviation,3m,type 4 Repair of exist.road,cross drainage,Kiku Maintenance of project road Improvement of existing road (1) Improved subgrade material (2) Gravel wearing course (3) Gravel wearing course (4) MC 30 pring coat (5) Chipping,3/6m Maintenance of exist.roads,heavy const. Re-carpeting of exist.roads,heavy const.

0.00 2356270.00 2356270.00 497150.00 126690.00 126690.00 176.00 554.08 554.08 554.08 559000.00 85.55 255.21 638.87 19.06 21.84 640.33 640.33 2517.78 8<u>5377</u>888

117.22 348.78 908.82 22.53 22.53 22.53 22.53 25.81 25.81 25.81 25.81 3530.19

7.60 58.91 58.91 58.91 58.91 58.91 7.44 44.44 44.44 521.01

109.62 325.06 849.91 19.56 19.56 22.41 836.40 5000.00 5000.00

24.07 69.85 211.04 0.50 0.57 0.57 196.07 50000.00 491.40

9.12

UNIT FC(Kshs) LC(Kshs) Total(Kshs) VAT(Kshs) LC(Kshs) T (incl.VAT) ( (incl.VAT) ( incl.VAT) ( incl.VAT		BILL OF QUANTITIES No.10 GRAVEL MEARING COURSE							
he material site.         ha         4160.60         1086.90         5247.50         202.30         1289.20           s road to the material         km         212460.00         60840.00         273300.00         79320.00         79320.00           of 200m in length.         m3         38.62         10.75         49.37         3.20         13.95           oil topsoil and over-         m3         28.62         10.75         49.37         3.20         13.95           waterial site.         m3         25.21         69.85         325.06         23.72         93.57	ITEM NO	DESCRIPTION	TINU	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
n3 38.62 10.75 49.37 3.20 n3 255.21 69.85 325.06 23.72	58	Clear site of the material site. Construct access road to the material	с, С	4160.60 212460.00			i di se		5449.80 291780.00
, m3 255.21 69.85 325.06 23.72	3	site in excess of 200m in length Excavate and spoil topsoil and over-	50 133	38.62	10.75	49.37	3.20		52.57
	8	burgen in the material site. Excavate gravel wearing course material,	5	255.21	69.85	325.06	23.72		348.78

	Total(Kshs) (incl.VAT)	848.31	848.31	848.31	908.82	848.31	848.31	848.31
	LC(Kshs) T (incl.VAT) (	253.76	253.76	253, 76	269.95	253.76	253.76	253.76
	VAT(Kshs)	58.07	58.07	58.07	58.91	58.07	58.07	58.07
	<pre>[otal(Kshs) (excl.VAT)</pre>	790.24	790.24	790.24	849.91	790.24	790.24	790.24
	LC(Kshs) Total(Kshs) (excl.VAT)	195.69	195.69	195.69	211.04	195.69	195.69	195-69
	FC(Kshs)	594.55	594.55	594.55	638.87	594.55	594.55	594.55
	UNIT	12		-		2	-	5
BILL OF QUANTITIES No.13 GRADED CRUSHED STONE FOR SUBBASE AND BASE	DESCRIPTION	13.01 Provide, spread and compact graded crushed stone to subbase for main road.	As for Item 13.01 but for slip road.	As for Item 13.01 but for approach road	Base, slip, approach and service roads.	Provide spread and compact graded	As for Item 13.05 but for slip road.	13.07 As for Item 13.05 but for approach road
	ITEM NO.	13.01	13.02	13.03	13.04	13.05	13.06	13.07

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BILL OF QUANTITIES No.14A LEAN CONCRETE FOR BASE

14.01       Provide, process, mix, transport, spread and m3       760.02       285.65       1045.67       81.28       366.93       1126.95         for main road in accordance with the       m3       760.02       285.65       1045.67       81.28       366.93       1126.95         14.02       As for item 14.01 but for slip road.       m3       760.02       285.65       1045.67       81.28       366.93       1126.95         14.03       As for item 14.01 but for slip road.       m3       760.02       285.65       1045.67       81.28       366.93       1126.95         14.03       As for item 14.01 but for approach road.       m3       760.02       285.65       1045.67       81.28       366.93       1126.95         14.04       Protecting and curing lean concrete base       m2       0.00       2.00	ITEM NO.	DESCRIPTION		FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
Specification.         Specification.         M3         760.02         285.65         1045.67         81.28         366.93         320         3236.93         402.80         3639.73           Variation in cement content(Prov.)         tonne         0.00         3236.93         3236.93         402.80         3639.73	14.01	Provide, process, mix, transport, spread and compact lean concrete base material for main road in accordance with the	Ĩ	760.02	285.65		81.28	366.93	
	14.02 14.03 14.03 14.05	Specification. As for Item 14.01 but for slip road. As for Item 14.01 but for approach road. Protecting and curing lean concrete base Variation in cement content(Prov.)	m3 m3 tonne tonne	760.02 760.02 0.00	285.65 285.65 2.00 3236.93		81.28 81.28 01.00 402.80	366.93 366.93 2.00 3639.73	

۰ ۲.	BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING	DRESSIN	IJ					
NO.	DESCRIPTION	11NN	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
11111111111111111111111111111111111111	MC 30 prime coat As for Item 15.01 but for slip road. As for Item 15.01 but for approach road main road As for Item 15.04 but for slip road. As for Item 15.04 but for approach read As for Item 15.04 but for approach read MC3000, first seal coat Cipping.10/14mm MC3000, first seal coat Cipping.3/6mm MC3000, first seal coat Cipping.3/6mm	litree mission litre mission litre mission litre mission litre mission litre mission litre litre mission litre mission litre litre	661 662 662 662 662 662 662 662 662 662	196.55 19	82222222 82222222222222222222222222222	2.97 97.97 97.97 94.60 94.60 94.64 9	595.589 2458 2458 2595.69 2505.69 2505	88.888 88.88 88

BILL OF QUANTITIES NO.15 BITUMINOUS SURFACE TREATMENT AND SUR

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m3         2517.78         491.40         3009.18         521.01         1012.41           m3         2517.78         491.40         3009.18         521.01         1012.41           m3         2517.78         491.40         3009.18         521.01         1012.41           ittre         0.00         8.45         8.45         2.35         10.80           onne         0.00         3236.93         3236.93         3236.93         3339.73	but for Stip roda. IID 2330.98 403.04 2014.02 400.23 949.07 but for approach road. m3 2330.98 483.64 2814.62 466.23 949.87 wearing course for m3 2517.78 491.40 3009.18 521.01 1012.41	bickipilun – Unul Pu(Ksns) Lu(Ksns) Iotal(Ksns) Val(Ksns) Lu(Ksns) Lu(Ksns) (incl.VAT) (inc excl.VAT) (incl.VAT) (incl.VA	BITUMINOUS BINDER COURSE AND WEARING COURSE DESCRIPTION UNIT FC(Kshs) LC(Kshs) VAT(Kshs) LC(Kshs) Total(Kshs) (excl:VAT) (incl:VAT) (incl:VAT)	E UNIT FC(Kshs) LC(Kshs) Total(Kshs) VAT(Kshs) LC(Kshs) Tota m3 2330.98 483.64 2814.62 466.23 949.87 m3 2330.98 483.64 2814.62 466.23 949.87 m3 2517.78 491.40 3009.18 521.01 1012.41 m3 2517.78 491.40 3009.18 521.01 1012.41
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BILL OF QUANTITIES NO.17 CONCRETE MORKS

	CONCRETE MORKS			•				
ITEM NO.	DESCRIPTION	TINU	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
	BRIDGES							
17.01	Concrete: Class 15/40 for	m3	1251.52	669.87	1921.39	177.64	847.51	2099-03
70.11	(1) Bridges fo	<b>m</b> 3	1572.10	667.31	2239.41	214.21	881.52	2453.62
17.03 17.04	<ul> <li>(2) Vehicle bridges.</li> <li>(3) Pedestrian bridges.</li> <li>Class 30/20 for structural concrete.</li> <li>Provide UF2 finish to concrete surface.</li> </ul>	88888 8	1572.10 1572.10 1600.83 6.93	667.31 667.31 667.31 690.76 34.63	2239.41 2239.41 2291.59 41.56	214.21 214.21 223.29 1.14	881.52 881.52 914.05 35.77	2453.62 2453.62 2514.88 42.70
1705	Fornwork: Fornwork.class (1) Sloping (2) Vertical	5 E E	95.69 70.52	270.84 273.59	366.53 344.11	8.08 8.32	278.92 281.91	374.61 352.43
17.05		tonne tonne	118.42 94.74 69.33 11776.80	373.65 298.92 345.31 9724.70	492.07 393.66 415.64 21501.50	13.22 10.58 11.44 2835.90	386.87 309.50 357.75 12560.60	505.29 404.24 427.08 24337.40
17.08 17.09 17.10	equal to or less than lown As for Item 17.07 but greater than lown 200mm wide waterstops Joint filler,20mm thick.	tonne m2	11468.80 371.93 524.85	9549.40 54.90 48.75	21018.20 426.83 573.60	2761.70 0.00 0.00	12311.10 54.90 48.75	23779.90 426.83 573.60
17.11	BOX CULVERTS Concrete: Class 15/40 for	Щ3 Т	1251.52	669.87	1921.39	177.64	847.51	2099.03
17.12 17.13	<ul> <li>Class 25/20 for structural concrete.</li> <li>(1) Box culverts for road.</li> <li>(2) Box culverts for drainage.</li> <li>(3) Box culverts for footpath.</li> <li>3) Provide UF2 finish to concrete surface.</li> </ul>	2222	1572.10 1572.10 1572.10 1572.10 6.93	667.31 667.31 667.31 34.63	2239.41 2239.41 2239.41 41.56	214.21 214.21 214.21 1.14	881.52 881.52 881.52 881.52 35.77	2453.62 2453.62 2453.62 42.70
17.14	Formwork: Formwork, class Fl finish (1) Vertical	щ <b>2</b>	70.52	273.59	344.11	8.32	281.91	352.43
17.15 17.16		m2 m2 tonne	118.42 69.33 11776.80	373.65 346.31 9724.70	492.07 415.64 21501.50	13.22 11.44 2835.90	386.87 357.75 12560.60	505.29 427.08 24337.40

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•	CONCRETE HORKS							
ITEM NO.	TEM DESCRIPTION NO.	TINU	UNIT FC(Kshs) LC(Kshs	LC(Kshs)	UNIT FC(Kshs) LC(Kshs) Total(Kshs) VAT(Kshs) LC(Kshs) Total(Kshs) (excl:VAT) (excl:VAT) (incl:VAT) (incl:VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
17.17	As for Item 17.16 but greater than 16mm tonne	tonne	11468.80	9549.40		2761.70	12311.10	
17.19	17.19 Joint filler, 20mm thick.	≝월	524.85	48.75	573.60	00.0		573.60

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BILL OF QUANTITIES No.17

BILL OF QUANTITIES No.20 ROAD FURNITURE

	AVAU FUALIUME 	TINI	Fr/Kchc)	( C(Kehe)	Total(Kche)	VAT(Kehe)	I C/Kehe)	Total(Kshc)
NO.		1100	L C ( C IISA )		(excl.VAT)		(incl.VAT)	(incl.VAT)
	Warning signs							
	Type H28,1200mm	No.	00.0	7000.00		00-0		
	Type W29, 1200mm	2 2	80	7000.00		0.0		
•	Type #30,1200mm	No.	00.0	2000-000	7000.00	00.0	7000-00	7000.00
20.02	Priority signs				•		-	•
	Type R1 1200m	No.	0.00	2000,000	7000.00	00-0	7000,00	7000-00
cv. v2	rroninitory signs Type P1_1000mm	No.	0-00	6000.00		0.00		
	Type P25,1000mm	No.	0.00	6000.00	6000.00	0.00	6000-00	6000.00
50°04	Mandatory Signs Type M3.1000mm	No.	0.00	6000.00		0.00		
		No.	00.0	6000.00	6000.00	00-00	6000.00	6000.00
20.05	Non-standard informatory signs	:				0		
	less than im/ 3m2_dm2	5.8						
	3m2-5m2 4m2-5m2	29	00.00	19000.00		0.00		
	5m2-6m2	No.	0.00	23000.00		00.0		
	6m2-7m2	۲	0.0	25000.00		00.0		
	/m2-8m2 8m30m2	9.9 8.9	000	2/000.00	2/000.00		2/000.00	2000-0005
	Gm2 - 10m2	No.	00.00	40000.00		0.00		
90	Road marking	2	155.03	19.29		0.78		
20.07	Flex beam guardrail	E	1086.39	255.17		21.03		
8	Road edge marker post	No.	284.02	475.93		39-90		
6	Road reserve boundary post	و	284.02	4/5.93		05 <b>.</b> 62		
10	Plant selected grasses	Щ2	0.00	18.29		0.62		
11.	Plant selected shrubs and bushes.	No.	17.20	59.38		6.63		83
12	Trees	No.	34.41	82.54		7.87		124-8
с <u>і</u> .	Provide and erect kilometer po	No.	526.60	612.88	1139.48	112-52	725.40	1252.00
	Flush kerb, ISUMM X LUUMM, type	Ei	44°TO			00-TT		
្ពម្	Flush Kerb, 150mm × 100mm, type	88	22.20 54 05	500 50		12.00		30.0
12	Flush kerh. 150mm x	E	29.03	56.89		8.45		- 40
20.18	Flush kerb,150mm x 100mm, type	E	52.80	69.62		11.82		134.2
<u>61</u> ,	Quardrants	:		1			1	( 
	Quardrants for kerb A, in-situ Quardrants for kerb B, in-situ	No.	53.82 48.81	53.21	102.02	/ .04 6.93	60.14 60.14	108.95
20.20	Raised kerb, 125mm x		1					
	4	56	111.46	142.14	253.6U	24-40	182.04	2/8.00
	(2) tealers on the college (2)	Ξ.	2	~~··				

BILL OF QUANTITIES No.20 ROAD FURNITURE

NO.	DESCRIPTION	LINU	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(KShs) (	LC(KShs) (inc1.VAT)	<pre>Iotal(Kshs) (incl.VAT)</pre>
20.21 R	20.21 Raised kerb.125mm x 250mm,main road					C C	F F	
	<pre>(1) straight. (2) radius 5m to lm.</pre>		124.01	160.58	294.59	29.53	11.001	324.12
20.22	Provide and lay ramped kerb.	No.	142.06	128.00	270.06	35.91	163-91	•
20.23	B Provide and erect permanent five strand wire fencing including intermediate and straining posts.	E	10.54	98.20	141.//	8.11	TC-DUT	
20.24	Provide and erect gates	No.	373.15	1840.05	2213.20	234.34	2074.39	2447.54
20.25	Provide and erect double headed mardrail		2061.59	313.78	•••	22.54	336.32	
20.26	6 Stairway for bus stop	Ē	762.52	835.93	1598.45	100.05	935,98	1698-50
07-02	Staltway tor bus	E	70-70/	02,000	04*0ACT	4	co•0	

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BILL OF QUANTITIES No.21 MISCELLANFOIS

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	MISCELLANEOUS			19				
NO.	DESCRIPTION		FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT (Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
21.01	Materproofing	<b>e</b>	261.54	20.45	281.99	0.00	20.45	281.99
7 <b>n</b> -17	<pre>tlastcomeric bearings, tixed (1) 406 x 279 x 18mm (2) 432 x 203 x 18mm</pre>	No.	2089.75 1693.58	471.82	2561.57 2145.59	2.01 2.01	473.83	2563.58
21.03	Elástomeric bearings,movable: (1) 229 x 152 x 56mm		1880.11	458.22	2338.33	1.01	459.23	2339.34
. :	(2) 279 x 229 x 3/mm (3) 279 x 229 x 46mm (4) 270 x 229 x 46mm	No.	2272.87 2823.96	479.41 506.97	2752.28 3330.93		480.92 508.48	2753.79 3332.44
10.12	(5) 422 × 20184 (5) 432 × 203 × 50184 Joint filler excarcing		5223.48	526.94	5850.42	1.51 1.51	528.45	5851.93
1	(1) 30mm thick (2) 25mm thick (3) 20mm thick	겉엍엍	787.28 655.44 524.85	61.87 55.28 48.75	849.15 710.72 573.60	0.00	61.87 55.28 48.75	849.15 710.72 573.60
21.05	Sealant,expansion joint (1) 30 x 50mm deep		446.56	27.00	473.56	0.00	27.00	473.56
21.06 21.07	<pre>(2) 25 x 50mm deep Asphalt concrete surfacing,bridge deck Supply and install flex beam guardrails</pre>	ene	371-93 2517.78 1054.88	23.26 491.40 242.69	395.19 3009.18 1297.57	521.01 21.85	23-26 1012-41 264.55	395.19 3530.19 1319.43
21.08	Including post Provide and erect in position parapet	E.	155.01	472.20	627.21	37.37	509.57	.664.58
21.09	Provide and erect in position pedestrian	E	236.14	518.31	754.45	56.94	575.25	811.39
21.10	100mm dia votto ruges 100mm dia drain pipe, deck slab		143.32	12.58		0.00	12-58 8-74	155.90
21 12	Perforated 200mm dia.PVC pipe Dowel bar,movable,20mm dia.		389.85	35.26		88	35.26 105.40	425.11
21.15 21.15 21.15	<ul> <li>Dowel bar, fixed, 40mm dia,</li> <li>Graded crushed stone base, box culverts.</li> <li>Ashbalt concrete wearing, box culverts.</li> <li>200mm dia, PVC ween biles</li> </ul>	0 8 8 8 8 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	1306.47 638.87 2517.78 553.31	211.04 211.04 491.40 43.44	1455.43 849.91 3009.18 596.75	0.00 58.91 521.01	148.95 269.95 1012.41 43.44	1455.43 908.82 3530.19 596.75
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BILL OF QUANTITIES No.22 DAYHORKS

NO.	DESCRIPTION	UNIT	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
	9747878787444774446688888888888888888888			****				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
22.01	PLANT D6 tractor or equivalent including brade	ł	1032 47	474 R1	1507 28	70 20	553 75	1501 22
+ - - - -		E	11.1001		A.		n	4
22.02	D7 tractor or equivalent, including brade	hr	1474.99	666.70	2141.69	119.92	786.62	2261.61
22.03		h	1859.55	818.14	2677.69	150.32	968.46	2828.01
22.04	Motor grader CA	рг Г	738.65	334.73	1073.38	59.33	394.06	1132.71
	(complete with					1		
22.05	م مد	51	790.86	335.95	1126.81	62,36 70,95	398.31	1189-17
22-00		<u>;</u>	53/ 40	00-704 70-001		74.05 34.85	05 V26	
22.08		Ę	441.83	199.74		38-45	238,19	
22.09	As for Item 22.08 but 6-8 ton.	ځ:	347.99	163.06		27.44	190.50	
22.10		Ę	120.87	72.91		9.45	82.36	
22.11		۲ ۲	31.46	38.40		2.42	40.82	
22.12		rd	861.70	385,99		69.22	455.21	
	equivalent.	-	1001			00 00		
T1 66	2.3 m3 tractor snovel or equivalent. 0.7 m3 class mechanical evenuator	7 1 1 1	1025.34 871 36	403.3U	1260 11	86-88 70 43	540.10 468 18	75.1/C1
	(backhoe) or	ŧ	0217 10		•	CT • > >	01-004	
22.15	0.3 m3 class n	hr	553.96	257.83	811.79	44.50	302,33	856.29
	(backhoe) or					0000		
22.16	2.3 m3 class	5	1025.34			82.88		
/1.22	5 m3 class whe	51	20.1821			102.01		
22-10	10 ton tipper lorry.	Ft	09 817			23 63		
06 66	f ton lorry	1	147 11			15.83		
22.21		2	246.22			19.78		
22.22		h	167.44			13.49		
22.23	Land Rover.	노.	150.08			12.10		
22.24	6 m3/min air c	۲ ۲	21/.50			1/.15		
12-22	Form dolars	5 5	410 02			07.07 07		
22.22	As for item 2	= b	32.17			2.62		
22.28		4	182.98			14.48		
22.29		r	19.95			15-1		
22.30	<ul> <li>Self-propelled water tanker 9500 litre.</li> </ul>	F t	443.10 662 75	184.09 285 01		35.60	219-69	662.79 1000 02
22.32		= E	320.05		480.50	25.71		
	Tests.							

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1997 - 1997 - 1998 1997 - 1997 - 1998 1997 - 1997 - 1998	

2 2 2 2	DESCRIPTION	UNIT	FC(Kshs)	LC(Kshs)	Total(Kshs) (excl.VAT)	VAT(Kshs)	LC(Kshs) (incl.VAT)	Total(Kshs) (incl.VAT)
	1.2000	5 1 1 1 1 1 1 1						
22.33		r r	000	19.00	19.00 25.00	0000	19.00	19.00
2.35		r L	0.00	29.00	29.00	0.00	29.00	29.00
35	MATERIALS Ordinary Dontland Comput			50 956E		402 GU	25 0535	
22.37	Mild steel (any diameter).	tonne	00.00	17870.40	17870.40	2628.00	20498.40	20498.40
8	High yield steel (any diameter).	tonne	00.00	18604.80		2736-00	21340.80	
2.33	Fine aggregate	л СШ	0.0	403.20		60.48	463.68	
<del>3</del> .		m3	0.00	515.23		24.41	539.64	
22.41		m3	00.00	515.23	515.23	24.41	539.64	539.64
22.42	size 40mm. Graded crushed stone for subbase and	n3 1	0.00	552.04	552.04	26.15	578.20	578.20
	base.							
2.43	Wrought shuttering timber.	Ę	0.00	217.09	: •	31.93	249.02	249.0
4.	Unwrought shuttering timber.	È	0.0	217-09		31-93	249.02	249-0
14 14 14	Plantering for trencies.	2014:1	0.0	201/17		01.40	24.242	247 C
22.47	Cut back bitumen Grade MC 3000.	litre	00.0	21.79		3.20	24.99	24.9
:ୱ ର	Emulsion.K1-60	litre	0.00	13.40		1.97	15.37	15.3
2.45	Straight-run bi	litre	00.00	8.45		2.35	10.80	10.80
2.50	10/14mm nominal	n G	0.00	586.99	586.99	27.81	614-80	614.80
	3/6mm nominal size chippings.	<u>n</u>	0.00	586.99		2/ - 81	614 <b>.</b> 80	914

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BILL OF QUANTITIES No.23 PILING

ITEM NO.	DESCRIPTION	TINU		LC(Kshs)	FC(Kshs) LC(Kshs) Tota1(Kshs) VAT(Kshs) LC(Kshs) Tota1(Kshs) (incl.VAT) (incl.VAT) (incl.VAT) (incl.VAT)	VAT(Kshs)	LC(Kshs) (incl:VAT)	Total(Kshs) (incl.VAT)
23.01	Mobilizatic for the pi	L.S.	79800.00	79800.00 26200.00	106000.00	0.00	26200.00	10600.00
23.02 23.03		.of B	855.82 3801.25	231.48 380.12	1087.30 4181.37	21.22 0.00	252.70 380.12	1108.52 4181.37
23.04	Driving piles of 500 mm dia including positioning and pitching. Include for cutting pile heads to correct level.	E	261.72	70.79	332.51	6.49	77.28	339.00