BILL NO.8 : CULVERTS AND DRAINAGE WORKS

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
	Note: No separate payments shall be made for hauling of any material to or from the site of works and the cost of such shall be included in the rates .				
	Excavation for pipe culverts, piped drains, minor drainage structures,manholes and subsoil drains				
8.01	Excavate in soft material to any depth for pipe culverts, subsoil drains including support of trench sides, compaction of the invert of the excavation to 100% MDD (AASHTO T99), backfilling and compaction to 95% MDD (AASHTO T99) with excavated suitable material and removing the excavated unsuitable/surplus material to spoil as per cl. 802, 803, 804, 806, 809, 812, 814 and 819 of the specifications, drawings and as directed by the Engineer.	m^3	29,000		
	Excavation for Trunk drain				
8.02	Excavate in soft material for trunk drain, including manholes, shoring and support of trench sides, compaction of the invert of the excavation to 100% MDD (AASHTO T99), backfilling and compaction to 95% MDD (AASHTO T99) with excavated suitable material and removing the excavated unsuitable/surplus material to spoil as per cl. 802, 803, 804, 806, 809, 812, 814 and 819 of the specifications, drawings and as directed by the Engineer.				
a)	Excavation depth up to 3m	m^3	72,000		
b)	Excavation depth exceeding 3m	m^3	53,000		
	Excavation for inlet, outfall, mitre drains, catchwater drains, channels, cut off drains and median drains , invert clock drains.				
8.03	Excavate in soft material for inlet, outfall, mitre drains, catchwater drains, channels, cut off drains and median drains as per cl. 802, 803, 804, 806, 817 and 819 of the specifications, drawings and as directed by the Engineer.(depth up to 5m)	m^3	40,000		
	Excavation in hard material				
8.04	Extra over Items 8.01, 8.02 and 8.03 for excavation in hard material.	m^3	5,000		
	Selected backfill material				
8.05	Provide, place and compact to 100% MDD AASHTO T99 selected backfill material as per cl.809, 812 & 814 of the specifications, drawings and as directed by the Engineer.	m^3	51,000		
	Sub surface drainage pipes				
8.06	Provide and place perforated UPVC subsoil drainage pipes as per the specifications, drawings and as directed by the Engineer.				
a)	200mm diameter pipes	m	2,500		
b)	300mm diameter pipes	m	2,500		
8.07	Provide and place crushed rock backfill to subsoil drains as per cl. 814 of the specifications, drawings and as directed by the Engineer.	m^3	2,000		
	Rockfill below structures				
8.08	Provide, place and compact rockfill below culverts as per cl. 507 and 804 of the specifications, drawings and as directed by the Engineer.	m^3	2,625		
	Total carried forward to next page				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
	B/F from previous page			**B/F**	
	Geotextile filter fabric to subsoil drains				
8.09	Provide, prepare surface and install filter fabric (300g/m²) to rockfill and subsoil drains as per clause 804 and 814 of the specifications, drawings and as directed by the Engineer.	m²	3,800		
	Provide, lay and joint pipe culverts				
8.10	Provide, lay and joint precast reinforced concrete pipe culverts as per the specifications, drawings and as directed by the Engineer.				
(a)	600 mm diameter	m	2,500		
(b)	900 mm diameter	m	2,560		
(c)	1200 mm diameter	m	400		
(d)	1500 mm diameter	m	12,300		
(e)	450 mm diameter	m	1,150		
	Concrete to beds				
8.11	Provide and place Class 15/20 concrete to beds of concrete pipes, aprons, drains and temporary works as per the specifications, drawings and as directed by the Engineer.	m^3	3,400		
	Concrete to haunches and surrounds to culverts				
8.12	Provide and place Reinforced Portland Cement Concrete class 20/20 to haunches and surrounds to culverts including all the cost of providing, placing concrete, formwork, reinforcement and finishing as per the specifications, drawings and as directed by the Engineer.	m^3	26,010		
	Concrete to minor drainage structures (flared/straight type headwalls and drop inlets)				
8.13	Provide, place and compact class 20/20 concrete to culvert end structures including all the cost of providing, placing concrete, formwork, reinforcement and finishing as per clause 816 and 819 of the specifications, drawings and as directed by the Engineer.	m^3	750		
	Concrete to minor drainage structures (Catch basins and RC manholes) masonry wall foundation and columns.				
8.14	Provide, place and compact class 20/20 concrete to catch basins including the cost of providing, placing concrete, reinforcement, shuttering as per clause 816 and 819 of the specifications, drawings and as directed by the Engineer.	m^3	1,150		
	Concrete lining to drains				
8.15	In-situ lining with class 20/20 on drainage channels to be instructed by the Engineer as per the specifications, drawings and as directed by the Engineer.	m^3	300		
	Rip-rap, Stone Pitching and masonry,				
8.16	(i) Prepare ground as necessarry, provide and place close jointed, grouted rip-rap as per the drawings, specifications and directed by the Engineer.	m^2	3,150		
	(ii) Prepare ground and necessary, provide and place 150mm thick grouted stone pitching per the drawings, specifications and directed by the Engineer.	m^2	14,300		
	Total carried forward to next page				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KSHS)	AMOUNT (KSHS)
	B/F from previous page			**B/F**	
	(iii) Prepare ground and necessary, provide and place 200 mm dressed stone masonry walling complete with key to joints as directed by the Engineer	m^2	8,400		
	Side slabs / Concrete seal to U-drains				
8.18	In-situ casting of concrete side slabs / seal to U-drain channels as per the specifications, drawings and as directed by the Engineer.	m^3	150		
	U-shape RC Invert block drains, Rate to include concrete cover slab				
8.19	Provide and place U-Shape Drains as per the drawings, specifications and directed by the Engineer.				
a)	Ditch road side Ds-Pu (450mm*450mm)	m	500		
b)	Ditch road side Ds-Pu(S) (bxd - 600mm*1000mm)	m	6,000		
c)	Ditch road side Ds-Pu(S) (bxd -750mm*1000mm)	m	16,000		
d)	Ditch road side Ds-Pu(S) (bxd -1000mm*1000mm)	m	5,000		
e)	Ditch road side Ds-Pu(S) (1250mm*1250mm)	m	125		
f)	Ditch road side Ds-Pu(S) (1500mm*1500mm)	m	125		
g)	Lined Open Channel (1000*500mm, sideslope 1:0.25)	m	250		
h)	Lined Open Channel (2000*1000mm, sideslope 1:0.25)	m	200		
i)	Reinforced Concrete V Ditch (500mm*500mm)	m	100		
j)	Reinforced Concrete V Ditch (1000mm*1500mm)	m	100		
	Invert Block Drains				
8.20	Provide and place 300mm x 450mm Invert Block Drains as per the drawings, specifications and directed by the Engineer.	m	3,000		
8.21	Provide and place 75mm x 225mm side slabs as per the drawings, specifications and directed by the Engineer.	m^2	4,500		
	Trunk Drain Manholes				
8.22	Provide all materials including shoring, struting, dewatering, and Construct reinforced concrete storm water manholes to trunk drain as shown in the drawings, average depth to invert 5.5m	No	125		
Total for Bill 8 forwarded to Summary Page					